

Managing Common Infections in Day Care Settings:

**Day Care Providers' Sickness Exclusion Beliefs,
Advice, and their Consequences for Parents**

Leila Rooshenas

School of Medicine
Cardiff University

In partial fulfilment of the requirements for the degree of
Doctor of Philosophy

April 2012

Acknowledgments

There are many people I would like to thank for their support over the past four years. My primary supervisor, Fiona Wood, epitomises what it means to be a brilliant supervisor. I will always be grateful to her, not only for her expert guidance, but also for helping me to grow in confidence over the years. I also feel very lucky to have received guidance from Chris Butler, who has been a massive source of motivation from the start to the end of the PhD, and a truly inspiring researcher. I'm very thankful for the time he has invested in ensuring this study ran as smoothly as possible. Lucy Brookes-Howell, who took over the responsibility of being my primary supervisor in the first year, has been a joy to work with. Nothing ever seemed too much trouble for her. Her dedication to supervision ensured that the study was carefully planned, and overcame early-stage hurdles. Finally, I would like to show my gratitude to Meirion Evans for his valuable advice and guidance on designing the survey, over-seeing the quantitative analysis, and his general words of wisdom on the conduct of the study.

A massive thank you is owed to all the day care providers who persevered with my numerous letters and phone calls, and took the time to complete their surveys. I am especially grateful to the day care providers and parents who took time out from their busy days to be interviewed. Meeting you all has been a highlight of the research experience.

I'd like to say a special thank you to my parents. I feel very privileged to have had the luxury of being able to pursue my aspirations, thanks to their hard work and sacrifices.

Last, but by no means least, a word of thanks to my husband, and best friend, Chris. I hope you understand how much I appreciate your unique personality and approach to life, which has undoubtedly made doing this PhD easier.

Summary

Background and Aims: Judicial antibiotic prescribing and appropriate use of healthcare resources are public health priorities. Preschool-aged children that attend day care frequently consult general practitioners (GPs) and receive antibiotics, despite experiencing mainly self-limiting and/or viral infections. North-American surveys indicate that day care providers unnecessarily exclude children with infections, and make exceptions to exclusion on the basis of antibiotic treatment. Commentators suggest that this may lead to unnecessary consultations and inappropriate antibiotic requests. This study's main aim was to explore whether UK-based day care providers' management of infections encourages parents to unnecessarily consult GPs, and inappropriately seek antibiotics. A secondary aim was to describe the content and nature of written day care sickness exclusion policies.

Questionnaire Methods and Results: Questionnaires were distributed to 329 day care providers in three socio-demographically contrasting areas of South-East Wales, to gather descriptive data regarding sickness exclusion policies. 216 (66%) responses were received. Policies were mostly self-written, diverse in content and detail, and often non-evidence-based.

Qualitative Methods and Results: Day care providers' management of infections, and the influence this had on parents' consulting and antibiotic-seeking behaviours, were explored through semi-structured interviews with 24 purposefully selected day care providers, and 28 opportunistically-selected parents that used their services. Interviews underwent inductive thematic analysis. All day care providers encouraged parents to consult GPs for self-limiting infections, and often inappropriately advised antibiotic treatment through written policies and verbal communication. Some parents felt that day care attendance increased their tendency to consult for symptoms they would usually manage themselves. The purpose of consultation was often to expedite return to day care, rather than alleviate concern. Parents understood that antibiotics were unlikely to be beneficial, but still sought and received treatment in order to appease day care providers' requirements.

Conclusion: Day care providers' inappropriate advice to parents, together with non-evidence-based exclusion policies, contribute to unnecessary GP consultations and inappropriate antibiotic-seeking behaviour.

Terms and Abbreviations

Terms Defined in the Context of this Thesis

Care and Social Standards Inspectorate Wales- A regulatory body that sets standards for 'registered' formal day care providers in Wales.

Day Care Settings- Registered nurseries and childminder settings.

Day Care Provider- The individual that runs the day care setting (i.e. a nursery manager or childminder).

Sickness exclusion policy- A policy, held by day care providers, that outlines their rules and procedures for dealing with ill children. The Welsh Assembly Government requires day care settings to have a sickness exclusion policy in place. Policies generally outline the circumstances in which the DCP will not provide care. In these cases, a child may not be permitted to attend day care, or may be sent home if already present in the day care setting.

Abbreviations

CCD: Centres for Disease Control and Prevention

CSSIW: Care and Social Standards Inspectorate Wales

DCP: Day Care Provider

GPRD: General Practice Research Database

HBM: Health Belief Model

HPA: Health Protection Agency

NHS: National Health Service

NICE: National Institute for Health and Clinical Excellence

RTIs: Respiratory Tract Infections

WHO: World Health Organisation

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 Overview	1
1.2 What is Meant by ‘Day Care’?	3
1.3 Geographical Context	5
1.4 Aims.....	5
1.5 Approach to Research.....	6
1.5.1 Positivism: realist view of reality, objectivist ways of ‘knowing’	6
1.5.2 Interpretivism: relativist view of the world, construction of ‘knowledge’	7
1.5.3 A critical realist view, with an interpretative approach.....	8
1.6 Quantitative and Qualitative Paradigms	9
1.7 Ethical Approval.....	11
1.8 Thesis Synopsis	12
CHAPTER 2: LITERATURE REVIEW.....	14
2.1 Introduction.....	14
2.2 Search Strategy	15
2.3 Drivers of Antibiotic Resistance	19
2.3.1 What is antibiotic resistance?.....	19
2.3.2 Antibiotic use drives resistance	21
2.3.2.1 The individual level	21
2.3.2.2 The population level	24
2.3.2.3 Population versus individual level data	26
2.3.3 Can community resistance levels decrease?	27
2.3.3.1 Why is there mixed evidence?.....	30
2.3.4 Section summary	30
2.4 Antibiotic Prescribing Data	31
2.4.1 UK prescribing.....	31
2.4.2 The day care population: high antibiotic consumers	32
2.4.2.1 Children’s prescriptions: current evidence	32
2.4.2.2 Antibiotic prescribing for day care attendees.....	33
2.4.3 Section summary	35
2.5 Common Childhood Infections.....	35
2.5.1 What are pre-schoolers in the UK consulting for?	35
2.5.2 Overview of common day care infections	36
2.5.2.1 RTIs, otitis media, and conjunctivitis	36
2.5.2.2 Gastrointestinal infections.....	48
2.5.2.3 Skin infections	51
2.5.2.4 Other viruses.....	53
2.5.2.5 Invasive bacterial disease	53
2.5.2.6 Risk of infection in childminder settings	54
2.5.3 Antibiotic resistance in day care settings	54
2.5.4 Section summary	57

2.6 Social Explanations for Day care Attendees' General Practice Consultations and Antibiotic Consumption	58
2.6.1 Overview.....	58
2.6.2 DCPs' exclusion thresholds.....	59
2.6.3 GP visits and antibiotic-seeking behaviour.....	63
2.6.4 Influence on parents.....	64
2.6.5 GPs' prescribing decisions	66
2.6.6 Section summary	68
2.7 UK Guidelines	71
2.8 Chapter 2 Conclusion	74
CHAPTER 3: QUESTIONNAIRE SURVEY METHODS	76
3.1 Introduction.....	76
3.2 Social Survey Methods.....	76
3.3 Preparatory Phase	78
3.4 Questionnaire Design and Content	79
3.4.1 Design and format of the questionnaire	79
3.4.1.1 Language.....	79
3.4.1.2 Visual elements.....	80
3.4.2 Themes	81
3.4.2.1 Main sections.....	81
3.4.2.2 Opinion and judgment-based questions.....	83
3.5 Sample.....	84
3.5.1 The population of interest.....	84
3.5.2 Sample size	84
3.5.3 Geographic area	85
3.5.3.1 Factors involved in choosing the study area(s).....	85
3.5.3.2 Selected areas.....	86
3.5.3.3 Other sampling frame options.....	86
3.5.4 Practical setbacks: changes to sample size.....	87
3.5.5 Exclusion criteria.....	88
3.5.5.1 Childminder settings.....	88
3.5.5.2 Nurseries.....	89
3.6 Recruitment and Sample Adjustments.....	90
3.6.1 Overview.....	90
3.6.2 Nurseries removed from sample during recruitment/data collection	90
3.6.3 Incentives for participation	94
3.6.4 Questionnaire packs: letters, cover sheets, consent forms and information sheets	94
3.7 Analysis	95
3.8 Chapter 3 Conclusion	96
CHAPTER 4: RESULTS OF QUESTIONNAIRE	97
4.1 Introduction.....	97
4.2 Response Rates.....	98

4.3 Characteristics of Respondents	99
4.3.1 Nature of day care businesses	99
4.3.2 Opening hours	99
4.3.3 Size	99
4.3.4 Nursery managers'/childminders' experience	100
4.4 Sickness Exclusion Policies	100
4.4.1 How many DCPs had sickness exclusion policies?	100
4.4.2 Who writes DCPs' sickness exclusion policies?	101
4.4.3 Resources used to compile sickness exclusion policies	102
4.4.4 Type of information included in sickness exclusion policies	105
4.4.4.1 Exclusion periods	105
4.4.4.2 Antibiotic treatment	106
4.4.4.3 GP consultations	107
4.4.5 Mentioning specific infections in policies	108
4.4.5.1 Total number of infections mentioned by DCPs	109
4.4.5.2 Which infections were selected?	110
4.4.5.3 Periods of exclusion	112
4.4.5.4 DCPs wanting additional information	114
4.4.6 Standardised policies	116
4.5 Symptom Guidelines	117
4.5.1 Recognising symptoms	117
4.6 Interactions with Parents	122
4.6.1 Parental influence on exclusion decisions	123
4.6.2 Disagreement over exclusion decisions	124
4.6.3 Advice offered to parents	125
4.6.3.1 Advice for recovery	125
4.6.3.2 Advising antibiotics	126
4.6.3.3 Advising GP consultations	127
4.7 Re-admittance Requirements	128
4.7.1 Varied re-admittance requirements, and discrepancies with HPA guidance	129
4.7.2 Summary of re-admittance criteria	134
4.7.2.1 Gastrointestinal infections	134
4.7.2.2 Chickenpox	135
4.7.2.3 Conjunctivitis	135
4.7.3 GP visits, antibiotic treatment, and non-specific treatment	136
4.8 Summary of Questionnaire Results	136
4.8.1 Overview of DCPs' sickness exclusion policies	136
4.8.1.1 Type of information in policies	136
4.8.1.2 Content of policies	137
4.8.1.3 Preferences for standardised policies	137
4.8.2 Recognising infections	138
4.8.3 Interactions with parents	138
4.8.4 Analysis of actual policies	139
4.9 Chapter 4 Conclusion	140
CHAPTER 5: QUALITATIVE METHODS	144
5.1 Introduction	144
5.2 Justification of Method	144
5.3 Day Care Provider Interviews	149

5.3.1 Overview and objectives	149
5.3.1.1 Exclusion	149
5.3.1.2 Relationships and communications with parents	150
5.3.1.3 Antibiotic knowledge	150
5.3.2 DCP sample	150
5.3.2.1 Sample size	150
5.3.2.2 Sampling method	151
5.3.2.3 The purposeful sample: how were participants chosen?	152
5.3.2.4 Inclusion and exclusion criteria	154
5.3.2.5 Increasing the sample size	154
5.3.3 Recruitment	155
5.3.4 Topic guide	156
5.3.4.1 Developing the topic guide	156
5.3.4.2 Vignettes	157
5.3.5 Pilot interviews	158
5.3.6 Interview procedure	159
5.3.6.1 Preparation and settings	159
5.4 Parent Interviews	160
5.4.1 Overview and objectives	160
5.4.2 Sample	160
5.4.2.1 Changes to the sampling methods	160
5.4.2.2 Finalised sampling method: opportunistic sampling	162
5.4.2.3 Sample size	162
5.4.2.4 Inclusion and exclusion criteria	163
5.4.3 Recruitment	164
5.4.3.1 Recruitment pack	164
5.4.4 Topic guide	165
5.4.5 Interview procedure	166
5.5 Data Collection Methods and Analysis	167
5.5.1 Audio recording and transcribing	167
5.5.2 Analysis	169
5.5.2.1 Choice of analytical approach	169
5.5.2.2 Thematic template analysis	171
5.5.2.3 Theoretical or inductive analysis?	171
5.5.2.4 What represented a theme?	175
5.5.2.5 Computer-assisted data analysis	175
5.6 Chapter 5 Conclusion	176
CHAPTER 6: OVERVIEW OF QUALITATIVE EMPITICAL CHAPTERS	178
6.1 Introduction	178
6.2 Sample	178
6.2.1 Nursery managers	178
6.2.2 Childminders	180
6.2.3 Parents	181
6.3 Presentation of Data	184
CHAPTER 7: SICKNESS EXCLUSION POLICIES AND BELIEFS	186
7.1 Introduction	186
7.2 Nature of Policies	187

7.2.1	Origins of policies	187
7.2.1.1	Guidance from external bodies	187
7.2.1.2	The internet: reference and communication	188
7.2.1.3	Knowledge through experience	190
7.2.2	Perspectives on standardised policies	192
7.2.2.1	Credibility	192
7.2.2.2	Less confusion	193
7.2.2.3	DCP-parent relationship and business protection	193
7.2.2.4	Confidence in exclusion	194
7.2.2.5	“No” to standardised policies	195
7.2.3	How are sickness exclusion policies used?	195
7.3	Exclusion Beliefs	198
7.3.1	Perceived benefits of exclusion	198
7.3.1.1	Minimising cross-infection	198
7.3.1.2	Minimising child’s discomfort, and minimising demands on DCPs	201
7.3.2	Infection-related terminology	202
7.3.2.1	“Infection”	202
7.3.2.2	Bacterial versus viral infections	203
7.3.2.3	Viral infections and antibiotics	204
7.3.3	Exclusion beliefs surrounding specific infections/symptoms	205
7.3.3.1	The common cold	206
7.3.3.2	Productive coughs and chest infections	208
7.3.3.3	Tonsillitis	215
7.3.3.4	Whooping cough	217
7.3.3.5	Conjunctivitis	218
7.3.3.6	Ear infections	225
7.3.3.7	Gastrointestinal infections	226
7.3.3.8	Rashes	227
7.3.3.9	Fever	229
7.4	Parents’ Attitudes to Exclusion	232
7.4.1	Childminder users versus nursery users	232
7.4.2	Disagreement with exclusion	233
7.4.2.1	Wellness	233
7.4.2.2	Length of exclusion periods	235
7.4.2.3	Low threshold for exclusion	236
7.4.2.4	Lack of medical justification	237
7.4.3	Consequences of exclusion	238
7.4.4	Positive comments about exclusion	239
7.5	Chapter 7 Conclusion	240
 CHAPTER 8: GP CONSULTATIONS AND ANTIBIOTIC-SEEKING BEHAVIOUR		
.....		243
8.1	Introduction.....	243
8.2	GP Consultations.....	243
8.2.1	Overview	243
8.2.2	Do DCPs’ advise parents to consult the GP?	244
8.2.3	Reasons for advising GP consultations	244
8.2.3.1	Non-health-related reasons: liability	244
8.2.3.2	Health-related reasons	246
8.2.4	Ways of encouraging GP consultations	248
8.2.5	Parents’ reasons for consulting general practice: non-day care-related factors	250
8.2.5.1	Perceived potential for severity	250
8.2.5.2	Cues to action	251

8.2.5.3 Perceived benefits of consulting.....	254
8.2.6 Parents' reasons for consulting general practice: day care-related factors	257
8.2.6.1 DCP advice	257
8.2.6.2 Proof for re-admittance	258
8.2.6.3 Accelerate recovery	259
8.2.6.4 Justification for not going to work.....	260
8.2.6.5 Control	260
8.2.6.6 Day care-associated barriers to consulting.....	261
8.3 Antibiotic-Seeking Behaviour	262
8.3.1 Introduction	262
8.3.2 Infections most commonly associated with antibiotic treatment.....	263
8.3.2.1 Chest infections and coughs	264
8.3.2.2 Conjunctivitis	265
8.3.2.3 Ear infections	266
8.3.2.4 Tonsillitis	266
8.3.3 Antibiotic treatment and written policies	267
8.3.3.1 24/48 hour exclusion for antibiotic treatment	267
8.3.3.2 Parents' interpretations of written policies.....	270
8.3.3.3 Consequences of written antibiotic exclusion policies	271
8.3.3.4 General 'no medication' policies	273
8.3.4 Antibiotic treatment is verbally advised.....	274
8.3.4.1 'Casual' advice.....	274
8.3.4.2 Strong advice	276
8.3.5 DCPs' projected antibiotic requirements	277
8.3.5.1 Antibiotics are needed for return to nursery.....	278
8.3.6 DCPs that do not advise antibiotics	282
8.3.7 Views surrounding antibiotic treatment	284
8.3.7.1 Over prescribing.....	284
8.3.8 Why are antibiotics required?	286
8.3.8.1 The obvious route of management	286
8.3.8.2 Preventing deterioration	287
8.3.8.3 Speed up recovery	287
8.3.8.4 Limit infection transmission.....	288
8.4 Chapter 8 Conclusion	289
CHAPTER 9: DISCUSSION	294
9.1 Introduction.....	294
9.2 Limitations of the Study.....	294
9.2.1 The questionnaire.....	294
9.2.1.1 Opportunities for generalisation	294
9.2.1.2 Questionnaire design	295
9.2.1.3 Reliability issues: DCPs' reporting.....	297
9.2.1.4 Validity and meaning	297
9.2.1.5 Over-simplification of data	298
9.2.1.6 Interpretation issues.....	299
9.2.1.7 Summary	300
9.2.2 Interviews	300
9.2.2.1 Overview	300
9.2.2.2 Credibility.....	301
9.2.2.3 Transferability	304
9.2.2.4 Dependability.....	307
9.2.2.5 Confirmability	308
9.3 Summary of Findings	308

9.3.1. Non-evidence-based exclusion	308
9.3.1.1 Overview	308
9.3.1.2 Exclusion policy documents are not evidence-based	309
9.3.1.3 Do non-evidence-based policies reflect non-evidence-based practices?	310
9.3.1.4 Other sources of unnecessary exclusion	312
9.3.1.5 Parent views of DCPs and policies	315
9.3.2 Do DCPs encourage GP consultations?	316
9.3.3 Do DCPs encourage antibiotic-seeking behaviour?	322
9.3.3.1 Overview of findings, and relevance to literature	322
9.3.3.2 Influence on parents' expectations	325
9.3.3.3 Lack of consistency between DCP and parent interviews	326
9.3.3.4 Potential pathways leading to GP consulting and antibiotic-seeking behaviour	328
9.3.3.5 Implications of findings	330
9.4 Recommendations	333
9.4.1 Day care for sick children	334
9.4.2 Standardised policies	334
9.4.3 Changing beliefs: education and training	336
9.4.3.1 DCPs	336
9.4.3.2 Parents	338
9.4.4 Addressing parents' misconceptions of DCP requirements	339
9.4.5 Addressing business-related factors	341
9.5 Conclusion	342
REFERENCES	344
APPENDICES	368
Appendix 1.1 Proof of Ethical Approval	369
Appendix 1.2 Ethical Considerations and Researcher Safety	372
Appendix 2.1 Search Terms and Hits	377
Appendix 3.1 Details of Discussions with DCPs in Preparatory Phase	382
Appendix 3.2 Questionnaire Recruitment Letter to DCPs	384
Appendix 3.3 Participant Information Sheet (for Questionnaire)	385
Appendix 3.4 Consent form for DCP Questionnaires	388
Appendix 3.5 Questionnaires (with Cover Sheets) for Childminders and Nursery Managers	389
Appendix 4.1 Number of Nursery and Childminder Policies with Various Re-admittance Requirements for Different Infections	400
Appendix 4.2 Description of Re-admittance Requirements for Various Infections	408
Appendix 5.1 Reflections on Interview Experiences	411
Appendix 5.2 Interview Recruitment Letter to DCPs	427
Appendix 5.3 Participant Information Sheet (for interviewing DCPs)	428
Appendix 5.4 Consent Form for DCP and Parent Interviews	432

Appendix 5.5 Interview Topic Guides for DCPs and Parents.....	433
Appendix 5.6 Interview Recruitment Letter to Parents, and Recruitment Poster	441
Appendix 5.7 Participant Information Sheet (for Interviewing Parents)	443
Appendix 5.8 Parent Demographics Sheet	447
Appendix 5.9 Coding Framework Examples	449
Appendix 6.1 Individual Participant Data.....	451
Appendix 8.1 DCPs’ and Parents’ Views on Excessive Antibiotic Use	459

TABLES, CHARTS and FIGURES

Tables

Table 2.1 Periods of exclusion and infectiousness for common day care infections	73
Table 3.1 Table of infections featured in questionnaire	82
Table 3.2 Number of nurseries excluded from each study area, shown for each exclusion criterion (n=17)	92
Table 3.3 Number of day care settings excluded from each study area throughout key stages of planning the study, and data collection	92
Table 4.1 Response rates for nurseries and childminders in the three study areas	98
Table 4.2: Numbers and proportions of DCPs with and without sickness exclusion policies (n=216)	100
Table 4.3: Numbers and proportions of DCPs with policies that had their policy in writing (n=209 for all DCPs, n=76 for nursery managers, n=133 for childminders)	101
Table 4.4 Information provided by DCPs regarding who wrote their sickness exclusion policies (n=209 for all DCPs, n=76 for nursery managers, n=133 for childminders)	101
Table 4.5 Written responses provided by nursery managers selecting 'other' (n=4 [one nursery manager wrote two answers])	101
Table 4.6 Written responses provided by childminders selecting 'other' (n=7 [one childminder wrote two answers])	102
Table 4.7 Number of nursery managers specifying various sources in written responses (n=28)	104
Table 4.8 Number of childminders specifying various sources in written responses (n=59)	104
Table 4.9 Number of nursery managers reporting that their symptom guidelines were obtained from various resources (n=39)	118
Table 4.10 Number of childminders reporting that their symptom guidelines were obtained from various resources (n=45)	119
Table 4.11 Numbers and proportions of DCPs that reported using various resources to help recognise symptoms (n=216)	120
Table 4.12 Numbers and proportions of nursery managers that reported using various resources to help recognise symptoms (n=78)	120
Table 4.13 Numbers and proportion of childminders that reported using various resources to help recognise symptoms (n=138)	121
Table 4.14 Nursery managers' written answers for 'other' resources used for recognising symptoms (n=12)	122
Table 4.15 Childminders' written answers for 'other' resources used for recognising symptoms (n=19).	122
Table 4.16 Number of different re-admittance requirements for infections, with consideration to the total number of policies that mentioned these infections .	130
Table 5.1 Categories and criteria for purposeful selection of DCPs	152

Table 5.2 Vignettes used in DCP interviews	158
Table 6. 1 Summary of characteristics of nurseries run by nursery manager participants(n=15).....	179
Table 6. 2 Summary of characteristics of childminder participants and their day care settings (n=9).....	180
Table 6. 3 Summary of parent characteristics (n=29)	182
Table 6. 4 Number of parents recruited per day care setting featured in study (DCP code refers to the DCP in charge of setting)	183
(Appendices)Table 5 Characteristics of nurseries run by nursery manager participants.....	452
(Appendices) Table 6 Characteristics of childminders that participated in interviews	454
(Appendices) Table 7 Characteristics of parents participating in interviews.....	456

Charts

Chart 4.1 Proportion of sickness exclusion policies formed using various resources (data from all DCP respondents: n=209)	102
Chart 4.2 Proportion of nursery managers reporting that their policies were formed using various resources (n=76).....	103
Chart 4.3 Proportion of childminders reporting that their policies were formed using various resources (n=133).....	103
Chart 4.4 Proportion of DCPs that report having periods of exclusion specified in their policies (n=209 for all DCPs; n=76 for nursery managers; n=133 for childminders)	106
Chart 4.5 Proportion of DCPs that report having periods of exclusion for children who are taking antibiotics mentioned in their policies (n=209 for all DCPs; n=76 for nursery managers; n=133 for childminders)	107
Chart 4.6 Proportion of DCPs that report having GP consultations specified in their policies (n=209 for all DCPs; n=76 for nursery managers; n=133 for childminders)	108
Chart 4.7 Proportion of nursery managers and childminders that reported mentioning various numbers of infections in their policies (for nurseries, n=76; for childminders, n=132).....	109
Chart 4.8 Proportion of DCPs that reported mentioning specific infections in their policies (n=208)	110
Chart 4.9 Proportion of nursery managers that reported mentioning specific infections in their policies (n=76)	111
Chart 4.10 Proportion of childminders that reported mentioning specific infections in their policies (n=132).....	112
Chart 4.11 Proportion of nursery managers that had mentioned exclusion periods for various infections mentioned in their policies	113
Chart 4.12 Proportion of childminders that had mentioned exclusion periods for various infections mentioned in their policies	114
Chart 4.13 Proportion of nursery managers that wanted more information regarding specific infections (n=76)	115

Chart 4.14 Proportion of childminders that wanted more information regarding specific infections (n=132).....	115
Chart 4.15 Do nursery managers want a standardised policy? (n=78).....	116
Chart 4.16 Do childminders want a standardised policy? (n=138).....	117
Chart 4.17 Proportion of DCPs choosing various responses when asked how frequently parents influence their exclusion decisions (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders).....	123
Chart 4.18 Proportion of DCPs choosing various responses when asked how frequently parents challenge their exclusion decisions (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders).....	124
Chart 4.19 Proportion of DCPs selecting each response when asked if they ever advise parents on how their child might recover (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders).....	126
Chart 4.20 Proportion of DCPs selecting each response when asked if they ever advise parents that their child may need antibiotics (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders).....	127
Chart 4.21 Proportion of DCP selecting each response when asked if they ever advise parents to consult a GP (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders).....	128
Chart 4.22 Number of different re-admittance requirements observed in nursery and childminder policies, for specific infections (results taken from 44 nursery policies and 95 childminder policies).....	129
Chart 4.23 Proportion of nursery policies that agreed/disagreed with HPA guidelines (proportions based on number of nursery policies that mentioned each infection).....	133
Chart 4.24 Proportion of childminder policies that agreed/disagreed with HPA guidelines (proportions based on number of childminder policies that mentioned each infection).....	133

Figures

Figure 2. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on the literature.....	69
Figure 3.1 Changes in target sample size over the course of the study.....	93
Figure 4. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on survey results and actual policies viewed.....	141
Figure 5.1 Diagrammatic representation of the Health Belief Model.....	173
Figure 6.1 Explanation of participant identifiers.....	Error! Bookmark not defined.
Figure 8. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on parent and DCP interviews.....	290
Figure 9. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on study findings.....	328

CHAPTER 1: INTRODUCTION

1.1 Overview

This thesis presents an exploratory study that investigates how common childhood infections are managed in children's out of home day care settings. I will consider the influence that day care providers' beliefs and practices have on parents' tendencies to a) consult general practitioners (GPs), and b) inappropriately seek antibiotic treatment on behalf of their children.

The study has been inspired by efforts to preserve the effectiveness of antibiotics through rational prescribing. Inappropriate antibiotic prescribing brings about financial and opportunistic health care costs, subjects patients to unnecessary side effects, reinforces inappropriate patient expectations for treatment, and contributes to the global threat of antibiotic resistance (Butler et al., 1998a). Antibiotic resistance is a phenomenon whereby bacterial species develop resistance to the very drugs used to treat them, rendering those drugs clinically ineffective (Centers for Disease Control and Prevention [CDC], 2010). There is extensive evidence that supports an association between antibiotic use and the prevalence of resistant bacteria (Costelloe et al., 2010; Goossens et al., 2005). This knowledge has fuelled efforts to reduce antibiotic use safely through restricting prescribing to cases where it is clinically necessary.

Encouraging judicious prescribing has been a health priority for national and international organisations for over a decade (Standing Medical Advisory Committee [SMAC]. 1998; World Health Organisation [WHO], 2001). Campaigns have raised awareness of antibiotic resistance, and extensive clinical guidelines have been written to guide GPs' prescribing decisions. However, antibiotic prescribing must also be viewed as a social, not just clinical, practice. Qualitative studies have revealed that GPs' antibiotic prescribing decisions are influenced by a myriad of factors, one of which is their perceptions of patients' hopes and

expectations for treatment (Tonkin-Crine et al., 2011). These factors are important contributors to prescribing decisions, as GPs strive to achieve patient satisfaction and maintain positive relationships with patients. Patient expectations or desires for treatment are thus integral considerations in efforts to change the culture of antibiotic prescribing.

This study has been designed on the premise that understanding lay consulting habits and antibiotic expectations is vital for designing solutions to tackle inappropriate prescribing. The presented research focuses on a subset of the population that is at particular risk of receiving antibiotics inappropriately, and examines the social factors that may be contributing to this. Children aged under 5 (referred to as 'pre-schoolers') consult general practice more than any other age group, and have the highest rate of antibiotic prescribing (Heginbotham & The Welsh Antibiotic Study Group., 2004; Summerfield & Babb, 2004; Wrigley et al., 2002). In addition to this, international studies have reported that day care attendance further increases the risk of consulting general practice and receiving antibiotic treatment (Hjern, 2000; Nilsson et al., 2007; Thrane et al., 2001). The majority of common infections experienced by day care attendees carry a 'delayed' or 'no prescribing' strategy according to National Institute for Health and Clinical Excellence (NICE) guidelines (2008). This had led to the suggestion that the social determinants of prescribing may be particularly important factors to examine in this population (Pappas et al., 2000; Skull et al., 2000).

Day care providers (DCPs) have been a population of interest in relation to the above issue, as they have the responsibility of excluding children from day care settings on the grounds of sickness. Previous North American survey studies have shown that DCPs' beliefs about exclusion indications and their reported exclusion practices are often not evidence-based, potentially resulting in children being needlessly excluded (Copeland et al., 2005; Landis et al., 1988). Exclusion has been suggested as a precursor to parents consulting general practice as they try to expedite their child's return to day care (Kahan et al., 2006; Pappas et al., 2000). Consulting could also indirectly encourage unnecessary antibiotic prescribing, if a GP perceives parental expectation or desire for treatment. Other surveys have

shown that DCPs report making exceptions to exclusion if the child has an antibiotic prescription (Skull et al., 2000), or make requests for antibiotics for infections that are unlikely to benefit from this treatment (Pappas et al. 2000; M'Ikanatha et al., 2010). Based on this research, authors and commentators *suggest* that DCPs' beliefs about exclusion, and view on how infections should be treated, could encourage parents to consult GPs and seek antibiotics. This is the mechanism through which DCPs' actions and beliefs are thought to contribute to inappropriate antibiotic prescribing (Kahan et al., 2006; Pappas et al., 2000).

To date, there has been no in-depth research that explores DCPs' management of common childhood infections. The management of infections refers to anything from exclusion practices to the advice offered to parents. In order to understand these actions, one needs to consider the context in which they occur and the beliefs that may be underlying them. These beliefs include ideas of when to exclude/re-admit children, and knowledge of appropriate treatment for specific common childhood infections. The closed-response questions of previous survey-based research make it difficult to draw inferences about DCPs' beliefs, and do not consider context. Furthermore, theories about how DCPs' actions influence parents' consulting/antibiotic-seeking behaviours are problematic, given that parents' perspectives on these issues have never been directly researched. This thesis presents the first study to employ qualitative methods to shed light on these topics, by generating knowledge that is grounded in the relevant stakeholders' accounts and experiences. The aim of these efforts is to determine whether DCPs, and/or their day care policies, encourage parents to consult GPs and seek antibiotic treatment on behalf of their children.

1.2 What is Meant by 'Day Care'?

Children's day care refers to the care of children provided by somebody other than their legal guardian¹, and usually serves the purpose of allowing the guardian

¹ Referred to as 'parent' in this thesis.

to work, seek employment, train, study, and experience respite (Day Care Trust, 2011).

Day care can be categorised as ‘formal’ or ‘informal’, with the former referring to any form of care offered by an establishment or person that is not a friend or relative of the parent (Speight et al., 2008). Formal day care can be provided by numerous professionals or organisations, including day care centres (‘nurseries’), crèches, nannies, au pairs, and childminders. These all vary in terms of the hours they operate, the services they provide, the environment they care in, and the maximum number of children they can accommodate (National Childcare Campaign: Daycare Trust, 2010). It has been estimated that 41% of pre-school children in England and Wales attend some form of formal day care (Organization for Economic Co-operation and Development (OECD), 2011).

This thesis focuses on the two most common types of formal day care in England and Wales: nurseries², and the services offered by childminders (OECD, 2011b). There are important distinctions between the care offered by nurseries and childminders. Childminders are self-employed, operating from their own homes, and generally care for no more than six children at a time (Alpha., 2011). Childminders can care for children of any ages, for as many hours as they choose.

Nurseries offer ‘full’ (four hours or more) or ‘sessional’ (less than four hours) care in non-domestic premises, for children up to 8 years of age (Welsh Assembly Government., 2003). Children are cared for in groups of various sizes, (usually larger than childminder groups), but there are strict ‘staff to children ratios’. These are: one adult to three children aged under 2 years; one adult to four children aged 2 years, and one adult to eight children aged 3-7 years (Welsh Assembly Government., 2002a).

² Often referred to as ‘day care centres’ in other texts

1.3 Geographical Context

This study has been carried out in the UK- specifically, in South-East Wales. The literature review in the next chapter will present the research that provides background to this study. Two issues will emerge from this: firstly, that there have been no qualitative studies conducted on this topic worldwide, and secondly, that there has been no research whatsoever conducted in the UK.

The survey-based research that will be discussed in the next chapter suggests that DCPs (predominantly nursery staff) in America, Canada and Israel have ‘sickness exclusion policies’ in place. These policies are devised by the DCPs, and outline when children should be excluded (on the grounds of sickness). Studies have revealed that policies do not comply with national evidence-based recommendations. However, no research of this sort has been conducted in the UK, and generalisations from international studies are not appropriate, as country-specific national guidelines or policies could regulate day care settings. Thus, prior to tackling the main aim of the study, some background research needed to be conducted. This work aimed to describe the nature of ‘sickness exclusion policies’ used in UK-based day care settings.

1.4 Aims

This study aimed to address two research gaps. The first was the global lack of research invested into understanding the reality of how DCPs manage common childhood infections, and the impact this has on parents’ tendencies to consult GPs, and seek antibiotics. Based on this, the main aim of the study was:

To explore whether DCPs, and the sickness exclusion policies they follow, encourage parents to consult GPs and inappropriately seek antibiotic treatment.

The second research gap was specific to the UK. In particular, this study considers the Welsh nursery and childminder population. In order to answer the main aims of the research, an overview of day care setting characteristics and the sickness exclusion policies they held was essential. Consequently, the secondary aim of this study was:

To describe the content and nature of typical day care sickness exclusion policies in Wales.

1.5 Approach to Research

What follows is a brief description of the ontological and epistemological views I held, and how this influenced the conduct of the research.

Ontology raises questions about the nature of reality and ‘what there is to know’ (Denzin & Lincoln, 2005). Epistemology is the study of how we obtain knowledge, or how we study the world (Steup, 2005). Ontology and epistemology are often linked, in that certain epistemological positions are associated with specific ontological views (Jonassen, 1991). Different texts and commentaries vary in the terminology they present as ontological and epistemological theories. This may be due to the fact that it is difficult to consider ontology and epistemology in isolation, as a person’s view of reality will impact their view of what can be classed as knowledge. What follows is a simplified, concise summary of the main epistemological ideas researchers typically engage with.

1.5.1 Positivism: realist view of reality, objectivist ways of ‘knowing’

The positivist perspective is usually allied to the study of natural sciences, but can be applied to studying people and behaviour. This perspective is based on a realist

ontological view, which states the existence of a 'real' world that is present, independent of humans and human experience (Jonassen, 1991). Social phenomena are thought to exist independent of human thought, and have the capability of influencing and/or constraining human behaviour through cause-effect relationships (Taylor, 2010).

The epistemological stance that marries with this ontological view is known as 'objectivism', which asserts that we can obtain knowledge by accessing the 'real' world through observations and experimentation. Human subjectivity is seen to impede our ability to discover the real world; thus, the goal is to produce objective findings which are free of interpretation and bias. In doing so, it is believed that the description of reality directly reflects the truth (Miller, 1986). Only information perceived by the senses is accepted as being valid: people's thoughts and feelings are not thought of as 'evidence'. Social phenomena, according to the positivist school of thought, can be explained by cause and effect relationships, where the causes are the phenomena/entities that exist independent of humans, and the effects are human behaviour.

1.5.2 Interpretivism: relativist view of the world, construction of 'knowledge'

The relativist ontological view asserts that there is no 'real' world that exists outside of human experience. This view rejects the idea that social phenomena exist independently, but sees these as being constructed and defined by humans. Social phenomena are constantly prone to change according to time and culture (Berger & Luckmann, 1966; Bryman, 2008; Taylor, 2010). Thus, people's perceptions, interpretations and actions are thought to be central elements to creating social structures and social rules (Taylor, 2010).

Those having a relativist view do not subscribe to a pre-existing independent reality, but believe that each individual has their own reality, which is a product of their experiences. This has consequences for the nature of knowledge, which is

thought to be constructed by the individual, and in the process, is shaped by factors such as culture, language, and society. The rejection of 'universal truths' renders the objective methods of obtaining knowledge invalid. Objects and social phenomena are not seen to have meaning independent of human consciousness. In order to study behaviour, researchers must therefore focus on people's understanding and interpretations of the world (Sale et al., 2002). The meanings people ascribe to their experiences play a fundamental role in shaping their behaviour and, on a larger scale, shaping social phenomena (when groups are considered). The subjective nature of knowledge transfers to researchers too, who need to be reflexive about their own interpretations of what is being researched, and the possible influence this has on their findings (Taylor, 2010).

1.5.3 A critical realist view, with an interpretative approach

The presented ontological and epistemological stances are an oversimplification, in that only the 'purist' stances have been discussed. Authors such as Morgan and Smircich (1980) discuss ontology as a continuum, with the above viewpoints marking the extremes of a scale. Likewise, Willig (2001) discusses various epistemologies that span the positivist and interpretivist perspectives.

I have conducted this research on the premise that there is a 'real' world, but meaning ascribed to this world is socially constructed. This stance most closely relates to critical realism, which argues that humans create social phenomena, which are deemed to be external to individuals, and have the power to constrain behaviour (King & Horrocks, 2010). My stance values individuals' abilities to interact with and shape the 'real' world, and embraces the notion that individuals may view the real world in unique ways (constructing their personal 'realities'). However, I also recognise that there are certain structural elements to reality, which can be considered as 'truth'. This ontological stance still allows for an interpretative approach to pursuing knowledge, as there is still a great deal of emphasis and value placed on subjective accounts of social actors. An interesting

article by Oliver (2011) describes how a critical realist viewpoint can be a foundation for exploring individuals' socially constructed understandings and beliefs, and assessing these in light of 'known truths'. This is particularly useful in researching lay health beliefs and comparing these to evidence-based ideas.

This study is based on the assumption that beliefs surrounding the management of common infections are constructed, based on individuals' experiences, their culture, and the wider society they live in. This applies to exclusion beliefs, and the meanings ascribed to antibiotic treatment and GP consulting. The beliefs and behaviours uncovered in the research will, however, need to be considered in light of structural and physical factors which are assumed to be 'real' (e.g. the presence of infection, access to medical care, biological responses in the child, etc).

1.6 Quantitative and Qualitative Paradigms

Placing too much emphasis on philosophical underpinnings can be counter-productive, as one can never truly prove the existence or absence of an external reality. Furthermore, one's philosophical beliefs do not necessarily dictate which research methods are employed. Depending on the aims of research, certain methods may be more appropriate than others. Yardley and Marks (2004) assert that the *aims* of research should inform methodology. Once this is accepted, it may be appropriate to adopt a mixture of research methods that would normally be aligned with positivist or interpretivist stances. Adopting a mixed method approach can be advantageous, as the shortcomings of one approach can be compensated by the merits of another. Understanding the philosophical underpinnings of different research approaches can aid one's understanding of how certain method should be executed. The methods selected in this study were primarily informed by the aims of research, whereas considering the philosophical underpinnings of these methods has been useful in informing the best possible use of these methods.

Methodological approaches can be broadly categorised into quantitative and qualitative paradigms. In general, quantitative methodology is associated with positivist lines of thought, while qualitative research is more aligned with interpretivist stances. This study used both approaches in an attempt to fulfil the main aim and secondary aim of the study. By combining methods, I was able to build a fuller, more comprehensive picture of the phenomena being studied.

Qualitative research aims to understand people, groups and cultures through focusing on the way they make sense of their experiences, and the world in which they live (Cohen & Crabtree, 2006). Unlike quantitative approaches, qualitative research methods are not designed to generalise findings to larger populations, but rather to capture rich details of people's experiences in attempts to explain phenomena. The qualitative approach has been described as being more holistic, in that it preserves the complexities of human behaviour, rather than reducing these to quantifiable data (Greenhalgh & Taylor, 1997). Theories are developed from the data in an inductive manner, making this approach ideal for conducting preliminary, explorative studies on topics that have received little research attention. Qualitative studies are also useful for defining what future research questions may be. Qualitative analysis tends to run concurrent to data collection, allowing the researcher to make meaningful choices regarding who to sample next, or whether further sampling is even necessary for refining the developing theories. Data collection is commonly reported to continue until the point of 'data saturation', where the researcher feels there are no new ideas/concepts emerging from the data (Given, 2008). The researcher's judgments and choices are thus central to qualitative research.

Qualitative research could be criticised as being an 'anything goes' approach, unless steps are taken to achieve rigour. Well-conducted qualitative studies are explicit in their methods, assumptions, and the impact the researcher may have had on findings (Greenhalgh & Taylor, 1997). Furthermore, providing a rich, descriptive account of the research scenario and process can aid transferability of findings, although the onus is on those interpreting the findings to decide whether the results can be applied to other cases/situations.

My philosophical stance dictated that DCPs' and parents' behaviours are complex, individual, and governed by constructed ideas and beliefs. My aim was to understand these beliefs, and build theories about a topic that has received limited prior research attention. The closest one can come to understanding another person's perspective is through interacting with them, observing, asking questions, and actively listening. The main aim of this study was thus achieved through qualitative methods. Semi-structured, face to face interviews were conducted with DCPs and parents, and an interpretative and inductive approach was taken to analysis. Findings were presented in accordance with my judgments of what contributed to the main aim of the study.

The secondary objective of the study, to describe typical day care sickness exclusion policies, was less pre-occupied with subjective responses and individual perspectives. The aim here was to collect information from large samples in order to build a picture of general trends. A questionnaire survey was used to meet this objective, and analysed using quantitative descriptions of findings. Here, the research process was mainly guided by positivist ideals, such as achieving precision through acquiring adequate sample sizes and limiting bias. The results of the questionnaire served the purposes of providing context for the qualitative work, informing meaningful sampling of interview participants, and providing novel, objective findings in relation to day care sickness exclusion policies.

1.7 Ethical Approval

This study was granted ethical approval by the Cardiff University Medical/Dental School Research Ethics Committee on the 18th June 2009 (appendix 1.1). Further details regarding the ethical and safety issues raised by this research, and how they were dealt with, can be seen in appendix 1.2.

1.8 Thesis Synopsis

Having briefly introduced the study, chapter two will follow by presenting an overview of the background literature relevant to the study. The literature discussed provides justification for why this study needed to be conducted.

Throughout the thesis, I will make reference to three 'phases' of the study: 'phase one' involved dispatching a questionnaire to DCPs; 'phase two' comprised conducting DCP interviews, and 'phase three' was concerned with interviewing parents.

Chapter three discusses the justification, planning, and execution of the questionnaire used in the first phase of the study, which aimed to provide a descriptive overview of sickness exclusion policies held by Welsh nurseries and childminders.

Chapter four presents the findings of the questionnaire. These are mainly descriptive summaries of results. Statistical tests of difference have been conducted between meaningful groups of data, where appropriate.

Chapter five outlines the planning, execution, and approach to analysis for the qualitative phases of the study (phases two and three).

Chapter six describes demographic information relating to the samples used in phases two and three, and briefly explains how the qualitative data will be presented in the empirical chapters that follow.

Chapter seven is the first of two chapters that present the qualitative findings. The chapter will focus on sickness exclusion policies and exclusion beliefs, from the perspective of DCPs and parents.

Chapter eight presents the qualitative findings in relation to DCPs' encouragement of GP consulting and antibiotic-seeking behaviours, and the effect this has on parents.

Finally, chapter nine provides a summary and evaluation of the research process, highlighting the limitations and set-backs of the methods employed. The quantitative and qualitative findings are both discussed, and placed in a wider context. The implications of the study and scope for future research are discussed towards the end of the chapter.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a more in-depth explanation of why it is necessary to focus on day care environments in efforts to curtail inappropriate antibiotic prescribing (and the unnecessary consultations associated with this). There was an intention to focus on both nursery and childminder settings, but most relevant literature concerned nursery environments. Most of the research available for review was conducted outside of the UK.

This chapter will begin with an overview of the search strategies used in this review (section 2.2).

Section 2.3, the first topic addressed, looks at the evidence supporting an association between antibiotic prescribing and resistance, alongside the additional factors that can influence this relationship.

Section 2.4 discusses recent rising trends in UK antibiotic prescribing, with particular attention to the pre-school age group. Reasons for pre-schoolers' high antibiotic consumption will be considered by examining the most common infections experienced by this group.

Section 2.5 provides an overview of the most common infections that occur in day care settings, and day care attendee's increased risk of acquiring these infections. The potential benefit of antibiotic therapy will be considered for each type of infection discussed. In particular, the discussion will focus on whether the frequency and types of infections experienced by day care attendees can justify their increased antibiotic use.

Section 2.6 will consider the non-clinical factors which might be contributing to high antibiotic prescribing in day care attendees, including the direct and indirect influence of DCPs. Previous research surrounding DCPs' management of common childhood infections, their knowledge of antibiotic indications, and the recommendations they offer parents will be reviewed. Finally, the importance of DCPs' actions will be underlined by briefly discussing the social factors that contribute to GPs' prescribing decisions.

Section 2.7 outlines the UK's official guidance as to when children should be excluded from day care. This information will help to put the empirical chapters into context.

Finally, the chapter ends with concluding comments, presented in section 2.8.

2.2 Search Strategy

The literature review employed a systematic search of bibliographic databases using explicit search criteria, in addition to consulting papers that had cited or been cited within key studies/reviews read. Papers were also identified through speaking with peers.

There was a limited amount of research that directly related to the study's main aim, but an abundance of 'peripheral' topics that justified the research objectives, and provided meaningful context to subsequent chapters.

2.2.1 Main searches

Most sections of this review followed a similar search strategy. The 'main search terms' can be considered as the 'building blocks' of this review, and can be seen in appendix 1.2. The searches for each of these terms were conducted within Medline (1950-present database via Ovid). Medical subject headings ('MeSH terms') were used wherever possible. Normal keyword (and in one case, title)

searches were also performed using Boolean operatives and search truncations. Results of MeSH searches and keyword/title searches were then combined. This was repeated for all main search terms. The hits achieved at each stage of each search can be seen in the tables in appendix 2.1. All searches were filtered to English language publications.

The topics discussed in the literature review were informed by combining the final hits of two or more search terms using the 'AND' function in Medline. For example, the section concerning conjunctivitis rates in day care settings will have combined the hits for conjunctivitis searches and day care searches. The full list of 'combined' terms, and the hits retrieved, can be seen in Appendix 2.1, under 'Combining main search queries'.

I was able to read the titles and abstracts of all of the hits obtained from each of the combined searches. The papers cited within this review were selected to showcase the range of conclusions I came across for each of the topics discussed. Where possible, I have also tried to vary the types of research presented, on the basis of study setting and methods employed.

2.2.2 Research directly related to study question

The papers deemed directly relevant to this study have been presented in section 2.6. All of these papers emerged from combining the main search terms described above, which were broad enough to capture any research related to children's day care settings and infection management/antibiotics/GP consulting. Searches were repeated at least once every six months, and I regularly checked for newer papers that may have cited the handful of studies presented in section 2.6. Over the course of the study, this resulted in two additional papers being cited.

2.2.3 Antibiotic resistance searches

The topic of 'antibiotic resistance' can be considered distinct to the other searches, as I spent some time reading about this as a topic in its own right (i.e. not necessarily in relation to day care). Although Medline searches were conducted for the purpose of combining main search terms (see above), this subject was also searched within the Web of Knowledge due to the potential to refine results by 'subject categories'. 'Topics' were first searched using relevant truncations and Boolean operatives, refined to reviews, then further refined by selecting public health, sociological, or general medical subject categories (appendix 2.1 provides full details). As the final number of hits exceeded 8,000 papers, results were ordered by 'number of times cited'. Titles/abstracts were then scanned. Those of public health/sociological/general medical relevance were saved in Endnote. Each time a paper was selected, the full text version was read in full (with the exception of sections of papers deemed irrelevant). Newer publications citing the review of interest were considered, as well as research cited within the review (again, emphasising on papers based on the above general categories). I stopped this process once I had reviewed the first 500 titles/abstracts of the Web of Knowledge search. By this point I found that most of the main principles discussed in reviews were being repeated. A total of 19 papers were initially selected from the 500. Despite the subject category filters, most of the first 500 papers were excluded on the basis of being about specific drugs, infections, or technical mechanisms.

The papers cited in this literature review discuss the relationship between antibiotic use and levels of resistance, as this issue was pertinent to my study. Some of the cited papers are the same as the 19 reviews, but the majority are publications that have cited, or been cited within, one of the 19 papers. These papers were selected on the basis of how commonly they were cited in the literature, and the impact factor of the journal they were published within. Articles from the Lancet, for example, were prioritised over those published within highly specific microbiological or pharmacological journals. In addition to

this, I attempted to showcase disparities in research conclusions present in the literature, by selecting papers that represented a range of views. The topic of antimicrobial use and resistance is vast, and selecting the most commonly cited studies was a practical decision, as I knew that most of the review needed to discuss topics that related more closely to my research topic. The time spent on different components of the review needed to reflect this.

2.2.4 Other search tools

Standard 'Google' searches were used to access publicly available information (e.g. healthcare organisation websites, government documents). The Office of National Statistics website was visited separately to search for relevant health care consultation and prescribing data.

'Google Scholar' was used to access full texts of papers obtained from database searches. References of interest within journal papers were obtained via Google Scholar, as were newer papers that had cited the key papers consulted.

2.2.5 Critical appraisal

Finally, I chose not to use any critical appraisal tools for selecting papers, as the research topics and methodological approaches reviewed were wide-ranging, making a common appraisal tool inappropriate. However, I have paid careful attention to the strengths and weaknesses of the research discussed, and expressed this in the text that follows.

2.3 Drivers of Antibiotic Resistance

2.3.1 What is antibiotic resistance?

“What do you do when you're faced with an infection with a very sick patient, and get a lab report back and every single drug is listed as resistant?”(Taubes, 2008)

Antibiotics are drugs that kill bacteria or interfere with their ability to replicate (CDC, 2010). When antibiotics were first introduced into clinical medicine in the 1940s, they were seen as panaceas that had the potential to cure all bacterial infections. Diseases that once killed millions could now be treated with a simple course of drugs (Cars et al., 2008; Davies, 2007). Over time, antibiotics became widely accessible outside of hospital settings, and began to be used for increasingly trivial symptoms (Alanis, 2005). Today, these drugs are so commonplace that their life saving potential can easily be taken for granted in western society. Infections such as cholera, pneumonia and tuberculosis are all examples of serious diseases which benefit from antibiotic treatment. Antibiotics can also be vital for post surgery recovery, organ transplantation, and immunologically compromised patients (Alanis, 2005; Bosley, 2010). As a consequence of increasing levels of resistance, we could be on the verge of a new era, where taking a course of antibiotics that rapidly cure common infections is no longer an option (Arias & Murray, 2009; Davies, 2007).

Antibiotic resistance is a natural process, whereby bacteria mutate, reducing or completely eliminating the effectiveness of a particular antibiotic against them (CDC, 2010). When exposed to this antibiotic, susceptible bacteria are killed, but the resistant bacteria persist and multiply, occupying niches that susceptible bacteria once occupied. Like all organisms, bacteria compete for survival. By destroying susceptible bacteria, antibiotics act as a selection pressure that favours the survival of resistant strains (CDC, 2010). In addition, bacterial genes for resistance can be passed between species, spreading mechanisms for resistance to new strains of bacteria (Health Protection Agency [HPA], 2010a). In some cases

bacteria can become 'multi-resistant', rendering a number of drugs useless against them. This drastically limits the treatment options that physicians can implement. In a recent report, it is estimated that the financial consequences of multi-resistance in the European Union amount to EUR 1.5 billion (European Centre for Disease Control and Prevention & European Medicines Agency, 2009). The increasing levels of antibiotic resistance therefore has implications for recovery time, the development of further health complications, and healthcare costs (Wise, 2002).

Multi-resistance may be a consequence of a combination of booming rates of resistance, and attrition in the rate of new antibiotic development (Alanis, 2005; European Centre for Disease Control and Prevention & European Medicines Agency, 2009; Spellberg et al., 2004). In previous decades, the issue of resistance received far less attention due to the ongoing development of replacement drugs which could combat the previously resistant bacteria with new mechanisms of action. More recently, however, pharmaceutical companies' priorities have shifted to alternative drugs which are proving to be more profitable (Alanis, 2005; Taubes, 2008).

The predominant factors that encourage resistance vary internationally. Tackling antibiotic resistance calls for numerous strategies which are specific to local factors that are known to drive resistance. In developed countries, high antibiotic use, inappropriate prescribing decisions, and poor patient compliance are the main drivers of resistance. Developing countries also experience the latter two issues, although they also contend with limited access to antibiotics, poor sanitation, and overcrowding, all of which ease the transmission of resistant bacteria and resistant genes (WHO, 2001). Furthermore, developing countries are less likely to have restrictions on over the counter sales of antibiotics, thereby encouraging inappropriate use (Alliance for the Prudent Use of Antibiotics, 2005).

The issue of antibiotic resistance needs to be tackled on a global scale, as resistance problems in one country are unlikely to remain exclusive to that area in this era of frequent travel and trade (Campbell, 2007). For the purposes of this

thesis, however, I will focus on the issue at hand within the UK: the overconsumption of antibiotics due to inappropriate prescribing.

2.3.2 Antibiotic use drives resistance

The evidence supporting the notion that antibiotic use encourages resistance exists at the level of populations, and at the level of the individual. Studies of all age groups have been included in this part of the review.

2.3.2.1 The individual level

Individual humans and animals can act as reservoirs for resistant bacteria following antibiotic treatment (Chung et al., 2007; Levy et al., 1976). Numerous studies have measured the proportion of resistant bacteria carried in samples of normal bacterial flora, taken from human subjects before and after antibiotic treatment. This approach has been repeated by researchers world-wide, with subjects of various age groups and health statuses.

A randomised, double-blind, placebo-controlled experiment in Belgium detected a significant increase in resistant bacteria in two treatment groups (n=74 in each), each receiving a different antibiotic (Malhotra-Kumar et al., 2007). Proportions of resistant bacteria were measured a week following treatment and compared to baseline, revealing a mean 57% increase in one group (95% confidence interval [CI]= 50.3% to 63.3%) and a mean 52% increase in the second group (95% CI= 45.3% to 58.4%). Importantly, no significant changes were found in a control group that was administered a placebo (n=76; 3.8% increase, 95% CI=-2.7% to 10.4%). The proportion of resistant bacteria in samples detected decreased with time in treatment groups. However, treatment groups still harboured significantly higher levels of resistant bacteria (compared to baseline measures) six months post treatment ($p < 0.0001$). Furthermore, genotypic analysis of samples showed that only one of the two antibiotics tested selected for a 'high resistance' gene, supporting the idea that specific drugs can influence the levels and persistence of

resistance. This could help to explain an important observation: the rate at which resistance levels dropped was different for the two treatment groups.

This well-conducted study controlled for confounding variables such as: antibiotic use prior to and during the study; exposure to healthcare settings, and relevant demographic/lifestyle differences. Overall, the findings supported the association between antibiotic use and resistance at the individual level, and reinforced the importance of careful decision making in the selection of specific antibiotics. The study was, however, limited through its lack of ecological validity, as healthy volunteers were used instead of patients with actual pathologies. Furthermore, the study did not consider social factors associated with being in an 'ill' state, and the culture of taking antibiotics (e.g. concordance and compliance in taking antibiotics). This is not a criticism of this specific study, but illustrates that the issue of resistance can also benefit from being viewed on a more holistic level, outside of laboratory settings.

A similar UK-based prospective study reached similar conclusions to the above, but considered paediatric *patients* presenting to primary care with respiratory tract or ear infections (Chung et al., 2007). Throat swabs were taken from children (aged between 6 months-12 years) at the initial consultation, and subsequently at two weeks and 12 weeks post initial visit. Two measures acted as proxies for antibiotic resistance: the first was the calculated lowest concentration of an antibiotic (in this case, Ampicillin) that was required to inhibit the growth of bacteria (known as the 'minimum inhibitory concentration' [MIC]), while the second simply looked for the presence of mobile genetic elements that coded for resistance. Group comparisons were made between children who received an antibiotic in the initial consultation (n=71) to those who did not (n=48), in addition to comparisons to baseline measures. Antibiotic recipients had a fourfold increase in MIC at the two week follow up (statistically significant, but figures not reported), and the proportion of children from which 'resistance elements' were isolated doubled (significant difference from baseline, p=0.002). No statistical differences from baseline were found in the non-treatment group at any point of measurement. No significant differences were found between the two groups at

the initial visit, but antibiotic recipients had a significantly higher MIC at the two week point (3.5 times higher than the 'no antibiotic' group, $p=0.005$). Similar to the previous study, resistance levels (according to both measures) returned to baseline levels in the antibiotic group, suggesting that the increase in resistance was transient. Importantly, there were no significant differences in age, number of siblings, history of antibiotic consumption, or gender between the two groups. The only noteworthy difference was that children who received antibiotics were significantly more likely to be enrolled in day care ($p=0.05$). Research presented later in this review will explain why day care attendance could have been an important confounding variable, due to its association with an increased risk of carrying resistant bacteria. It was also interesting that day care attendees were more likely to receive antibiotics, although it is difficult to determine how relevant this is given that symptom severity was not reported by the authors.

The phenomenon of resistance developing (in individuals) post antibiotic treatment has also been observed specifically in the pre-school age group (Nasrin et al., 2002). Based on parents' diary entries, the authors recorded antibiotic use in children ($n=461$) living in Canberra (Australia) over a two-year period, taking nasal swabs every six months. Pneumococci resistance was significantly associated with antibiotic use in the preceding 2 months (Relative Risk [RR]= 2.03, 95% CI= 1.15- 3.56). Possible confounding variables such as age, gender, day care attendance, and siblings, were accounted for.

Malhotra-Kumar *et al.*, Chung *et al.*, and Nasrin *et al.* all offer evidence supporting the idea that humans can become carriers of antibiotic resistance following antibiotic use. Even if this is transient, it increases the risk of transmission of resistant organisms, and could aid in sustaining 'pools' of resistant genes within communities. Evidence relating to this theory has been collated and evaluated in a recent meta-analysis (Costelloe et al., 2010). Based on 24 experimental and observational studies of mixed age groups (22 involving patients, two with healthy subjects), the pooled odds ratio (OR) for resistance was 2.5 at two months following treatment (95% CI= 2.1-2.9), and 1.33 (95% CI=1.2-2.5) at 12 months following treatment. The authors also concluded that longer duration and more

frequent courses were associated with higher levels of resistance. All studies in the meta-analysis were taken from countries where antibiotics can only be obtained through prescription. This meta-analysis, and the individual studies discussed, support the link between antibiotic use and resistance at the individual level.

2.3.2.2 The population level

In some European countries, antimicrobial resistance has been monitored through the European Antimicrobial Resistance Surveillance System (EARSS). Bronzwaer and colleagues (2002) correlated the levels of antibiotic prescribing (outpatient sales data) with EARSS data within 11 European countries over a year, focusing on two antibiotic classes³. One strong association (r square value of 0.8, p=0.0002) was found between the prescribing of one antibiotic class and resistance rates, while a weaker, yet still positive correlation was found with a second antibiotic investigated (r square value of 0.46, p value not given). This difference in the strength of relationship could be explained by antibiotic-specific differences in the rate of resistance development (discussed earlier). However, there are additional factors not measured that could influence the emergence and spread of resistance. For example, patient non-adherence and differences in the control of antibiotic availability (over the counter sales vs. prescription only) could have influenced data on actual antibiotic use. Likewise, the authors recognise the possible effects of sampling bias associated with resistance data, as doctors' criteria or thresholds for requesting cultures could vary between countries. One of the issues not discussed was the potential for national resistance levels to be influenced by resistance from hospitals- a potential issue given that the authors only measured outpatient antibiotic prescribing.

A similar, more recent study focused on the association between outpatient antibiotic prescribing and resistance rates across 26 European countries

³ In this case, and all subsequent population based studies discussed, antibiotic prescribing was used as a proxy for antibiotic use. Standard measures of antibiotic prescribing are used ('defined daily doses' [DDDs], in this case).

(Goossens et al., 2005). This large-scale study also used data from the EARSS, but covered a greater area of Europe. Strong positive correlations were consistently found between prescribing and resistance. However, like the previous study, these findings are viewed in light of possible differing selection pressures existing between countries. This makes it very difficult to confidently ascertain the extent to which antibiotic resistance is caused by antibiotic use alone- at least, when population level studies are used.

A number of UK studies have considered the relationship between antibiotic prescribing and resistance at regional or GP-practice levels. Magee and colleagues (1999) measured resistance in routine urine samples, correlating this with prescribing data for each of 190 Welsh surgeries. Positive correlations were found between prescribing and resistance for a number of antibiotic classes (r values ranged from 0.17-0.39, with all p values < 0.05). Less frequently, associations were also found between prescribing of one antibiotic, and resistance levels in another. This may be explained by the effects of horizontal gene transfer, cross-resistance, and co-resistance (described later).

Another criticism of the population based studies that use routine samples is the possibility that samples sent for analysis are more likely to be taken from patients that have developed complications or are suffering from co-morbidities. This has implications for estimating the true levels of resistance in a community. It could be argued that as long as all GPs are sending in samples according to the same biases, the effects of this are cancelled out in studies that compare communities. However, there is also a possibility that some GPs are more likely to send samples for microbiological analysis than others (Duckworth, 2002; Hillier et al., 2006). For example, GPs who are more likely to send samples for analysis could be less likely to prescribe antibiotics at the first consultation, and vice versa. Magee *et al.* were able to account for this by showing no significant correlation between each practice's prescribing rates and the number of samples sent.

The link between antibiotic prescribing and resistance has also been shown at a regional level. Priest *et al.* (2001) conducted a similar study to Magee *et al.*, in

England, estimating resistance at practice level and primary care trust level. At practice level, correlation coefficients were similar to those reported by Magee *et al.* (coefficients range from 0.18-0.24 for three classes of antibiotics investigated), and were generally significant or highly significant ($p < 0.001$ for two out of the three antibiotic classes). Stronger associations were found at the trust level (coefficients in range of 0.31-0.57; all statistically significant), possibly due to greater opportunities for the spread of resistance (e.g. a larger population density, greater population movement).

2.3.2.3 Population versus individual level data

One of the main limitations of population-based studies is the difficulties with establishing causality. Individual based data have the advantage of offering greater scope to measure and account for other factors that are thought to contribute to resistance (such as social activity; compliance behaviour; duration of antibiotic consumption; co-morbidities). Most population studies are based on average statistics rather than individual data, making it difficult to connect outcomes with individual variables. This can lead to what is known as an ecological fallacy, where assumptions are incorrectly made on the basis of population-level findings (Woodhead *et al.*, 2004). Findings based on aggregated prescribing and resistance data can be misleading. Studies have demonstrated this by conducting both practice-based and individual-based analyses on the same cases (Donnan *et al.*, 2004; Harbarth *et al.*, 2001), revealing that population-level analyses can obscure strong associations yielded by individual-level data.

Whereas Magee *et al.* used their data to support the case for more prudent antibiotic prescribing, Priest *et al.* pointed out that variation in prescribing levels would translate into minor differences in resistance, on the basis of their data and those of Magee *et al.* Through fitting regression lines to their data, they predicted that a 20% decrease in mean antibiotic prescribing would only lead to a 1% decrease in resistance. This prediction is based on a number of assumptions borne from mathematical modelling, and should be treated as theory alone. However,

this idea does raise an interesting issue: will reductions in antibiotic prescribing lead to clinically important reductions in resistance?

2.3.3 Can community resistance levels decrease?

Restricting antibiotic prescribing to cases where it is clinically beneficial has economic advantages, and, in light of the evidence considered above, can discourage the future development of resistance. However, could a decrease in antibiotic prescribing lead to reductions in current levels of resistance in the community? Theoretically, bacteria compromise their own fitness at the expense of developing resistance. This is known as a 'fitness cost' (Andersson & Hughes, 2010; Andersson & Levin, 1999). This places resistant bacteria at a disadvantage when competing with susceptible bacteria. Through minimising antibiotic prescribing, it is thought that susceptible bacteria could persist and out-compete resistant forms.

Some studies do report a reduction in resistant bacteria following declines in antibiotic prescribing. One well cited five-year study in Finland reported a significant decline in macrolide resistance following significant decreases in erythromycin prescribing towards the beginning of the study period (Seppala et al., 1997). This effect was seen in all areas of the country, leading researchers to believe that the reduced antibiotic prescribing was responsible for the decline in resistance. Other countries including Hungary (Nowak, 1994), Japan (Fujita et al., 1994) and Iceland (Kristinsson, 1997), have reported similar successes on a national level. On a smaller scale, a French study using 3-6 year old kindergarten attendees reported a significant decrease in resistant pneumococci over the course of a five-month intervention that promoted stringent prescribing (Guillemot et al., 2005). Swabs were taken from children at three points, and antibiotic prescribing to all 3-6 year old children (n=601) in the study area were recorded (in addition to antibiotic use in specific participants). The same procedures were also conducted in a demographically similar control group (n=405). A significant decrease in prescribing ($p < 0.001$), and significant decrease

in resistant pneumococci ($P < 0.001$) were found in the intervention group only (based on changes between the start and end of the study period). Interestingly, rates of *susceptible* pneumococci significantly increased in the intervention area, remaining unchanged in the control group. This reduction in resistant bacteria, coupled with an increase in susceptible bacteria, could be explained by the fitness cost theory described above, but the study is limited in that it considered a relatively short time period (five months). This makes it difficult to draw conclusions about long term effects.

An Israeli study, conducted over a longer time period, considered seasonal variation in paediatric antibiotic prescribing and corresponding levels of resistance over five years. Although the study only measured community prescribing, samples from children with acute otitis media (ear infections) were taken from community *and* hospital settings. Reductions in the carriage of resistant bacteria were observed in summer months, in line with reduced prescribing (Dagan et al., 2008). This study proved to yield reliable data, in that the findings were repeated for each of the five study years. For comparative purposes, the study team also considered a group of Bedouin children that lived in a geographically distinct area, where there was less pronounced seasonal variation in prescribing. No significant seasonal reductions in antibiotic resistance were observed, supporting the idea that the variations in levels of resistance observed in Jewish children were associated with variations in prescribing. However, the Bedouin children were not demographically matched with Jewish children. The study could have been strengthened by comparing two demographically similar groups of children, but presumably, finding a demographically similar comparator group, that also experienced less seasonal variation in prescribing, was not feasible.

Finally, evidence to support the merits of reduced antibiotic prescribing has been provided by a UK-based observational study that monitored prescribing and resistance rates, at the level of Welsh general practices, over a seven year period (Butler et al., 2007). Practices with the greatest reductions in antibiotic dispensing showed a significant reduction in antibiotic resistance for two classes of antibiotics, compared to practices that reduced antibiotic dispensing the least.

This study, and those previously discussed, support the idea that resistance can be 'reversed' through appropriate reductions in antibiotic prescriptions.

In contrast to these studies, there have been numerous interventions to reduce antibiotic prescribing that have failed to decrease resistance rates. In the UK, a 98% reduction in prescribing for a class of antibiotic (between 1991-1999) failed to change resistance levels in *Escherichia coli* (*E. coli*) (measured from samples obtained from hospital and general practices) (Enne et al., 2001). It could be argued that more time was necessary before any significant changes in resistance were observed. However, a separate study in 2004 reported that resistance in *E. coli* (measured from UK hospital samples) remained unchanged (Bean et al., 2005). The rate of detection of specific genes for bacterial resistance also remained unchanged between 1991, 1999 and 2004. Similarly, a Swedish community-based study found that an 85% reduction in outpatient antibiotic prescribing failed to decrease resistance rates over the next four years- instead, a marginally significant increase in resistance was observed (Sundqvist et al., 2010).

Finally, the importance of 'time' as a consideration was demonstrated by a prospective, community-based study in Alaska, which used educational interventions to successfully reduce community antibiotic prescribing (Hennessy et al., 2002). This was initially believed to explain a decrease in resistance that followed a year later. However, resistance rates rose again in subsequent years, despite the sustained low prescribing rates. Furthermore, resistance levels remained unchanged within two other demographically similar Alaskan regions, despite significant reductions in prescribing. Studies such as these *suggest* that reducing antibiotic prescribing is not always sufficient in tackling the problem of resistance.

2.3.3.1 Why is there mixed evidence?

a. Methodological issues

As discussed earlier, methodological issues such as sampling biases limit the validity of studies. In particular, it is difficult to account for and measure confounding factors in some of the ecological studies presented. Another issue to consider is the duration of a study, as changes in resistance levels can be slow (Levy & Marshall, 2004). Rates of antibiotic resistance can also naturally fluctuate over time (Turnidge & Christiansen, 2004); thus, larger scale studies conducted over longer time scales might give a more accurate surveillance of resistance, and should be favoured when it comes to monitoring the effects of interventions (Steinke & Davey, 2001).

b. Other factors influencing resistance

Cross-resistance and associated resistance can complicate the antibiotic prescribing-resistance relationship (Gould, 1999). Sometimes, a single mechanism can bring about resistance to two or more antibiotics. Reducing prescribing of one drug might not be sufficient to drive down the population of multi-resistant bacteria. Resistant bacteria can also persist due to further compensatory mutations that override the fitness costs described earlier (Andersson & Hughes, 2010; Johnsen et al., 2009). Finally, choice of antibiotic and dosage are important considerations that influence rates of resistance (Cizman, 2003; Roberts et al., 2008; Wood et al., 2007). Studying the effects of antibiotic prescribing (or consumption) alone could therefore be seen as an oversimplification of a multi-factorial issue.

2.3.4 Section summary

It is theoretically accepted that reducing antibiotic prescribing can slow down the emergence of newly resistant bacteria, and may even decrease current levels of resistance. Collectively, most research conducted supports the link between antibiotic use and resistance. Studies which show decreased resistance with

reduced prescribing are not common, but this process is expected to require time and additional interventions that account for other determinants of resistance. It seems clear that ignoring the warnings to control antibiotic prescribing can only make the problem worse. Given the numerous confounding factors that could affect correlation studies, the fact that any significant relationships exist is important (Turnidge & Christiansen, 2004). Collating the evidence discussed in this section paints a convincing picture that antibiotic prescribing should be well-thought out, and limited to cases where there is a justifiable clinical benefit.

2.4 Antibiotic Prescribing Data

2.4.1 UK prescribing

Antibiotic prescribing in the UK was amongst the lowest in Europe in 2004, although there were still a number of European countries with lower rates (Austria, Sweden, Denmark, Germany, and the Netherlands) (van de Sande-Bruinsma et al., 2008). In the study by Goossens *et al.* (2005), UK prescribing was shown to be almost double that of the Netherlands. It is possible that variations in prescribing could be explained by different infection typologies and severities. A recent Europe-wide study recorded the variation in rates of prescribing in 13 countries for cases of acute cough presenting to primary care (Butler et al., 2009). After accounting for clinical presentation and symptom severity, there was still substantial variation in rates of prescribing between countries. In relation to the overall mean prescribing rate, the odds ratio of receiving an antibiotic in the lowest prescribing country (Norway) was 0.22 (95% CI=0.12-0.38); for Wales, on the other hand, there was a significantly greater chance of receiving an antibiotic (OR=2.44; 95% CI=1.42-4.19). Rates of prescribing in the England (Southampton, specifically) were not significantly different to the mean, but still higher than the lower prescribing countries (OR for Southampton was 0.84; 95% CI=0.47-1.5). This study demonstrated that clinical presentation and symptom severity did not account for variation in prescribing, suggesting that antibiotic prescribing can still be safely reduced in some European countries, including some areas of the UK.

The UK experienced a decrease in antibiotic prescribing from 1997-2005 (National Health Service [NHS] Prescription Services, 2011), especially in terms of respiratory tract infections (RTIs), where the chance of receiving an antibiotic decreased from 70.8% to 59.5% per RTI consultation (in adults), and 46.1% to 30.8% in children between 1990 to 2004 (Meropol et al., 2009). However, the most recently reported trends show an increase in UK prescribing (NHS Prescription Services, 2011). In particular, paediatric prescribing increased between 2003 to 2006 (Thompson et al., 2009). It has been suggested that this is associated with an increase in prescribing for non-specific RTIs in children, where GPs do not specify a diagnosis (Thompson et al., 2009).

The discrepancy between the UK and other European countries' prescribing rates, and the suggestion that antibiotic prescribing is on the rise, implying that progress can still be made in reducing antibiotic prescribing safely.

2.4.2 The day care population: high antibiotic consumers

The pre-school population is an important target group in efforts to reduce antibiotic prescribing, as they are one of the highest, if not *the* highest, recipients of antibiotics relative to other age groups (Heginbotham & The Welsh Antibiotic Study Group., 2004; Wrigley et al., 2002). Pre-schoolers are also one of the highest consulting age-groups (surpassed only by those aged 75 and over)(Summerfield & Babb, 2004). Day care attendance itself increases the risk of antibiotic use (according to American studies, discussed shortly). If the latter is true for the UK, day care attendees are an important sub-group to consider, as they make up just under half of the pre-school population (OECD, 2011a).

2.4.2.1 Children's prescriptions: current evidence

Data from the Office of National Statistics provides a breakdown of the number of antibiotic prescriptions per 1000 people by age group, for the period of 1994 -

1998 (Wrigley et al., 2002). The data are based on information from the General Practice Research Database (GPRD), and covers a large spread of regions throughout England and Wales. Under fives, referred to in this review as ‘pre-schoolers’, are consistently the highest recipients of antibiotics for each year considered.

Another study, also based on GPRD records, reported prescribing data by age group between 1995-2000 (Ashworth et al., 2006). In this study, antibiotic prescribing rates were measured as the proportion of consultations that resulted in an antibiotic prescription. Reductions in prescribing rates were observed in all age groups, with the highest decrease seen in children aged below 16- particularly pre-school children (18% decrease). Although the proportion of consultations resulting in antibiotics decreased for pre-schoolers, the consultation rates were by far the highest of all age groups, by a three-fold magnitude in some cases. Rates of prescribing per person were thus highest in pre-school aged children.

More recent GPRD data have emerged, revealing that preschool-aged children’s prescribing rates have been steadily increasing year by year since 2000 (Schneider-Lindner et al., 2011). In fact, the most recent prescribing rates for pre-schoolers (2007) show that figures are the highest they have been in the past 20 years.

2.4.2.2 Antibiotic prescribing for day care attendees

This section will discuss day care attendees’ risk of antibiotic use relative to non-day care attending pre-schoolers (referred to as ‘home-care’ children). Some studies have failed to specify what the term ‘day care’ entailed, in which case, this phrase (‘day care’) has been used. Others specify the nursery or childminder-status of the day care settings.

Studies from Sweden, Finland, Denmark and the USA have compared antibiotic use in nursery attendees versus ‘home-care’ preschoolers, all reaching the

conclusion that nursery attendance increases the risk of antibiotic use (Bogaert et al., 2001; Hjern, 2000; Petersson & Håkansson, 1990; Rasmussen & Sundelin, 1990; Thrane et al., 2001). Studies of this nature need to account for confounding variables. One of the best designed studies found that children of lower socio-demographic backgrounds were less likely to attend day care, less likely to consult GPs, and less likely to receive antibiotics. The authors created a model that accounted for socio-demographic and chronic morbidity variables, still concluding that day care attendance is associated with more 'physician' visits (not defined as primary or secondary care) and antibiotic consumption (Hjern, 2000). A Danish study echoed these findings, estimating that being cared for by a childminder, or attending nursery, was associated with a two fold increase in risk of receiving antibiotics, although this risk fell as age increased (no differences at age 2 years and above) (Thrane et al., 2001). A later Finnish survey conducted multivariate analysis (including a mixture of psychosocial and demographic measures) on 817 families, to find that families with 'high antibiotic use' children (defined as five or more courses in the first 18 months of life) were over four times more likely to be enrolled with a childminder (OR= 4.4, 95% CI=2.1-9.3), and 13 times more likely to attend nursery (OR= 13, 95% CI=5.1-32) (Louhi-Pirkanniemi et al., 2004). Nursery attendance was also concluded to be a risk factor for antibiotic use in a survey based on 8700 four year olds living in Sweden (Nilsson et al., 2007), and a survey of over 1000 preschoolers based in Massachusetts (Kuzujanakis et al., 2003). Socio-demographic statistics and age were accounted for in all studies, and antibiotics were only available through prescriptions, although the medical care setting in which prescribing occurred is unclear in some studies. Outpatient sales alone were used in the study by Thrane *et al.*, although this still does not differentiate between emergency departments and general practice. The study by Louhi-Pirkanniemi and colleagues (2004) was one of the few that accounted for hospital visits and period of stay in their multivariate analysis, which still revealed day care attendance as a significant risk factor for antibiotic consumption.

2.4.3 Section summary

The most recent UK statistics show that pre-schoolers have the highest rate of antibiotic prescribing relative to other age groups. International evidence suggests that day care attendees are at an even greater risk of receiving antibiotics in comparison to their age-matched counterparts, but there are no published UK-based studies or statistics that have considered this.

2.5 Common Childhood Infections

2.5.1 What are pre-schoolers in the UK consulting for?

Day care children's high antibiotic consumption could be explained by the frequency and type of infections they are experiencing. UK statistics of *day care attendees'* morbidities have not been investigated. However, information for the pre-school age group (without reference to day care attendance or home-care) has been published.

Children's RTIs continue to be the most common cause for antibiotic prescriptions - not only amongst children, but within UK primary care as a whole (Thompson et al., 2009). A comprehensive report describing reasons for consulting general practice (by age group) was published in 1995 (McCormick et al., 1995). The report showed that pre-schooler consultations tend to be for respiratory, ear/eye, skin, and gastrointestinal infections. This, to date, has been the only detailed analysis of the most common morbidities pre-school children present to general practice with.

These findings are based on the general pre-school population, not day care attendees alone. It could be argued that day care attendees experience additional infections that benefit from antibiotic treatment, but to date, there is no evidence to suggest this. According to studies conducted outside of the UK, the most commonly occurring infections in day care settings are similar to those that occur

in the general pre-schooler age group (respiratory, skin, and gastrointestinal infections)(Giebink, 1993; Lu et al., 2004; Osterholm, 1994; Slack-Smith et al., 2002b).

If day care attendees experience similar infection patterns to other pre-school children, why do they receive more antibiotic prescriptions? One explanation is that day care children experience more of these infections, and attend GP consultations more frequently. Certain childhood behaviours, such as placing objects in the mouth, close proximity and contact with other children, and a lack of hygiene awareness, can increase infection transmission in day care settings. This is especially true when a number of children come together under one roof, where toys are shared and interactions occur with the same staff (Brady, 2005). The remaining part of this section will discuss the frequencies of common 'pre-schooler infections' and resistance carriage in day care attendees, relative to age-matched 'home-care' children. The benefits of antibiotic therapy for each of these infections will also be considered.

2.5.2 Overview of common day care infections

RTIs, conjunctivitis, gastrointestinal infections, and skin infections are the most common infections prevalent in day care settings according to a number of reviews that focus on infection transmission in these environments (Brady, 2005; Doyle, 1976; Haskins & Kotch, 1986; Holmes et al., 1996; Jorm & Capon, 1994; Ponka et al., 1991). As discussed above, these are also the most common infections experienced by the wider pre-school population.

2.5.2.1 RTIs, otitis media, and conjunctivitis

a. RTIs

i. Non-specific RTIs

'RTI' is the umbrella term applied to a group of infections that include coughs, colds, sinusitis, bronchitis, pneumonia, tonsillitis, ear infections, sore throat and

pneumonia. These are often grouped into upper RTIs (URTIs) and lower RTIs (LRTIs). URTIs include: colds; coughs; rhinitis; sinusitis; tonsillitis, and throat and ear infections. LRTIs include: pneumonia, bronchitis, and bronchiolitis (NHS, 2009a).

There is strong evidence to support day care attendance as a risk factor for RTIs. Studies from different countries have reached the same conclusion using different methodological approaches (Hernandez et al., 1999; Louhiala et al., 1995; National Institute of Child Health and Human Development Early Child Care Research Network, 2001; Petersson & Håkansson, 1990; Wald et al., 1988). Many researchers have compared home-care children with day care attendees, concluding that day care attendance significantly increases the risk of RTIs (Hurwitz et al., 1991; Woodward et al., 1991).

In their analysis of 2500 Finnish children aged 7 years and below, Louhiala *et al.* (1995) found that the risk of developing common colds, otitis media, and pneumonia was significantly increased in 1 year old nursery attendees when compared to home-care children (adjusted RRs= 1.69 [95% CI=1.43-2.01]; 1.99 [95% CI= 1.57-2.52]; 6.69 [95% CI= 2.31-40.55]). Importantly, this risk decreased with age, and was only significant for children aged 2 years and below (with the exception to pneumonia, for which there was only a significant difference in 3-year-olds). No significant differences were found between children cared for by childminders, and home-care children. There are, however, doubts surrounding the reliability of the data used in this study. Information gathered was based on parent-completed questionnaires, which required respondents to recall details of infections that had occurred over the previous year. Furthermore, self-completed questionnaires may have been inappropriate for measuring actual incidence of infection, as there are likely to be differences in parents' interpretations and assessment of what constitutes various RTIs.

The above limitations extend to others studies that have explored the day care associated risk of RTI using questionnaire methods. Looking beyond these limitations, the conclusions reached are similar. For example, an Australian study

used 2600 parents' questionnaire responses to categorise children in terms of their frequency of RTI-symptoms over the preceding 12 months. The top and bottom 20% of respiratory scores were labelled as 'prone' and 'not prone' to RTIs, respectively. After adjusting for confounding factors, it was concluded that 'prone' children were over twice as likely to be occasional or frequent users of day care, compared to those labelled as 'not prone' (OR= 2.28; 95% CI= 1.53-3.61) (Woodward et al., 1991).

In contrast to the above two studies, a nation-wide American longitudinal study used structured interviews to ask parents about symptom incidence every three months, for a three year period. This improved consistency of diagnoses and the reliability of information recalled. Rates of infection for 1200 children were recorded from birth to 3 years of age, alongside their day care exposure. Multiple logistic regression revealed that nursery attendance doubled the risk of URTI in the first 12 months of life (OR= 1.92, 95% CI= 1.44-2.57) . Those cared for by a childminder were also at increased risk (OR=1.42, 95% CI=1.20-1.67) (National Institute of Child Health and Human Development Early Child Care Research Network, 2001). Similar to the study by Louhiala *et al.*, the day care associated risk of infection decreased with age, until there were no significant differences with home-care children at 3 years.

A common problem with the aforementioned studies is the failure of researchers to consider symptom severity. One prospective study clearly defined and recorded the symptoms, severity and duration of RTIs in its comparison of Mexican nursery attendees (n=138) and home-care children (n=144) (Hernandez et al., 1999). Children were aged 2-4 months on entry to the study. Detailed information was gathered through weekly interviews with mothers (over a year). Analysis revealed that nursery attendees were more likely to develop RTIs (RR of 5.27, 95% CI= 3.54-7.83), and more likely to suffer from 'severe' RTIs ($p < 0.0001$) (defined as fever for more than three days, alongside RTI symptoms for at least 10 days). The relative risk of RTI contraction associated with day care was far higher than other studies discussed, which could be due to cultural differences in the standards of day care settings between countries.

Most of the above studies focus on URTI and LRTIs, some of which define actual infections or symptoms, and some of which do not. Pneumonia, an LRTI, is considered to be one of the more severe forms of RTI, and one of the few that warrants antibiotic treatment. Could an increase in incidence of day-care-associated pneumonia contribute to day care attendees' increased risk of antibiotic treatment?

ii. *Pneumonia*

As mentioned above, Louhiala *et al.* (1995) found that the relative risk of pneumonia was 6.69 [95% CI= 2.31-40.55] in one year old nursery attendees (relative to home-care children). No significant risk was found in nursery attendees aged 2 years, but the risk was significantly elevated in 3-year-olds (RR=10.01; 95% CI=1.13-88.86). No analysis could be done on 4-year-olds (due to limited numbers of cases), and no significant risk was found in 5-year-olds. There does not appear to be a clear pattern of decreasing risk with age according to these data, and the confidence intervals for risk rates were extremely wide, possibly due to the limited number of pneumonia cases (ranging from 6 to 11 cases per 100 person years). Other studies have also produced contradictory findings. For example, a German cohort study followed 3097 infants from birth until 6 years of age. Questionnaires, filled out every six months by parents, revealed a nursery-associated risk of several URTIs. Although the incidence of pneumonia was higher in nursery attendees aged below 2 years, this did not reach statistical significance. Conversely, children aged 4 years had a lower incidence rate of pneumonia, which was statistically significant ($p < 0.05$). The authors do point out, however, that the incidence of pneumonia was extremely low in all children (numbers not reported).

Beyond these two studies, very few published papers have reported the day-care associated risks of pneumonia, although a number have included pneumonia in a broader analysis of LRTIs. For example, a Boston-based prospective study found that day care attendance was a significant predictor of LRTI (defined as bronchitis,

bronchiolitis, pneumonia and croup). Multivariate analysis was based on combining these specific infections, and included 500 children aged 1 year and below. However, the risk was only marginally significant (OR=1.6; 95% CI=1.0-2.4) (Celedon et al., 1999). This may be explained by the authors' failure to make distinctions between care provided by childminders and nurseries. A Texan cohort study that monitored 131 children for 12 months found that day care attendance significantly increased the risk of LRTIs, but only when cases of pneumonia and bronchiolitis were combined in the analysis. The incidence rate of pneumonia was, again, extremely low (less than 5%). Furthermore, reported risk ratios were not adjusted for other factors also believed to influence RTI incidence (lifestyle factors, etc.) (Gardner et al., 1984).

Finally, some studies have conducted analyses on the basis of group size, and presence of unrelated children. An American cohort study followed a sample of 1000 children in Arizona from birth to 3 years of age, collecting data on LRTI incidence (measured in terms of positive physician diagnosis) from parents at five stages during the three year period. Children across all ages that were cared for alongside two or more unrelated children were approximately 1.6- 2 times more likely to experience LRTIs than those cared for alone, with related children, or with only one unrelated child. This risk did not increase with group size, or care setting (home, childminders, or nurseries) as long as three or more unrelated children were present (Holberg et al., 1993). No analyses were conducted on specific LRTI infections. Similarly, a Dutch study of 4146 children aged 1 year and below found that day care attendance significantly increased risk of pneumonia and bronchitis. Group size appeared to be an important factor, as the risk was higher in settings with more than five unrelated children (i.e. nurseries; OR= 4.8; 95% CI=3.5-6.9) than smaller settings (i.e. childminders, OR= 2.7, 95% CI=2.1-3.4). Again, the incidence of pneumonia was extremely low (2.5%) (Koopman et al., 2001).

iii. Streptococcus pneumonia

Many studies have looked at the causative agent of some RTIs rather than the symptoms themselves. This review will not consider specific bacterial species, but

it is worth mentioning *Streptococcus pneumoniae* (*S. pneumoniae*) in the context of day care research. This pathogen has received much attention, particularly in studies focusing on antibiotic resistance. It can cause a range of infections of different severities, depending on the site of infection (collectively referred to as 'pneumococcal disease'). Some of these infections include: otitis media; sinusitis; bronchitis; pneumonia; meningitis, conjunctivitis and bacteraemia (HPA, 2011; National Foundation for Infectious Diseases, 2006). Relative to experiencing symptoms of pneumococcal disease, the mere carriage of *S. pneumoniae* is thought to be more important in peer to peer transmission (Dagan & O'Brien, 2005). Pre-school aged children are already biologically predisposed to be high pneumococcal carriers (Dagan & O'Brien, 2005), and day care attendance is thought to further increase this risk (Dagan et al., 1996; Principi et al., 1999; Strangert et al., 1976). An Israeli study found that day care attendance was highly associated with *S. pneumoniae* carriage, in a multivariate analysis that included numerous other variables (e.g. socio-economic status, age, siblings, current and previous infections, current and previous antibiotic use) (OR=4.7; 95% CI=2.5-8.6). The conclusion that there is an association between day care attendance and *S. pneumoniae* carriage was lent further support by the observation that children spending eight or more hours in day care (per day) were significantly more likely to be carriers when compared to those spending no more than five hours ($p < 0.03$) (Samore et al., 2001). Other studies have reported outbreaks of pneumococcal infection in nurseries (Rauch et al., 1990) and childminder settings (Cherian et al., 1994), or suggested an association between day care attendance and risk of pneumococcal disease (Siedler et al., 2005). A Finnish case control study compared 149 cases of pneumococcal disease with 284 controls, matched for age, sex and area of residence. Both nursery and childminder attendance were significant risk factors for developing pneumococcal disease in children under two (OR of 36; 95% CI= 5.7-233 and OR=4.4, 95%CI=1.7-12, respectively) (Takala et al., 1995). This conclusion has received further support through North American studies (Levine et al., 1999).

iv. *Is antibiotic treatment appropriate for RTIs?*

Overall, there is good empirical evidence that the risk of developing an RTI is increased with day care attendance, though this is normally during the first two years of attendance. Does this justify increased antibiotic prescribing in day care attendees?

In general, most RTIs are of viral aetiology, and do not benefit from antibiotic treatment. Studies have also shown that even in bacterial cases, the benefit of prescribing antibiotics can be marginal.

A study mentioned earlier in this review demonstrated substantial variation in prescribing for acute cough across Europe. The study team also monitored patients' recovery, by plotting symptom severity scores over time for patients that did and did not receive antibiotics. Overall, the study showed that antibiotic prescribing had no clinically important effect on patients' rates of recovery (after adjusting for initial clinical presentation)(Butler et al., 2009). A number of Cochrane reviews have been compiled to assess the clinical benefit of antibiotic treatment for sinusitis, sore throat, and bronchitis, all concluding that antibiotics have a modest clinical benefit, but most patients recover spontaneously (Ahovuo-Saloranta et al., 2008; Smith Susan et al., 2004; Spinks et al., 2006). The small magnitude of clinical benefit gained from prescribing needs to be weighed against the potential costs to the individual, healthcare service, and society, leading to questions of whether or not prescribing is *appropriate*. According to the WHO, appropriate antibiotic prescribing involves four components: a) cost-effectiveness, b) maximal clinical therapeutic effect, c) minimal drug-related toxicity, and d) minimal development of antibiotic resistance. It is clear then, that appropriate antibiotic use calls for a balancing act of risks and benefits. A recent overview of Cochrane reviews concluded that antibiotics are not the recommended first line of management for most RTIs, although they have their place with specific cases (Arroll, 2005). The authors underline the importance of the clinician's discretion, and ability to judge which patients will be at risk of developing complications without treatment.

In light of this, NICE has produced guidelines for RTI management, designed to support GPs' decision-making. Antibiotic therapy is generally not advised, except for cases where: a) the patient is systemically unwell; b) the patient is at risk of complications, or c) the patient shows signs of serious infections (e.g. pneumonia). For children, a delayed or no prescribing policy has been advised for the five most common paediatric RTIs (acute sore throat, acute ear infections, colds, acute rhino-sinusitis and acute cough) (NICE, 2008).

Efforts to curtail antibiotic prescribing has led to scepticism, due to the potential for increased complications (Spyridis & Sharland, 2008). A retrospective analysis of 3.36 million cases of RTI, taken from the GPRD, examined the risk of complications in cases where an antibiotic was/was not prescribed (Petersen et al., 2007). Complications were defined as chest infection from RTIs, mastoiditis from ear infections, pneumonia from RTIs, quinsy from sore throat, and pneumonia from chest infections. The analysis was stratified by age, and included the pre-schooler age group. For all ages, there was no protective effect of antibiotic treatment against the development of any complications. At least 4000 patients needed to be treated to prevent one case of complication for all symptoms considered. The only exception to this was the protective effects of antibiotics in the development of pneumonia from chest infection, with the number needed to treat approximately 100 for most age groups, with exception to patients aged 65 and above, where only 39 needed to be treated to prevent one case of pneumonia.

Another GPRD-based study collected records of approximately 170,000 cases of LRTI on the first presentation to primary care. Multivariate analysis revealed that antibiotic prescribing on the day of consultation was associated with a reduced risk of LRTI-related hospitalisation, in the three months following consultation for all age groups (RR= 0.61, 95% CI=0.44-0.84, number needed to treat to prevent one case of hospitalisation =1222). The only exceptions to this were the youngest (0-17 years of age; RR= 0.64; 95% CI=0.36-1.14) and those aged 65 and over. Furthermore, antibiotic prescribing was associated with significantly reduced risk

of mortality in all age groups, with the exception of those aged 0-17 years of age (not analysed due to insufficient numbers). In other age groups, at least 6329 patients needed to be treated to prevent one mortality (Winchester et al., 2009). The findings of this study need to be interpreted with caution, as there is no detail of initial symptom severity, or the stage of illness at which patients (or parents) consulted. These are important factors that could have skewed the data. Furthermore, observational studies that rely on routinely recorded data are especially problematic when it comes to establishing causal links. Those patients deemed seriously ill and/or those that were thought to require secondary care may not have received antibiotics from their GP, as this action may have been considered to be futile, and/or more intensive care/therapy was prescribed. In these cases, hospitalisation or death would not have been a consequence of the GP not prescribing antibiotics.

Of course, there is a danger of GPs missing rare cases where antibiotics would be beneficial to the child's prognosis. A UK-based case control study found that children hospitalised with empyema or pneumonia were significantly less likely to have received an antibiotic at the first GP consultation for index symptoms (Crocker et al., 2011). A qualitative study of 22 parents whose children had been admitted to hospital with the above diagnoses revealed both parent and health care associated factors attributed to missed opportunities for timely treatment. Nine parents were dissatisfied with the quality of the clinical encounter, reporting that they felt 'dismissed', or had the impression that their physician had not examined their child properly, or rushed the consultation (Francis et al., 2011).

This final study reminds us of the importance of using the evidence against antibiotic prescribing for RTIs with caution, so as to avoid poor quality of care. Overall, however, the evidence suggests that a 'watch and wait' strategy is the recommended course of action for children with non-severe RTIs.

b. Otitis media

Studies have shown that like RTIs, day care attendance increases the risk of developing otitis media (Bradley et al., 2003; Hardy & Fowler, 1993; Louhiala et al., 1995; Rasmussen & Sundelin, 1990; Slack-Smith et al., 2002a; Strangert, 1977). Otitis media is often categorised under RTIs, as it can develop from other viral respiratory symptoms (e.g. colds) (but can be bacterial or viral in nature). The overall consensus is that otitis media is a self-limiting condition that, in most cases, does not indicate antibiotic treatment. An American randomised, placebo controlled trial of 240 children aged under 2 claimed that antibiotic treatment led to quicker symptom resolution and reduced symptom burden (Hoberman et al., 2011). Closer examination of findings revealed that the effect antibiotics had on 'time to symptom resolution' varied depending on how authors chose to define 'symptom resolution'. If defined as 'the first recording of a symptom severity score of 0 or 1' (Measured on the Acute Otitis Media Symptom Severity Scale, 0-10), there were no significant differences between treatment and placebo groups (measured in terms of proportion to reach initial symptom resolution by day two, four and seven). There was a marginal significant difference between groups when authors considered a 'sustained symptom resolution', defined as two or more consecutive symptom severity scores of 0 or 1 ($p=0.04$ for overall comparison of proportions to recover by day two, four and seven). Significant differences in symptom burden between treatment and control groups were restricted to a subgroup that entered the trial with particularly severe symptoms (symptom severity score of 8 (out of 10) or above). Findings must also be viewed in light of the fact that the treatment groups were significantly more likely to develop side effects such as diarrhoea and dermatitis.

A Cochrane review of paediatric prescribing for otitis media (10 trials involving children aged 15 and under) found that antibiotics led to only a 'modest benefit' in most cases. 16 children needed to be treated in order to prevent ear pain in one child. The review concluded that most cases spontaneously resolve, but some sub-groups, such as children aged below 2 with bilateral otitis media and discharge, might benefit from treatment the most (Sanders et al., 2004). There are

few studies exclusive to the pre-school age-group, although one double-blind, randomised, placebo-controlled trial estimated that eight children with acute otitis media (aged 6-24 months) had to be treated to see symptomatic improvements in any one child (Damoiseaux et al., 2000). Given that otitis media is common in pre-school children, the benefits of prescribing must be weighed out against the threat of resistance (Hoberman et al., 2011), and side effects (Sanders et al., 2004). In accordance with the evidence, NICE guidelines advise withholding from prescribing antibiotics on the first visit to the GP, with two exceptions: a) the child is under 2 years of age, with bilateral infection, and b) the child has discharge from the ear (NICE, 2008).

c. Conjunctivitis

Conjunctivitis is an infection of the conjunctiva of the eye, and is often associated with RTIs. Characteristic symptoms include redness of the conjunctiva and ocular discharge (clear or coloured, watery or thick). The discharge may form crusting, which can make it difficult to open the eye(s). This crusting, however, can often be seen in well children who have been asleep (Everitt, 2009). At least half of cases are viral, whilst bacterial cases are usually caused by *S. pneumoniae*, *Haemophilus influenzae* (*H. Influenzae*), or *Staphylococcus aureus* (*S. aureus*), all of which are common causative agents for RTIs and otitis media (Daly et al., 1999; Hament et al., 1999; Jacobs et al., 2003; Paisley, 1984; Sheikh & Hurwitz, 2001).

Despite reviews mentioning conjunctivitis as a common day care infection (Jorm & Capon, 1994), there have been no studies that compare the risk of infection in day care versus home children. Nonetheless, it follows that day care attendees are at an increased risk of contracting conjunctivitis, given the well-documented, day care-associated risk of *S. pneumoniae* and *H. influenzae* carriage (and invasive disease) (Berg et al., 1991; Dagan & O'Brien, 2005; Dunais et al., 2003; Istre et al., 1985; Neto, 2003; Principi et al., 1999).

Most cases of conjunctivitis should not be treated with antibiotics, on account of possible viral aetiology, and the unconvincing findings of clinical trials conducted

on bacterial cases. A Cochrane meta-analysis considered three double-blind, placebo-controlled trials that investigated the effects of antibiotics on clinical remission rates (two studies) and microbiological remission rates (all three studies) in patients of all ages, presenting to secondary care with acute bacterial conjunctivitis. Overall, clinical remission occurred by five days in 64% of those treated with a placebo (95% CI= 67-71). Antibiotic treatment was associated with significantly better clinical remission rates (RR=1.31, 95% CI= 1.11-1.55, based on 177 in treatment group, and 173 in control), and microbiological remission rates, (RR= 1.71, 95% CI= 1.32-2.21, based on 250 in treatment group and 138 in control) by day five. It is questionable whether these findings can be generalised to primary care, as hospital cases could have been more severe. Two primary care-based trials (one from the UK, involving children, and one from the Netherlands, based on adults) were included in an updated version of the review, concluding that there was still a significant improvement in clinical remission rates with treatment (RR= 1.24, 95% CI=1.05-1.45). However, statistical significance of findings should be one of many factors considered whilst making prescribing decisions for self-limiting infections- especially in cases where there is minimal discomfort or distress. In this case, do the marginal benefits for recovery time outweigh the social and public health issues associated with unnecessary antibiotic prescribing? The answer to this question can vary from different stakeholder group perspectives, reflecting vested interests. Pharmacological researchers, for example, could argue that conjunctivitis is a societal burden, and that the beneficial effects of antibiotics are highly desirable (Benitez-del-Castillo et al., 2011). It should be emphasised that these benefits are only relevant to proven bacterial cases; in practice, conjunctivitis could be viral (or even allergic), in which case there is no benefit to antibiotic therapy. Furthermore, neither of the two primary care-based studies included in the updated meta-analysis found any significant differences in clinical remission rates (Rietveld et al., 2005; Rose et al., 2006), although this lack of effect will have been overshadowed by the three secondary care studies. In light of this evidence, the current consensus is for a 'no prescribing' or 'delayed prescribing' strategy to be employed in conjunctivitis presentations, in both adult and paediatric cases (NHS, 2010).

2.5.2.2 Gastrointestinal infections

Gastrointestinal infections normally manifest in the form of diarrhoea and vomiting. These common childhood symptoms could be related to diet rather than infection. The majority of transmissible cases are viral, but bacteria can also cause gastrointestinal symptoms (e.g. through food poisoning). Gastroenteritis can cause diarrhoea and vomiting, stomach pain and the passage of blood. Whilst it is considered to be more severe than symptoms of diarrhoea or vomiting, like most gastrointestinal infections, it rarely benefits from antibiotic treatment (NHS, 2009b).

There have been numerous surveys using self-administered questionnaires and structured interviews to explore the incidence of diarrhoea in day care versus home-care children. One of the earliest studies, based in Canada, conducted a three way comparison of diarrhoeal/vomiting symptom occurrence in children cared for in nurseries, by childminders, and by a legal guardian in their own home (n=14, 11 and 14, respectively)(Doyle, 1976). All cases were matched based on socio-demographic and household information. A significant increase in risk of symptoms was only observed in nursery attendees (relative to home-care children), although this only applied to children aged under 2 years ($p < 0.05$). However, the reported lack of significant difference between 'childminder children' and home-care children could have been misleading, as the authors included informal care by relatives and babysitters within the childminding category.

The sample in Doyle's study only included one nursery, and sample numbers in general were too small to make statistical generalisations. A decade later, Bartlett and colleagues (1985) conducted a similar survey administered to families with children aged below 3 years, all of which were randomly selected from 22 nurseries and 30 childminders in Arizona (also randomly selected). Reported incidences of diarrhoea in the previous two weeks were compared to 102 randomly chosen families with same-aged home-care children. Similar to Doyle's study, significant differences in diarrhoea incidence were found between nursery

attendees and home-care children of all ages ($p < 0.001$), with no differences detected between children attending childminders, and those cared for at home (Bartlett et al., 1985). However, socio-demographic statistics were not accounted for, beyond selecting participants from similar 'zip code' (post code) regions.

A larger US-based study reached similar conclusions to those above using alternative data collection techniques (structured interviews), a larger sample (5000 parents), and a wider variation of child ages (up to 5 years) (Alexander et al., 1990). After accounting for socio-demographic and household data, the increased risk of diarrhoea was found to be limited to children aged under 3 years, but also confined to those attending nursery for 10 hours or more a week (OR 3.5; 95% CI= 0.99-4.77). No significant differences emerged between children cared for by a childminder, and those cared for at home. Similarly, a prospective Columbian study conducted 5 months' worth of weekly structured interviews with mothers, to measure diarrhoea occurrence in children (241 nursery attendees, and 252 home-care children) (Hillis et al., 1992). After adjusting for socio-demographic and local environmental factors, nursery attendees were significantly more likely to experience at least one episode of diarrhoea. This risk was highest in 12-month-old children (OR= 3.7; 95% CI= 1.45-9.38), and gradually dropped as child age increased (2 year olds: OR= 2.4; 95% CI= 1.39-4.14, 3 year olds: OR= 1.6; 95% CI= 1.04-2.30). Importantly, these results were limited to children who attended day care for more than 30 hours a week. Thus, both of these studies suggest that the day care-associated risk of diarrhoea symptoms is dependent on total hours spent at day care, as well as age.

The results of the studies discussed above are limited by their reliance on parents' estimates of symptom occurrence. Parent recall may have been an issue for most studies, with the exception of Hillis *et al.*, who not only conducted regular weekly interviews, but also required parents to fill in daily diaries. The findings from other studies could also have been affected by parents' individual interpretations of what constitutes 'diarrhoea' (versus loose stools, for example). Hillis *et al.* minimised these issues by providing parents with a clear definition of what they were measuring. Most of the studies discussed could have been limited by

inconsistencies in parents' reports in cases where parents were obtaining this information from DCPs, as DCPs' thresholds for reporting symptoms to parents could vary. Only Doyle's study used DCPs' records in conjunction with parents' reports in the analysis.

Using a different methodological approach, a case control study conducted in Texas concluded that the period of time *enrolled* at day care is another important measure in relation to the risk of seeking medical care for diarrhoeal symptoms. Reves *et al.* (1993) compared children presenting to a clinic with diarrhoeal symptoms (n=345) to age-matched controls (without diarrhoea) (n=375). Cases were more than twice as likely to be nursery attendees (OR= 2.4; 95% CI=1.6-3.7), and twice as likely to be cared for by a childminder (OR= 2.0; 95% CI= 1.3-3.1). The risk of diarrhoea was also increased during the first month of enrolment in any out-of-home day care (OR =3.1; 95% CI= 1.8-5.4). This study thus concluded that period of time since enrolment is also a predictor for diarrhoea, and, in contrast to other studies, there is a significant elevated risk associated with childminder setting attendance (relative to home-care). The reported findings had been adjusted for factors including recent morbidity, ethnicity, age, and whether or not the child was breastfed. In line with these findings, an earlier American study measured weekly diarrhoea incidence in 442 nursery attendees across 13 randomly selected nurseries (Staat *et al.*, 1991). Children were followed from enrolment for a 14-month period. Diarrhoea incidence was significantly higher in the first four weeks of attendance. Multiple factors were assessed in the analysis, including gender, history of day care attendance, and group size. A significant trend was observed, where risk of diarrhoea decreased with increasing age categories ($p < 0.001$). This further supports the idea that both age and time since initial enrolment are important variables that should be considered.

The literature suggests that the risk of developing gastrointestinal symptoms (mainly diarrhoea) increases with nursery attendance. This seems to be pronounced in younger children, and those who have newly enrolled in day care. These factors have not been independently assessed in all studies mentioned above. The evidence surrounding childminder settings is somewhat mixed. These

overall conclusions have been echoed in an extensive review which considers the risk of gastrointestinal infections associated with day care (Barros & Lunet, 2003).

Gastrointestinal infections are highly unlikely to account for many antibiotic prescriptions, generally being of a viral nature. Bacterial cases are likely to recover within a week without treatment. Contacting the GP is rarely required, except for cases where the child is: a) feeling particularly unwell; b) passing blood; c) has had more than six episodes of diarrhoea or three episodes of vomiting in a day (under 6 months), or d) has experienced vomiting for more than a day (under 6 months) (NHS, 2009b). In more severe cases, rehydration treatments might be necessary. The increased risk of gastrointestinal infections associated with day care is therefore unlikely to account for higher rates of antibiotic use in the day care population.

2.5.2.3 Infections with skin manifestations

There has been little to no research that compares the risk of contracting infections with skin manifestations for day care and home-care children. Reviews of common day care infections have briefly discussed these, albeit in substantially less detail than RTIs and gastrointestinal infections (Brady, 2005; Nesti & Goldbaum, 2007). The infections mentioned below are commonly associated with skin symptoms, and all are of a viral, self-limiting nature. A brief outline of the most common of these follows.

a. Chickenpox

Firstly, chickenpox is an extremely contagious, yet generally mild, self-limiting viral infection manifesting as a vesicular rash. Chickenpox is experienced by most children in the first 10 years of life, and rarely causes complications. Although authors of reviews have claimed that day care attendance increases the risk of chickenpox, they have not supported this claim with empirical comparisons between day care and home-care children (Brady, 2005; Nesti & Goldbaum, 2007). One UK-based survey of 12,500 respondents (not referenced in the

reviews) found that day care attendees were significantly more likely to develop chickenpox before the age of 5 relative to home-care children (OR=2.56, 95% CI=2.06-3.17, adjusted for child and maternal age, sex, and socio-demographics variables) (Manikkavasagan et al., 2010). It seems logical that nursery attendees are more likely to experience chickenpox, given its highly contagious nature, and a number of reported outbreaks in nurseries (Brunell et al., 1986; Vally et al., 2007).

b. *Slapped cheek syndrome*

One review has discussed the ease of slapped cheek syndrome transmission in nurseries (Holmes et al., 1996). Symptoms include a red rash, usually on the cheeks, which can be preceded or accompanied by fever and malaise (Jorm & Capon, 1994). This infection is no longer contagious once the rash appears. Slapped cheek poses little danger to children, but pregnant women are advised to avoid risk of exposure due to the risk of adverse foetal outcomes (Frydenberg & Starr, 2003). It has been suggested that day care settings are associated with higher prevalence of slapped cheek (Miller et al., 1998), although the only studies I identified that have explored this have been centred around the increased risk to adults exposed to day care or school settings (Holmes et al., 1996).

c. *Hand, foot and mouth*

Hand, foot and mouth, another viral childhood infection, is characterised by blisters on the extremities and on/within the mouth. The infection is sometimes accompanied with fever. Hand, foot and mouth is self-limiting, although the virus may be present in stools for weeks after recovery (after the blisters have disappeared). I did not identify any studies that discuss the day care-associated risk of Hand, foot and mouth, but there have been several reports of nursery outbreaks (Chan et al., 2003; Ferson & Bell, 1991; Freymuth et al., 1980; Ljubin-Sternak et al., 2011).

d. Impetigo

Impetigo is an acute, self-limiting bacterial skin infection, characterised by fluid-filled blisters or sores. The infection is highly contagious until the sores/blisters have burst and dried out, or until two days following antibiotic treatment (George & Rubin, 2003). As above, the infection tends to be associated with children more so than adults, though there have been no reports of the day care-associated risk of infection.

2.5.2.4 Other viruses

Other viruses, generally asymptomatic in children, have also been associated with day care attendance. Outbreaks of day care-related Hepatitis A have been reported (Gingrich et al., 1983; Morais et al., 2006; Panella et al., 1998; Pohjanpelto & Ponka, 1985; Sadetzki et al., 1999), as has the increased risk of Hepatitis A associated with nurseries (Jackson et al., 1996; Jacques et al., 1994). The introduction of vaccination programs have been shown to successfully reduce the day-care associated risk of contracting hepatitis A (Duggirala et al., 2005). The risk of cytomegalovirus infection is also increased with day care attendance (Hutto et al., 1985; Pass et al., 1984). Although this virus usually has no effects on healthy humans, it is particularly dangerous for pregnant women. Many studies have focused on the spread of Hepatitis A and Cytomegalovirus infection to parents and day care staff (Jackson et al., 1996; Pass et al., 1986; Reves & Pickering, 1992), thereby demonstrating how infections stemming from nurseries can have consequences for the health of the community.

2.5.2.5 Invasive bacterial disease

Finally, there is evidence that day care attendance can increase the risk of invasive bacterial disease, caused by pathogens such as *H. Influenzae*, and *Neisseria meningitides* (Holmes et al., 1996). Most studies, however, precede the introduction of the vaccination programs against these pathogens, or occur in developing countries. This is not to say that serious infections with these

pathogens are no longer a risk; however, this thesis focuses on relatively mild, common childhood infections that are typically dealt with in primary care.

2.5.2.6 Risk of infection in childminder settings

The discussion thus far has shown that there is mixed evidence to suggest that childminder attendance is associated with increased risk of infection. The lack of agreement across studies that include childminder settings may be related to the lack of consistency regarding the definition and nature of what constitutes a 'childminder setting'. Unlike nurseries, there are international variations in whether or not childminder care is considered 'formal', and the extent to which it is regulated by central authorities. The term 'childminder' has been used in this review for clarity, although the literature reveals a plethora of terms for this type of day care (e.g. 'family day care', 'day care homes', 'family day care homes'). Confusingly, different studies have used the same term to refer to slightly varied versions of day care (e.g. 'babysitter' services were included in one study). These issues, combined with the limited number of studies considering childminder settings, have contributed to the difficulties in reaching firm conclusions regarding the role childminder settings play in the risk of infection.

2.5.3 Antibiotic resistance in day care settings

Certain establishments, such as hospitals, nursery homes and day care settings, favour the emergence and spread of antibiotic resistant organisms. These settings will often have common characteristics: a high prevalence of infection, and a high density of antibiotic use (Alliance for the Prudent Use of Antibiotics, 2005; Burke & Pestotnik, 1996; Levy & Marshall, 2004; Nicolle et al., 1996; Spyridis & Sharland, 2008). Several risk factors associated with day care environments encourage the carriage and spread of bacteria, some of which can be resistant. These risk factors include the presence of young children (Bogaert et al., 2001; Givon-Lavi et al., 1999; Nilsson & Laurell, 2001), crowding (Bogaert et al., 2001; Givon-Lavi et al., 1999; Souli et al., 2007), and frequent use of antibiotics (De Lencastre & Tomasz, 2002; Givon-Lavi et al., 1999).

The association between recent antibiotic-use and the carriage of resistant bacteria has been reported in many studies on nursery attendees (Arnold et al., 1996; Brook, 1988; Katsarolis et al., 2009; Kellner et al., 1999; Nilsson & Laurell, 2005; Petrosillo et al., 2002; Reichler et al., 1992; Sakata et al., 2009; Sato et al., 2009; Stephenson et al., 1985; Tan et al., 1993; Yagupsky et al., 1998). Earlier, I discussed how individuals who have taken antibiotics can harbour increased levels of resistant bacteria for months following treatment. This slow rate of decay, coupled with frequent antibiotic use (in the individual, or community) can sustain or increase the levels of resistant bacteria in a population. This phenomenon is more pronounced in nurseries, where antibiotic use occurs frequently. At any given time, at least one child in a nursery is likely to be taking (or have recently taken) antibiotics. This favours the ongoing survival of resistant strains within the nursery (Sá-Leão et al., 2008).

The unique characteristics of nurseries (i.e. young children, multiple pathogens, crowding, and frequent person-to person contact) create ideal conditions for the transmission of resistant strains. These characteristics also promote horizontal gene transfer, increasing the risk of multi-resistant and newly resistant strains emerging (Bogaert et al., 2001). This has led to some authors describing nurseries as “*autonomous epidemiological environments*” (Sá-Leão et al., 2000b), and the nasal passageways of nursery attendees as “*a melting pot for resistant strains*” (Nunes et al., 2005). This is supported by evidence from microbiological studies which have found clusters of resistant bacteria to be specific to different nurseries (Sá-Leão et al., 2000a), even within a small geographical area (Givon-Lavi et al., 1999). This suggests that the mechanisms driving and sustaining resistance are operating from within nurseries, rather than the surrounding community.

There have been numerous reports of a high prevalence of resistant bacteria within nurseries. Day care children are reported to have high rates of colonisation with resistant *S. pneumoniae* (Chiou et al., 1998; Kellner et al., 1999; Velasquez et al., 2009), *H. influenza* (Ito et al., 2010; Stratchounski et al., 2001; Torun et al., 2007), *S. aureus* (Lamaro-Cardoso et al., 2009) and *E. coli* (Reves et al., 1987). The

significance of increased carriage of resistant bacteria is shown through the multiple outbreaks of resistant pathogens in nurseries around the world, including *S. pneumoniae* (Reichler et al., 1992); *E. coli* (Hiruta et al., 2001); *S. aureus* (Jensen et al., 2006); and *Shigella sonnei* (Brian et al., 1993; CDC, 2006). Carriage of resistant pathogens also has consequences outside of the day care setting. Studies have shown that resistant pathogens can be transmitted to parents and siblings of nursery attendees (Fornasini et al., 1992; Givon-Lavi et al., 2002). This has resulted in community-wide outbreaks of resistant infections originating from nurseries (Benenson et al., 1980; CDC, 2006).

The literature frequently mentions that nurseries are associated with high levels of antibiotic resistant bacteria. These claims are usually supported with prevalence studies or reported outbreaks of infections caused by resistant bacteria. Research that compares the carriage of resistant bacteria between day care and home-care children is limited. Is it possible that day care attendance acts as an independent risk factor for carriage of resistant bacteria? One cross-sectional surveillance study has investigated the risk of carrying susceptible *S. pneumoniae* and resistant *S. pneumoniae* in children recruited from 15 Israeli primary care settings. Children's day care status (nursery vs. home-care) was recorded, alongside other important variables (recent antibiotic use, number of siblings, age, etc.), in order to assess the independent risk factors for carriage of resistant *S. pneumoniae*. In line with the research discussed earlier, day care attendance significantly increased the risk for carrying susceptible *S. pneumoniae*. The authors went on to show that nursery attendees were also significantly more likely to carry resistant *S. pneumoniae* (OR=3.8, 95% CI=1.9-7.5, after adjusting for other variables). However, when the analysis was repeated on *S. pneumoniae* carriers alone, there were no significant differences between day care and home-care children's rates of resistant *S. pneumoniae* carriage (Regev-Yochay et al., 2003). Similar conclusions have been reached by other studies that focus on carriers, rather than the whole population (Arnold et al., 1996; Ciftci et al., 2001; Nilsson & Laurell, 2005; Samore et al., 2001). This suggests that nursery attendees' increased risk of carrying resistant bacteria may be linked to their already elevated risk of carrying bacterial pathogens in general. Whilst this is of

theoretical interest, the end results remain unchanged: children who attend nurseries are more likely to carry resistant pathogens than children who do not. This may be linked to their increased susceptibility of carrying pathogens, their more frequent antibiotic use, or a combination of factors. Regev-Yochay *et al.* (2003) also highlighted a particularly 'high risk' group of children that were almost 13 times more likely to be carriers of resistant *S. pneumoniae*. The three crucial characteristic features of this group were: 1) young age (under 2 years); 2) recent antibiotic use (in the past month), and 3) nursery attendance. Young age and recent antibiotic use have been reported as risk factors for carrying resistant pathogens in other studies (Kellner *et al.*, 1999), some of which were discussed earlier in this review. These risk factors, when combined with day care attendance, may have a synergistic influence on one another. For example, Holmes *et al.* (1997) report that the increased risk of carrying resistant bacteria following antibiotic use is even greater if the child also attends day care (OR=2.5, 95% CI= 1.1-5.8). Thus, it is important to consider day care attendance alongside the additional risk factors that independently increase the risk of carrying resistant pathogens. This is especially true given that day care attendance often goes hand in hand with some of these additional risk factors (e.g. young age and frequent antibiotic use) (Holmes, 1996).

2.5.4 Section summary

To summarise, the fact that day care attendees are more likely to a) be carriers of certain pathogens, b) experience more infections, and c) use antibiotics, combined with the unique characteristics of day care environments, leads to the conclusion that the resistance phenomenon is an important issue within day care settings. This is particularly true for nursery settings, as the evidence surrounding childminder settings is less consistent and less abundant in the literature.

The greater frequency of common infections in day care attendees could contribute to their more frequent GP visits and increased antibiotic use. Even though most of the common day care-associated infections carry a delayed or no

prescribing strategy, antibiotic prescribing may still be indicated in severe cases or more serious types of infections (such as pneumonia). However, although some studies suggested that younger day care attendees are at an increased risk of developing pneumonia, the prevalence in day care children was still extremely low, and overall, the evidence was not consistent.

Logic would dictate that an elevated incidence of infection will automatically be coupled with an increase in consulting, which in turn could be associated with greater antibiotic use. This makes sense, and it could be that the rate of antibiotic prescribing with respect to consulting is the same in day care and home-care children. This is why it is important that studies compare the *rate* of antibiotic prescribing per cases of infection (or per consultation) in day care and home-care children. This information remains absent in the literature. In spite of this, there is evidence to suggest that *nursery* attendees are more likely to receive antibiotics for reasons that extend beyond their increased incidence of infection. This review will now turn to considering the evidence behind these suggestions.

2.6 Social Explanations for Day care Attendees' General Practice Consultations and Antibiotic Consumption

2.6.1 Overview

Day care attendees' frequent use of general practice and high rates of antibiotic prescribing could be explained by social factors, in addition to clinical explanations. This section focuses on nursery settings, unless the term 'day care' has been used by authors that have not defined what this entails (and so may have included nurseries and/or childminder settings).

I will begin this section by exploring the evidence regarding DCPs' thresholds for excluding children from nursery (on the grounds of sickness), and the influence this may have on parents' consulting and antibiotic-seeking behaviours. Research touching on DCPs' knowledge and understanding of antibiotic indications will also be explored, as this could also impact parents' consulting and treatment seeking behaviours. Finally, the factors contributing to GPs' prescribing decisions will be considered, underlying the important role social factors play in shaping decisions to prescribe antibiotics.

2.6.2 DCPs' exclusion thresholds

One explanation for nursery children's increased risk of antibiotic use could be a direct consequence of clinicians' tendencies to adjust their prescribing decisions, in light of the knowledge that a child attends nursery. In a survey study by Schwartz and colleagues (1997), 71% of GPs and 53% of paediatricians reported that they would prescribe antibiotics to a child with green nasal discharge (n=350). In a second vignette, the same clinical symptoms were presented, with addition of the fact that the child attended day care. 94% of GPs and 95% of paediatricians now reported that they would prescribe. The main explanations for this, according to the clinicians, were pressure from parents, and a desire to help parents return to work sooner by expediting re-admittance to day care. The economic and work-related burden associated with exclusion has been suggested as a reason for parents' desires to return children to day care as quickly as possible (Carabin et al., 1999b; Kahan et al., 2005; Pappas et al., 2000). Consequently, day care exclusion alone could contribute to GP consultations and antibiotic-seeking behaviour. This highlights the indirect role DCPs' exclusion practices could have on parents' management of their child's symptoms. As a result, various studies have focused on DCPs' exclusion thresholds, and the degree to which exclusion decisions are evidence-based.

Landis et al (1988) used a cross-sectional survey to elicit American DCPs' (n=302), parents' (n=134) and paediatricians' (n=69) thresholds for sickness-exclusion from

nursery settings. There were no official guidelines on sickness exclusion at the time of study, and nurseries were under no obligation to have a sickness exclusion policy. The survey, distributed within three counties within North Carolina, asked respondents to select the most appropriate course of action in relation to eight common day care infections. Responses were multiple choice, ranging from “do nothing” to “call the parent for immediate pick-up”. Symptoms scenarios were repeated using children of different age groups, with or without the addition of fever. Overall, DCPs and paediatricians had vastly contrasting views in relation to a number of infections. For example, 61% of DCPs versus only 26% of paediatricians felt that conjunctivitis required immediate exclusion. Immediate exclusion for diarrhoea was selected by 64% of DCPs versus 14% of paediatricians. Fever also had a significantly greater impact on DCPs’ readiness to immediately exclude children (relative to paediatricians). Parents’ responses were consistently somewhere between that of DCPs and paediatricians.

This pioneering study was the first to highlight the disparities between paediatrician and DCPs’ opinions surrounding the correct management of common day care infections, and raised questions regarding the evidence-basis of DCPs’ exclusion decisions. However, the study had a number of limitations. All staff within each day care setting completed the questionnaire, but the authors did not mention whether all staff had the authority to make exclusion decisions. In the UK and Canada, exclusion decisions in nurseries are generally made by senior members of staff holding management or supervisory roles (Skull et al., 2000). If this is true for the sample used in this study, the non-managerial staffs’ responses may not reflect true practice, and the ‘average’ results reported could have been skewed. The validity of this study is also compromised by the vague symptoms presented in the questionnaire. For example, as discussed earlier, diarrhoea can carry different meanings to different individuals. Likewise, conjunctivitis has a very strict set of diagnostic criteria that non-medical respondents might not be aware of. To lay audiences, it could present as anything from ocular discharge, to an inability to open the eyes. Thus paediatricians, parents, and DCPs could have had different symptoms in mind.

American exclusion recommendations for day care settings were introduced in 1992, and updated in 2002 (American Public Health Association & American Academy of Pediatrics, 1992). A postal-survey, distributed to 79 DCPs (from 10 nurseries) and 36 paediatricians in the state of Maryland, examined DCPs' exclusion thresholds, and their beliefs of how effective exclusion would be for 12 symptoms (Copeland et al., 2005). Responses were compared to national guidelines, revealing that DCPs tended to over-exclude children, whilst paediatricians under-excluded. Most DCPs excluded for all of the symptoms which did not warrant exclusion, and were significantly more likely to exclude when compared to paediatricians. These symptoms included 'red eyes with watery discharge', and 'coloured nasal discharge for 5 days'. Survey responses also revealed that significantly larger proportions of DCPs (relative to paediatricians) incorrectly believed exclusion was effective for reducing the spread of ear infections, conjunctivitis, fever and 'runny nose'. Test-retest methods increased the reliability of these results, and content validity of the questionnaire was strengthened through preliminary focus group discussions with DCPs, parents and paediatricians. However, the survey was limited by its sample size and make-up. Although 79 DCPs were surveyed, most were not responsible for making exclusion decisions (sampling only occurred from ten nurseries). Responses might not be representative of manager/directors' practices, but it is also possible that similar views/beliefs were shared amongst staff working in the same day care setting. In either case, the study would have benefitted from using a larger sample of nurseries.

Like the work by Landis *et al.*, the study by Copeland *et al.* revealed discrepancies in exclusion attitudes of DCPs and paediatricians. The latter study also demonstrated a lack of compliance to national guidelines. There was also some suggestion that DCPs' incorrect exclusion practices might be linked to incorrect beliefs, but this theory was not developed by the authors- possibly due to the superficial level of information collected through the survey.

Another American survey distributed to a random sample of 'manager' DCPs in Virginia (n=183) asked respondents about their exclusion policies for various

common childhood symptoms (Pappas et al., 2000). Results showed that even the mildest of symptoms could result in exclusion. For example, 80% of DCPs reported that they would allow children with clear nasal discharge to continue in nursery as normal, but this figure dropped to 29% if the discharge was coloured. Similarly, a Canadian survey of randomly selected Ontario-based DCPs (from 36 nurseries) also found that green nasal discharge resulted in exclusion in almost 60% of reported policies (Skull et al., 2000). Both of these studies will be considered in more detail later, but they demonstrate that certain symptoms, such as coloured nasal discharge, could be an important trigger for exclusion, despite this not being advised in national guidelines. DCPs' impressions of coloured discharge have not been explored any further, and their reasons for excluding (assuming their reports reflect practice) remain unknown.

Finally, surveys containing vignettes have been used by Copeland and colleagues (2006) in Maryland, and more recently adapted for a survey distributed in Milwaukee (Hashikawa et al., 2010). In both studies, reported exclusion practices were compared to national guidelines. Similar to their above study, Copeland *et al.* included manager DCPs (n=192), paediatricians (n=215), and parents (n=223) in their sample, and found further support for their earlier conclusion that DCPs tend to over-exclude while paediatricians are more likely to under-exclude. Overall, however, paediatricians had the highest compliance (74% of vignettes correct), followed by parents (61%) and DCPs (60%). The most marked significant differences in compliance between DCPs and paediatricians were seen for RTIs and conjunctivitis. Importantly, there was great variation in compliance amongst DCPs from different nurseries (Copeland et al., 2006).

The Hashikawa *et al.* (2010) study on DCPs (n=305) used the vignettes adapted from the above study, but only presented symptoms that did not warrant exclusion (according to national guidelines). Almost 60% of DCPs made *at least* one unnecessary exclusion, confirming that non-compliance was still occurring, despite guidelines having been available for 19 years. The authors also reported that knowledge of the official guidelines' existence was not associated with greater compliance.

To summarise, North American surveys have found that unnecessary exclusions from nurseries are common, even when national guidelines are available. There are also discrepancies in infection management beliefs of DCPs and paediatricians.

2.6.3 GP visits and antibiotic-seeking behaviour

Exclusion could indirectly trigger unnecessary GP consultation and antibiotic prescribing, but survey-based evidence suggests that DCPs also encourage parents to consult GPs and seek antibiotics in a direct manner.

Pappas *et al.* (2000) found that 20% of 183 American DCP survey respondents (from Virginia) excluded children with coloured nasal discharge *until they acquired* a doctor's clearance note. The Canadian survey mentioned earlier (36 Ontario-based manager DCPs) by Skull *et al.* (2000) also asked DCPs about their tendencies to advise 'physician' referrals and antibiotic treatment. 70% reported to have made an exception to exclusion on the basis of a child having an antibiotic prescription in the past six months. When asked about the last child they excluded, 20% had *required* antibiotic treatment. This is particularly problematic given DCPs' poor knowledge of when antibiotics were indicated: 20% believed they were required for colds, 40% for coughs, and 33% for sore throat. Furthermore, 64% had advised a physician visit for the last child they excluded. Holding certain beliefs about antibiotics (e.g. antibiotics speed up recovery) was significantly more likely to be associated with requesting antibiotic treatment, although the confidence intervals for these risk ratios were large (e.g. DCPs holding the view that antibiotics prevent bacterial infection were 13.9 times more likely to request antibiotic treatment, but the 95% CI was 1.9-103.4). Similarly wide confidence intervals were found for other beliefs featured in the survey, most likely owing to the small sample (n=36).

As well as its small sample size, the findings of Skull *et al.* were limited as authors did not ask about the severity and duration of symptoms. Pappas *et al.* focused on

actual policies rather than specific experiences (as was the case in the study by Skull *et al.*), but still failed to report details of how altering symptom severity affected exclusion policies. Although there was an attempt to link practice with beliefs in Skull *et al.*'s study, the closed 'yes/no' questions were not suitable for obtaining meaningful, theory-generating data.

2.6.4 Influence on parents

The extent to which parents' behaviours are influenced by DCPs is a largely unexplored area. Surveys discussed above suggest that DCPs' actions could theoretically influence parents' consulting/treatment seeking behaviours, but this was not considered from parents' perspectives. Friedman *et al.* (2003) attempted to address this by administering a survey to 85 manager DCPs and 211 parents from 36 randomly selected nurseries in Massachusetts. Surveys explored: 1) DCPs' policies in relation to RTIs, 2) the extent to which parents were familiar with their nursery's policies, and 3) parents' general knowledge regarding RTIs and antibiotic treatment. Three symptoms were considered: clear nasal discharge, green nasal discharge, and cough. None of these are indications for exclusion, physician referral or antibiotics. Over 75% of DCPs at least 'sometimes' excluded for coloured nasal discharge and cough, and more than 65% required physician clearance for these symptoms. As discussed in other studies, this is further evidence that DCPs' policies do not always reflect national guidelines, and suggests that DCPs recommend general practice consultations. However, parents' survey results showed that they rarely felt pressurised by their DCPs to consult physicians or obtain antibiotics. Parents also had misconceptions regarding antibiotic indications, with the majority believing antibiotics were required for green nasal discharge (73%) and bronchitis (88%). Multivariate regression models, including demographic factors and nursery policy factors, revealed that only parental knowledge was a significant predictor of tendencies to consult for the three symptoms. Knowledge scores were also the only significant predictor of parents having the misconception that antibiotics expedited return to day care.

This led the authors to conclude that parent factors, rather than DCPs' practices, explain consulting behaviour.

One major criticism of the above study is that DCPs' *recommendations* for antibiotic treatment and knowledge of antibiotic indications were not measured. These factors could have been associated with parental knowledge, and/or parental misconceptions that antibiotics can speed up return to day care. The authors emphasise that parents did not feel *pressurised* by DCPs, but this does not necessarily mean that they were not influenced by DCPs.

A second paper by the same study team describes a longitudinal (6 week) study conducted on a subset of their original sample of DCPs. DCPs from 29 nurseries completed 'absence diaries', recording reasons for exclusion, and recommendations made to parents. DCPs also completed a series of questions that gauged knowledge of antibiotic indications, similar to the questions completed by parents in the paper discussed above. Like previously discussed research, misconceptions regarding antibiotic indications were common. 80% of DCPs believed that antibiotics were necessary for coloured nasal discharge and bronchitis. In addition, over a quarter felt that flu and cold-related illnesses would get better faster with antibiotic treatment. Interestingly, these results are similar to those arising from the parental antibiotic knowledge assessment as Bronchitis and coloured nasal discharge were incorrectly believed to require antibiotics by most parents. The authors did not find many examples of DCPs recommending antibiotics to parents, although this could be misleading, as the infections that warranted treatment (according to DCPs' knowledge tests) rarely presented in the six week observation period. Nonetheless, it is interesting that parental and DCP misconceptions of antibiotic indications were similar, even though the authors described each group in separate papers. It is possible that knowledge and beliefs surrounding antibiotic use is diffused through the various groups associated with a given nursery, leading to lay beliefs being shared by members of these social networks. Thus, DCP beliefs could influence parental beliefs, which in turn shape parental actions when their children become ill. To date, no study has looked at this possibility.

2.6.5 GPs' prescribing decisions

In light of day care attendees' high antibiotic use, it could be argued that DCPs' and parents' behaviours are irrelevant, as the final decision to prescribe rests with the GP (or other clinician). An in-depth discussion of clinicians' decision-making is beyond the remit of this thesis, but I will briefly describe the array of factors that have been reported to shape prescribing decisions.

There is a duality to the role of GPs, as they are expected to act as individual patient advocates, whilst also acting as societal agents concerned with wider public health issues (Davey et al., 2002). Inappropriate prescribing can occur despite doctors being aware of antibiotic resistance and clinical guidelines (Butler et al., 1998b; Watson et al., 1999). The pressure to deliver quality care in busy healthcare settings can offer some explanations to why overprescribing occurs. For example, diagnostic uncertainty can lead GPs to air on the side of caution as they prescribe to avoid missing serious infections (Coenen et al., 2000; Moro et al., 2009; Pichichero, 1999), thereby minimising the risk of patient deterioration and future accusations of malpractice. Writing a prescription for antibiotics can also be perceived as less time consuming (and resource-intensive) than convincing patients that antibiotics are not required (Björnsdóttir & Hansen, 2002; Kumar et al., 2003), particularly in cases where a patient is likely to later obtain antibiotics from another GP .

In addition to these practical decisions, social factors contribute to GPs' prescribing decisions. Interviews and observational work have revealed that GPs sometimes prescribe antibiotics if they feel their patient desires or expects this treatment (Björnsdóttir & Hansen, 2002; Butler et al., 1998b; Petursson, 2005). This can preserve positive doctor-patient relationships (Butler et al., 1998b), as GPs communicate their desire to appear altruistic and understanding of the stresses patients face outside of the consultation (e.g. difficulties managing exclusion from day care, taking time off work) (Björnsdóttir & Hansen, 2002; Petursson, 2005). This could explain why knowledge that a child attends day care

can encourage GPs' decisions to prescribe (Jong et al., 2009; Schwartz et al., 1997). Looking at paediatric prescribing specifically, a survey of American paediatricians suggested that the main indicator for inappropriate prescribing in children was parental pressure (Bauchner et al., 1999), and Israeli and UK-based studies report GPs' frequent feelings of being pressurised to prescribe antibiotics (Britten & Ukoumunne, 1997; Kahan et al., 2006). Similarly, two Italian studies found that the greatest determinant for prescribing antibiotics to children was doctors' perceptions of parental expectations, although this did not necessarily fall in line with GPs' reported ideas of what guides their prescribing decisions (Ciofi degli Atti et al., 2006; Moro et al., 2009). There is a danger of oversimplifying complex behaviours here, especially when conclusions are based on isolated figures and statistical models. In reality, it is much more likely that clinicians will have individual ideas of what the most important determinants of their prescribing practices are, and even these ideas are not necessarily fixed.

Although texts often make reference to 'patient-exerted pressure', GPs can overestimate patient/parent expectations (or desires) for antibiotics (Altiner et al., 2004). This has also been shown for parents consulting on behalf of children (Cockburn & Pit, 1997; Mangione-Smith et al., 1999; Stivers et al., 2003). Conducting unrushed consultations and delivering follow-up care have been found to be better predictors of patient/parent satisfaction than prescribing antibiotics (Barden et al., 1998; Nordlie & Andersen, 2004). This is why some authors have specified GPs' *perceptions* of patient/parental expectation as being a predictor for prescribing (Coenen et al., 2006), rather than actual expectations.

The fact that an array of non-clinical factors can influence GPs' prescribing practices highlights the importance of DCPs implementing realistic, evidence-based exclusion practices. Pichichero (2002) discusses inappropriate day care exclusion as a societal problem, as there are economic consequences for disrupting parents' work commitments. Furthermore, uncertainty regarding DCPs' individual re-admittance policies could encourage 'pre-emptive prescribing', in the interest of saving time and money, and ultimately, helping parents. For example, Rose *et al.* (2006) conducted a qualitative study to explore GPs' attitudes to

prescribing antibiotics for conjunctivitis. GPs' prescribing was influenced by their perceptions of day care requirements, which in turn related back to their assessments of how to achieve parental satisfaction. Prescribing antibiotics for the sake of appeasing DCPs was a familiar scenario to GPs. This clearly demonstrates how DCPs' exclusion decisions alone can be an important trigger to the eventual receipt of antibiotics.

Finally, it is worth mentioning that inappropriate antibiotic prescribing can encourage future consulting, and reinforce (or create) expectations for treatment in the future (Vinker et al., 2003; Watson et al., 1999). Adopting a delayed prescribing strategy can reduce future consultations (Moore et al., 2009). Watson *et al.* (1999) found significant correlations between parents' beliefs and their doctors' prescribing practices. Parents who believed green nasal discharge required a GP consultation were more likely to be registered at practices that frequently prescribed antibiotics for this symptom. In London, patients belonging to high prescribing practices were more likely to hope for an antibiotic prescription than those in lower prescribing practices (Britten & Ukoumunne, 1997). Of course, it is possible that parental/patient expectations were the determinant of prescribing behaviour. Regardless of how the problem is viewed, this can be seen as a self-perpetuating issue.

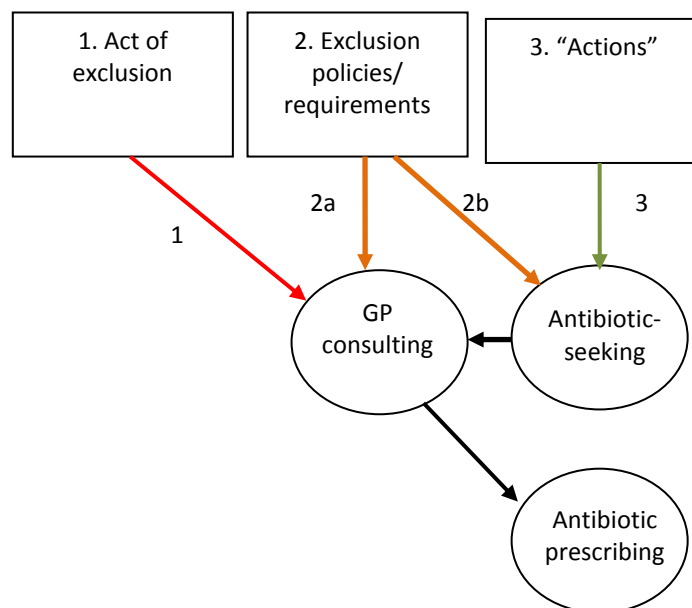
A recent meta-ethnography of GPs' views surrounding antibiotic prescribing has succinctly summarised the topics discussed above (Tonkin-Crine, 2011). The authors underline the importance of basing interventions to reduce inappropriate antibiotic prescribing on the factors that GPs report being influential to their prescribing decisions. On this basis, a close examination of possible day care-related triggers to consulting, and antibiotic-seeking, are warranted.

2.6.6 Section summary

Based on this section, it seems that there may be direct and indirect pathways through which DCPs could influence GP consulting and antibiotic prescribing in

day care children. Figure 2.1 summarises some of the pathways that may exist. This thesis does not intend to create a model of cause and effect relationships, but summarising *some* of the possible pathways that (partially) explain the phenomena under research is useful for organising ideas and developing theories.

Figure 2. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on the literature



The first pathway is based on suggestions that exclusion itself pressurises parents to consult GPs in a bid to expedite return to day care (although this has never been directly investigated). Consulting could result in inappropriate prescribing as a consequence of non-clinical factors that can influence GPs’ prescribing (e.g. perception of parental expectation). GPs’ awareness of a child’s day care enrolment could also increase tendencies to prescribe. This indirect pathway leading from DCPs’ exclusion decisions to the eventual receipt of antibiotics reinforces the importance of DCPs limiting exclusion to cases where it is necessary. However, research conducted to date suggests that exclusion beliefs/practices often go against evidence-based guidelines.

The surveys reviewed in this chapter showed that some DCPs require (or have policies that request) ‘physician clearance’ or antibiotic treatment for certain

infections/symptoms. These policies or requirements could be seen to directly encourage consulting/antibiotic-seeking behaviours (pathways 2a and 2b). Seeking antibiotics will normally be coupled with consultation to obtain the treatment sought (as shown by the arrow connecting 'antibiotic-seeking' and 'GP consulting'). The non-clinical factors influencing GPs' prescribing decisions could be particularly influential if a parent really is hoping for antibiotic treatment.

Finally, one survey found that DCPs reported making exceptions to exclusion on the basis of antibiotic treatment- an 'action' which could also encourage parents to seek treatment (pathway 3), and eventually go on to consult and receive antibiotics through the mechanisms described above.

The suggested pathways are based on the evidence available to date, all of which has been derived from surveys. This could result in over-simplification of potentially complex social issues. There is also ambiguity surrounding many of the terms used in the surveys reviewed (e.g. are 'policies' or 'requirements' written, verbal, strict, flexible, etc.), making it difficult to make sense of the suggested pathways. Furthermore, the outcomes of interest (i.e. parents' behaviours) are based on assumptions. No study has explored these issues from parents' perspectives. Finally, the North American setting of the surveys conducted make generalisations to other countries problematic, as American and Canadian day care regulations/training may be country-specific. The healthcare sectors are certainly different to the UK, having implications for the culture of consulting general practice and/or seeking treatment. The issues of exclusion practices for common infections, and DCPs' knowledge and beliefs surrounding common infections, have never been rigorously researched in the UK.

On an international level, the surveys discussed comprise the only research that has been conducted in the area of DCPs' management of childhood infections. Whilst the results are interesting, no research has attempted to build a deeper understanding of DCPs' management of childhood infections. Survey methods can have validity issues, where researcher's/respondent's interpretations of questions/answers differ. All surveys conducted in this area failed to consider the

effects of symptom variation, severity, duration and other non-clinical factors that may influence DCPs' decision making. Furthermore, most questions featured in the surveys discussed were multiple-choice, limiting the ways in which respondents could answer. In cases where little is known regarding the research phenomenon, imposing the researchers' preconceptions on participants can yield biased, invalid data. The reductionist nature of survey methods is a problem when studying complex, multi-factorial issues, such as the management of children's health. To date, no study has considered DCPs' management of childhood infections in an inductive manner, and we are yet to understand how DCPs make exclusion decisions, or why these decisions are made. Furthermore, no study has truly explored DCPs' knowledge of antibiotics, and the situations and manner in which DCPs recommend these to parents (if at all). We are also yet to understand the influence day care attendance has on parents' beliefs or ways of managing their children's infections. One survey has asked parents if they felt their DCP pressurised them to consult/seek antibiotics, but this question had negative connotations, and may not have been the most suitable approach to exploring this topic. Parents might not feel pressurised, but their behaviour can still be influenced by DCPs, with or without parents' awareness.

2.7 UK Guidelines

Exclusion from day care can occur in the interest of the child or other children in the day care setting (i.e. to minimise transmission) (Copeland et al., 2005, Kahan et al., 2005). When a child is distressed or in danger, the decision to exclude is clear. The problem arises when children are excluded on the grounds of potential infection transmission (Shapiro et al., 1986).

Many childhood infections have periods of infectiousness before and after the onset and resolution of symptoms (Landis et al., 1988). This is especially true for viral skin infections and some RTIs. In these instances, excluding to prevent cross infection might have little benefit. A review of 41 childhood infections only

managed to define periods of infectiousness for 11 conditions (Richardson et al., 2001). Some of these infections have been summarised in table 2.1 (see below).

The Health Protection Agency (HPA) has produced the only official UK-based exclusion guidance for infectious illnesses in day care environments (HPA, 2010b). DCPs are under no obligation to follow these guidelines. However, DCPs are required to have some form of sickness exclusion policy, as dictated by the Care Social Standards Inspectorate Wales (CSSIW) and the Office for Standards in Education Excellence (OFSTED) in England. This review will only consider the CSSIW's requirements, though these are similar to that of OFSTED. In Wales, DCPs operating for more than two hours a week are expected to register with CSSIW (Welsh Assembly Government, undated). According to CSSIW's requirements:

"[Childminders/ day care providers] should have a policy about the exclusion of children who are ill, which is discussed with parents. This includes a procedure for contacting parents or another adult designated by the parent, if a child becomes ill while in the [day care provider's] care. The [day care provider] notifies the other parents if a child they are caring for is diagnosed as having an infectious disease."

(Welsh Assembly Government., 2002a; Welsh Assembly Government., 2002b; Welsh Assembly Government., 2003)

DCPs are therefore obligated to have sickness exclusion policies. The nature of these policies, their details, and the resources used to write them, remain unknown.

A summary of common day care-associated infections, and the HPA's exclusion recommendations, can be seen in table 2.1 (alongside periods of infectiousness). As can be seen, most infections do not require exclusion providing the child is 'well'. No further details are given regarding what being 'well' entails. For example, a child might feel well enough to remain in day care, but not be at their optimal level of health. It is understandable that it is impossible to specify exclusion policies in detail. DCPs' judgment is thus of central importance.

The HPA's guidelines mention that antibiotics may be used for impetigo and whooping cough. Diarrhoea and vomiting cases are considered equally, regardless of the causative agent. However, the number of episodes or severity of cases has not been specified. This is an important consideration, as diarrhoea in particular is commonly experienced by young children who might not necessarily have an infection. Symptoms/infections such as coughs, colds, rhinitis and otitis media have not been mentioned in the HPA guidelines. The reasons for this are unclear. It could be that DCPs should assume that these symptoms do not warrant exclusion.

Table 2.1 Periods of exclusion and infectiousness for common day care infections

INFECTION	PERIOD OF EXCLUSION	PERIOD OF INFECTIOUSNESS
<u>SKIN</u>		
Molluscum contagiosum (HPA, 2010c)	None	Uncertain
Hand, foot and mouth (HPA, 2010d)	None	Just before onset of symptoms, until blisters have healed, but could persist in faeces for weeks
Ringworm (Victorian Government Health Information [VGHI], 2008a)	Usually none	As long as the fungus persists
Roseola infantum (Netdoctor, 2005)	None	Most infectious when fever starts (before rash appears), lasting until 3 days after symptoms resolve
Scabies (VGHI, 2008b)	Until first treatment	From 4-6 weeks before onset of symptoms, until treated
Chickenpox (NHS, 2009c; Richardson et al., 2001)	5 days from onset of rash	2 days before rash appears until 5 days after rash has disappeared
Impetigo (VGHI, 2008c)	Until lesions are healed or crusted over, or 48 hours after antibiotic commencement	As long as open sores persist
<u>GASTROINTESTINAL</u>		
Diarrhoea and vomiting	48 hours from last episode	Varies, depending on cause
<u>RESPIRATORY and OTHERS</u>		
Tonsillitis (NHS, 2009c)	None	Varies, depending on cause.

Glandular fever (NHS, 2009c)	None	Up to 50 days before symptoms appear until at least 2 months from onset of symptoms
Conjunctivitis (HPA, 2010e; Richardson et al., 2001)	None	From time symptoms appear, up to 2 weeks after first appearance.
Flu (NHS, 2009c)	Until recovered	1 days before symptoms appear until 5 or 6 from onset of symptoms
Whooping cough (HPA, 2010f)	5 days from onset of rash, or 3 weeks after onset of symptoms	1-2 weeks before onset of symptoms until 3 weeks after first sign of symptoms
Common cold (NHS, 2009c)	Not mentioned	1-2 days before symptoms appear until symptoms reside.

Sources: Compiled using the HPA's guidance (2010); Richardson et al's review (2001); the Victorian Government Health Information (VGHI) (Australian); HPA Factsheets (individual references in table); and NHS Choices / 'Netdoctor' websites.

2.8 Chapter 2 Conclusion

This review has established that day care attendance is associated with more frequent GP visits, and increased antibiotic use. It seems that the explanation behind this is multi-factorial, and could be attributed to both clinical and social reasons.

The current literature suggests that day care attendees experience similar infections to those of the general pre-school population, most of which are viral and/or self-limiting. There is no convincing body of evidence to suggest that day care attendees experience more serious types or more severe manifestations of infections relative to home-care children, but further research is required to investigate these possibilities.

In addition to the above, surveys suggest that social factors may contribute to day care attendees' increased antibiotic use and GP visits. These social issues involve numerous stakeholders, including parents, employers, DCPs and clinicians. DCPs' non-evidence-based exclusion decisions, misconceptions regarding antibiotic indications, and their tendencies to request antibiotic treatment/GP

consultations, have been proposed as factors that encourage parents to consult GPs, and/or seek antibiotics. Qualitative studies of GPs' prescribing decisions have found that knowledge of day care enrolment, and perceived parental expectations, can increase the likelihood of prescribing antibiotics.

The review has exposed two gaps in the research. Firstly, there has been no research devoted to describing the nature of UK-based DCPs' sickness exclusion policies. Secondly, on a global scale, there is a lack of in-depth research that seeks to understand and explain infection management from DCPs' perspectives. This includes understanding the ways they respond to infections, the reasons behind their decisions, and their knowledge of how infections should be dealt with. Linked to this, is a lack of understanding of how DCPs' actions and communications influence parents' tendencies to consult GPs and seek antibiotic treatment. It may be that parents' knowledge and personal beliefs are the sole factors that predict these behaviours, but no study has investigated this by considering parents' perspectives in an in-depth manner.

The previous survey-based studies described in this review are important in that they have played a role in exposing these research gaps. The studies themselves do not address these gaps, as the methodological approaches taken were not suitable for yielding valid, meaningful data. Exclusion decisions and the general management of childhood infections are likely to be dependent on situational factors, severity, and child behaviour. These factors have not been accounted for, and certainly cannot be understood through the closed response questions used to generate data.

This thesis will therefore attempt to address the identified research gaps, beginning with a general description of UK-based DCPs' sickness exclusion policies. This will be followed by addressing the primary research aim: to conduct an in-depth exploration of DCPs' management of day care infections, and the influence this might have on parents' consulting and antibiotic-seeking behaviours.

CHAPTER 3: QUESTIONNAIRE SURVEY METHODS

3.1 Introduction

This chapter will discuss the methods employed in the first phase of the study. The aim of 'phase one' was to generate basic descriptive data regarding day care settings and their sickness exclusion policies. A self-administered questionnaire was the most appropriate approach to data collection.

The chapter begins with a justification for using social survey methodology, and the questionnaire method itself. Next, the preparatory work and design issues considered in the planning of the questionnaire will be discussed, followed by an overview of the questionnaire's content. Issues of sampling will be addressed next, including discussions about sample numbers, the geographical areas from which the sample would be derived, and the exclusion criteria adopted. An overview of the recruitment methods will follow this. The chapter concludes with a description of how data from this phase of the study were analysed.

3.2 Social Survey Methods

A social survey is a method of gathering information from a population of interest. This can sometimes include every member of a population, but more commonly uses a representative sample taken from the population one wishes to study (Kelley et al., 2003). If samples are of a suitable size and free from bias, statistical generalisations may be made to the wider population.

Surveys tend to be descriptive, analytical, or a combination of both. As suggested by the name, descriptive surveys aim to describe the attributes, attitudes or

actions of a population. Analytical surveys tend to test theories by generating evidence that either supports or rejects hypotheses (Buckingham & Saunders, 2004). The data arising from surveys is usually numeric, allowing for a quantitative analysis of results. This can take the form of descriptive statistics (e.g. frequencies, averages, ranges, proportions) or analytical statistics (e.g. tests of difference).

Surveys methods can either take the form of face to face structured interviews (where an interviewer delivers questions to participants), structured telephone interviews, or self-administered questionnaires (sometimes dispatched via post), where participants read/complete the questions themselves (Bryman, 2008). In each case, the questions are presented in a standardised manner.

Phase one of the study aimed to generate descriptive data from as many day care settings as possible, and within a relatively short time frame (four months). A survey method was, in many ways, the only practical way of achieving this.

Conducting face to face interviews could have yielded valid data, as there would have been opportunities to aid participants' comprehension of questions. However, this approach would have limited the maximum sample size achievable within the allocated time-frame, as there would have been a requirement to travel around a wide geographical area.

Structured telephone interviews have potential to collect large volumes of data whilst remaining at the research base. This can save time and is not as resource-intensive as face to face interviews. Both telephone and face to face interviews have the advantage of minimising incomplete responses or missing answers, and allow the interviewer to note down the reason for any missing answers. The main barrier to using telephone interviews in this study was the potential for multiple choice response options to introduce bias, where participants are more likely to recall options given later down the list (i.e. those most recently heard). This is especially true when there is a long list of options, as was the case with many of the questions in my survey. Furthermore, both telephone and face to face interviews had potential to be needlessly disruptive for the DCPs running the

targeted day care settings, as there was a chance that the DCP in charge would not be able to complete the interview without interruption (given the nature of their work). This can be particularly problematic in survey research, as there is an aim to delivery questions in as standardised a way as possible. The risk of disruption was thought to be minimised if participants were free to complete the questionnaire at a time of their choosing (which may not be planned in advance, and could be outside of working hours).

There were many justifications for using self-administered questionnaires distributed via post. Firstly, there is potential to reach a larger sample at less cost when compared to face to face interviews. Although there is usually a requirement to wait for responses, this time can be used effectively by coding and analysing the responses already received. Distributing self-administered questionnaires via post also removed the obligation to complete the questionnaire all at once, as would be the case with telephone and face to face interviews. Furthermore, self-administered questionnaires allowed DCPs to see the multiple choice answers, minimising the issues of bias discussed above.

There were also many limitations to using self-administered questionnaires, including difficulties in securing a high response rate, problems with participant comprehension and interpretation, and issues of measurement validity. Steps taken to minimise the effects of these limitations will be discussed throughout this chapter, beginning with the next section. A more detailed discussion of the strengths and limitations of using self-administered questionnaires can be seen in the discussion (section 9.2.1).

3.3 Preparatory Phase

A typical limitation of questionnaire surveys is their lack of face validity, where questions fail to measure the concepts the researcher intended to study. People with experience or expertise in the field concerned can be consulted for advice, to ensure that the right questions are being asked in an appropriate manner

(Bryman, 2008). In preparation for developing the questionnaire, six DCPs were individually visited (three childminders and three nursery managers). During these meetings, I discussed the objectives of the research, and presented the draft questionnaire. DCPs studied the questionnaire items, commenting on their relevance, how well questions reflected day to day practice, and the ease of comprehension. DCPs also commented on the proposed recruitment process, offering their opinions regarding the time required for questionnaire completion, and incentives they believed would encourage participation. Further details of discussions about these meetings can be seen in appendix 3.1.

3.4 Questionnaire Design and Content

3.4.1 Design and format of the questionnaire

There is a great deal of cognitive work that occurs in the process of responding to a survey. According to Krosnick and Presser (2010), various motives may encourage respondents to put in the cognitive effort required for participation. These include motives such as altruism, the desire for self-expression, emotional catharsis, or intellectual challenge. In these instances, participants are more likely to place effort into providing good quality, accurate answers (referred to as 'optimising'). The converse of this, 'satisficing', can also occur, where participants provide the quickest and easier responses at the expense of quality and accuracy. This may occur with compulsory surveys, but can always come about if respondents become disengaged, bored, or experience difficulties in comprehension whilst completing any survey. It was therefore important to employ tactics that a) encouraged response, and b) made the experience of survey completion as positive as possible.

3.4.1.1 Language

Language comprehension is one of the main barriers to successful completion of self-administered questionnaires (Jenkins & Dillman, 1995). Simple language was

used (avoiding specialist terms or medical terminology) that was non-ambiguous and specific (rather than abstract). Questions dealt with one point at a time, and were written in an affirmative style (avoiding negations or double negations). A pilot questionnaire (see 3.5.2 and 3.5.4) gave participants opportunity to comment on any questions they had difficulties understanding.

3.4.1.2 Visual elements

Prior to verbal comprehension comes visual perception, where the spatial organisation and visual aesthetics of the questionnaire are processed by the recipient (Jenkins & Dillman, 1995). According to Dillman, the decision to respond to or discard a questionnaire is based on trade-offs between the perceived costs (e.g. time, mental effort) and rewards (e.g. feelings of altruism, mental stimulation, financial incentives) of completion. Potential participants will make initial judgments on the work required on the basis of visual information such as perceptions of length, detail, and written requirements.

Aesthetically, in accordance with Bryman's (2008) recommendations, the type face was consistent throughout the questionnaire (easy to read, consistent font style and sizes). Consideration was given to how 'spread out' questions were, but this needed to be balanced against minimising the number of sheets used for the questionnaire. According to a systematic review of the factors affecting questionnaire response rates, the length of the questionnaire is one of the most important determinants, with shorter questionnaires being more likely to be returned (Edwards et al., 2009). This led to a number of questions being re-designed or discarded. For example, similar questions were combined into a table, where respondents placed ticks for numerous scenarios under one of three overarching categories. This reduced the length of the questionnaire, and minimised risk of boredom/frustration on the reader's behalf. The questionnaire was also streamlined by mentally justifying the purpose each question served. According to Sudman and Bradburn (1982), questions that have been included purely "because it would be interesting to know..." should be removed if they do not make clear contributions to the research objectives. Questionnaire items that

could not be justified in relation to the aim of 'phase one' were therefore abandoned, although some were preserved if they formed 'talking points' for issues that needed to be discussed in DCP interviews (phase two).

Multiple choice questions were used for most questionnaire items to minimise the effort required for completion. Discrete, pre-set choices also made it easier to code responses for analysis. The preparatory talks with DCPs checked that the multiple choice options were realistic and sufficiently extensive, but an 'other' option was always provided (alongside a space for written details).

Visual elements and the spatial organisation of questionnaires are not only important in initial impressions, but are also important in ensuring the respondent does not get confused or frustrated as they are completing the questionnaire. Krosnick and Presser (2010) advise organising like-themed questions together. This approach was adopted, although I also separated the three main themes of the questionnaire into three sections. This emphasised the distinct themes, and minimised the likelihood of respondents becoming confused by similarly worded questions.

3.4.2 Themes

3.4.2.1 Main sections

The questionnaire consisted of three themed sections. The first, 'Characteristics of Day Care Setting', comprised questions about the day care setting, such as opening times, the number of children cared for, the number of staff, and funding sources. This information was essential for purposefully selecting interview participants to achieve a sample of maximum variation, based on characteristics that could influence exclusion practices. For example, more expensive, private settings could have been more or less lenient than council-funded, not-for-profit settings. The questionnaire had to be adapted for childminders. Most questions remained identical, with exception to some nursery manager-specific background

questions (e.g. 'how many staff do you employ?'). These were removed from the childminders' questionnaire.

The second section, 'Exclusion Policies for Unwell Children', was concerned with sickness exclusion policies. DCPs were requested to include a copy of this policy with their returned questionnaire. Questions focused on the content and details of policies, such as what sources they are based on, and what type of information they state (e.g. when to consult GPs, whether to seek treatment, etc.).

Respondents were required to select infections, presented in a table, that were mentioned in their policies. They were also asked to select which of these had specified periods of exclusion, and which they felt they needed more information about. A copy of the table of infections is shown below:

Table 3.1 Table of infections featured in questionnaire

	Mentioned ✓	Period of exclusion described ✓	I would like more information and guidance ✓
Rashes in general			
Details on specific rashes such as:			
Cold sores (Herpes simplex)			
Impetigo			
Slapped cheek syndrome			
Hand, foot and mouth			
Chickenpox			
Measles			
German measles (Rubella)			
Eye infection (Conjunctivitis)			
Ear infection (Otitis Media)			
Common cold			
Tonsillitis			
Whooping cough			
Flu			
Bronchitis			
Diarrhoea			
Vomiting			
Head lice			
Scabies			

This section served two purposes: the first was to provide information on how varied policies are in terms of the information they include (and how this is conveyed), and the second was to explore whether any of the policies mentioned antibiotic treatment/GP consulting. This idea was informed by the findings of the literature review, which suggested that information in policies could directly encourage GP consulting and antibiotic-seeking (and thus initiates a pathway leading to antibiotic prescribing) (pathways 2a and 2b in figure 2.1, page 67). The literature review also suggested that DCPs make exceptions to exclusion on the basis of antibiotic treatment- an ‘action’ which could encourage consulting behaviour and receipt of antibiotics via parents’ treatment-seeking behaviours (pathway 3 in figure 2.1). This section was designed to reveal any policies that made similar suggestions (e.g. by stating shorter exclusion periods on the condition of starting antibiotics).

The third and final section, ‘Support and Guidelines’, dealt with the guidance and support DCPs have when it comes to deciding which infection/condition the child has. Initial questions asked if DCPs have guidelines, where guidelines were obtained from, and whether the guidelines are part of the exclusion policy itself. DCPs were also asked whether they *personally* ever advise parents that their child might need antibiotics, or that they should consult a GP. This component of the questionnaire was designed to address the possibility that DCPs directly encourage parents to seek antibiotics or consult GPs, thereby triggering a pathway leading to antibiotic prescribing (through their advice /requirements). The literature review presented one study that suggested DCPs had ‘required’ antibiotic treatment, although it did not specify whether this was through verbal or written communication.

3.4.2.2 Opinion and judgment-based questions

Although the questionnaire was largely objective, some questions required DCPs to reflect, make judgments, and express opinion. For example, DCPs were asked how they perceive the support and guidance available to them, and how often parents influenced their exclusion decisions. The final question asked whether

DCPs would prefer to have standard sickness exclusion policies, written by health professionals. These topics were discussed in greater depth in interviews, but played a role in the purposeful selection of interview participants. Raising these topics in the questionnaire also had the advantage of preparing participants to discuss these issues face to face, if selected for interview.

3.5 Sample

3.5.1 The population of interest

The population of interest for this study was registered nurseries and childminder settings in South-East Wales. Nurseries comprised of those providing full and sessional care. No day care settings offering two hours of care or less were included, as these do not require formal registration with CSSIW.

Ideally, a representative sample of day care settings from across the UK would have been used, but this was not feasible given the time and budget allocation for the study. All targeted day care settings were regulated by CSSIW. The *people* the questionnaire was targeted at were DCPs that managed or led these day care settings.

3.5.2 Sample size

An adequate sample size that would allow for statistical generalisation to the wider population of nursery and childminder settings (in Wales) was desirable. At the time of sample calculation (March 2009), there were 3757 registered settings in Wales. The minimum number needed to achieve a 5% margin of error (at the 95% confidence level) around an estimate where the probability of each answer being selected was 50%, was 349. 50% was chosen as this is the most conservative probability when dealing with discrete data, and yields the greatest target sample size (in sample size calculations). According to the pilot run of questionnaires, I

expected a 70% response rate (14/20). Assuming the response rate for the actual study would be similar, the questionnaire needed to be sent to at least 499 day care settings to receive 349 responses.

3.5.3 Geographic area

3.5.3.1 Factors involved in choosing the study area(s)

Deciding upon the study area involved statistical and practical considerations. The study area(s) needed to:

- 1) Be easily accessible from the research base (for qualitative interviews in phase two of the study).
- 2) Contain sufficient numbers of registered nursery and childminder settings (to achieve adequate sample sizes).
- 3) Represent a range of populations (measured on socio-demographic factors), to maximise opportunities for statistical generalisation, and generate a sample of maximum variation for qualitative interviews.

The study area was limited to South-East Wales on account of travelling considerations for the next phase of the study, which involved an estimated 40-60 face to face interviews with questionnaire respondents (and parents using their services).

Though crude, socio-demographic statistics provide a rough indicator of the living and working circumstances of the inhabitants of an area. Choosing the areas from which sampling occurs lessened the likelihood of all participants being of a similar background. Socio-demographic statistics for each unitary authority in South-East Wales was considered by examining their Multiple Deprivation indices (MD indices) (Welsh Assembly Government, 2011). MD indices take into account a number of statistics, including education levels, housing, access to public services, and income. Comparisons between unitary authorities are made by comparing the proportion of 'super layer output areas' (areas with a set number of inhabitants;

'SLOAs') that had MD indices that fell above and below the Welsh national average.

A list of registered Welsh day care settings was obtained from CSSIW'S online database, which gave the numbers and names of day care settings in each Welsh Unitary Authority (CSSIW, 2007).

3.5.3.2 Selected areas

In light of the above considerations, the final selected unitary authorities were Cardiff, Monmouthshire and Merthyr Tydfil.

According to MD indices, Cardiff is very similar to the Welsh average (47% of SLOAs in Cardiff are more deprived than the Welsh national average, 53% less deprived). Monmouthshire had a much lower MD index, with only 21% of its SLOAs more deprived than the Welsh average. Merthyr Tydfil, however, has 81% of its SLOAs with higher deprivation than the Welsh average, and was thus the most deprived of the three study areas. One potential problem with the selected areas was that Cardiff was considerably larger and more densely populated with day care settings relative to the other areas. However, as half of the SLOAs within Cardiff fell below the Welsh national average (with the other half above), this unitary authority was sufficiently diverse in itself.

162 nurseries and 377 childminder settings were found across the three study areas, leading to a potential sample of 539. However, three nurseries and three childminders were removed from the sample, on account of their involvement in the planning of the study (the preparatory meetings). This led to an overall sample of 533 day care settings (159 nurseries, 374 childminder settings).

3.5.3.3 Other sampling frame options

Other sampling frame options were considered but rejected for various reasons. One option was to include the whole of South-East Wales, which included a range of contrasting unitary authorities. However, there were practical drawbacks with

this approach, as participants needed to be within easy access for interviews, and the large sample number of respondents would be unmanageable in the allocated time. This sample size would also have surpassed what was required to achieve adequate levels of precision for data analysis. Researchers should refrain from placing unnecessary burden on a population, and exercise strategic use of research budgets.

Another option was to focus on one unitary authority, sending the questionnaire to all nurseries and childminder settings. The unitary authority needed to be selected on the basis of how diverse it was in terms of deprivation, and the abundance of day care settings it had. None of the unitary authorities in South-East Wales satisfied these criteria.

The decision to focus on a selection of unitary authorities was the most appropriate option because it: a) offered a more practical alternative to covering the entirety of South-East Wales, b) avoided reducing the sample size too far, and c) allowed for adequate socio-demographic variation.

3.5.4 Practical setbacks: changes to sample size

As previously discussed, generating a sampling frame for selection of interview participants was an important function of the questionnaire. During the pilot study, only 30% of targeted DCPs returned their questionnaire within two weeks (without reminders) (6/20). 14 telephone reminders were undertaken at the two week point, resulting in eight additional responses over the next four weeks. An overall 70% response rate was achieved six weeks after initial dispatch (14/20). The dangers of these delays being repeated in the final distribution of questionnaires would have been detrimental to the second phase of the study, as qualitative data collection, transcription, and analysis are extremely time consuming. If anything, delays in the final dispatch were likely to be extended due to the substantially larger sample size. Consequently, I decided to increase the financial incentive for participation and reduce the questionnaire sample size, in

favour of ensuring the qualitative phase of the study would not be rushed. Reducing the sample size made it possible to increase the financial incentive within means of the study budget, and also reduced the time required for coding questionnaire responses (for analysis).

There was a considerable imbalance in the proportion of childminder to nursery settings, with the majority of the sample consisting of childminders (374/533, 70.2%). Thus, I reduced the target sample of childminders by 50%, on the basis of stratified random sampling based on the number of childminders in each of the three study areas. This resulted in a final target sample of 346, consisting of 159 nurseries (46%) and 187 childminders (54%).

The financial incentive for returning the questionnaire was maximised to match the upper limit of DCPs' estimations of what would constitute a worthy incentive for participation (discussed in the preparatory meetings [£20]).

3.5.5 Exclusion criteria

There were a number of exclusion criteria identified for nurseries and childminder settings.

3.5.5.1 Childminder settings

Childminders excluded from the study were limited to:

1. Those who only had experience of caring for children that were related to one another.
2. Those that had no experience of caring for children aged under 5 years.
3. Those who only had experience of caring for children before and after school.
4. Those not registered with CSSIW
5. Those who had assisted in the preparatory stages of the study

The first criterion was put in place to remove childminders that might not have been as concerned with cross infection as others (children who shared the same home were likely to be exposed to the same pathogens anyway). It was assumed, based on the literature review, that cross-infection would be a major reason for exclusion. Childminders are required to include their own children when quoting total numbers of children in their care (per day). Those caring for children from one family, in addition to their own, were thus included.

The second and third criteria were in place to exclude childminders caring for children aged 5 and above, as this study focused on common infections in pre-school aged children. Furthermore, caring for children before and after school differs to continuous care during the day. I also felt that the issues of cross-infection and exclusion would be less salient to DCPs that only cared for children for short periods before and after school.

The fourth criterion ensured that only legitimate childminders were included. Formally recognised Welsh day care businesses are required to register with CSSIW. Registration with CSSIW established that all childminders were following the same regulations, making it easier to administer the standardised questionnaire.

Finally, childminders I met with in the preparatory phase were not eligible for the study, as they were aware of the theoretical issues the study was trying to address, and had helped design the questionnaire.

Seeing as though I was using a random sample of childminders (rather than all childminders in the study areas), I was able to continue sampling until I had the desired target sample of 187. Eligibility was checked during recruitment (see 3.6).

3.5.5.2 Nurseries

On the outset of the study, excluded nurseries were limited to:

1. Those that did not cater for children aged 5 years or less.
2. Those not registered with CSSIW.

3. Those managed/run by nursery managers who had assisted in the preparatory stages of the study.

Reasons for these restrictions were similar to those described for childminders.

3.6 Recruitment and Sample Adjustments

3.6.1 Overview

All targeted day care settings were sent a questionnaire pack via post, addressed to the DCP in charge. The CSSIW website was used to obtain contact details (CSSIW, 2007). Unlike nurseries, childminders' addresses were rarely publicly available; the only contact information provided were email addresses and telephone numbers. Each of the randomly selected 187 childminders were telephoned to obtain their postal addresses. This also acted as a filter that identified which childminders had no interest in participating. In these events, the next childminder on the CSSIW alphabetical list was contacted, to ensure the target sample size of 187 was achieved. Prior contact also allowed me to determine eligibility.

All nurseries in the study areas were sent questionnaires⁴. Eligibility of nurseries was determined by consulting CSSIW inspection reports (CSSIW, 2007), which contained information about the age groups each nursery caters for. All nurseries offered continuous care for full days or half days.

3.6.2 Nurseries removed from sample during recruitment/data collection

During data collection, a number of additional nurseries were excluded. Reasons for this fell into three categories:

⁴ No prior contact was needed, as nurseries had publicly available postal addresses.

1. The business was no longer operating at the time of data collection;
2. Contact details provided by CSSIW were incorrect, and correct information could not be obtained by alternative means (e.g. internet searches, telephone directories);
3. DCPs had re-directed their questionnaire to more senior staff members who worked at other nursery branches within the franchise.

17 nurseries were removed from the sample during recruitment/ data collection. Table 3.2 shows the number of nurseries excluded for each of the above reasons.

The final sample of eligible day care settings that were sent questionnaires totalled 329 (142 nurseries, 187 childminders). Table 3.3 and Figure 3.1 summarise how this target sample size was reached.

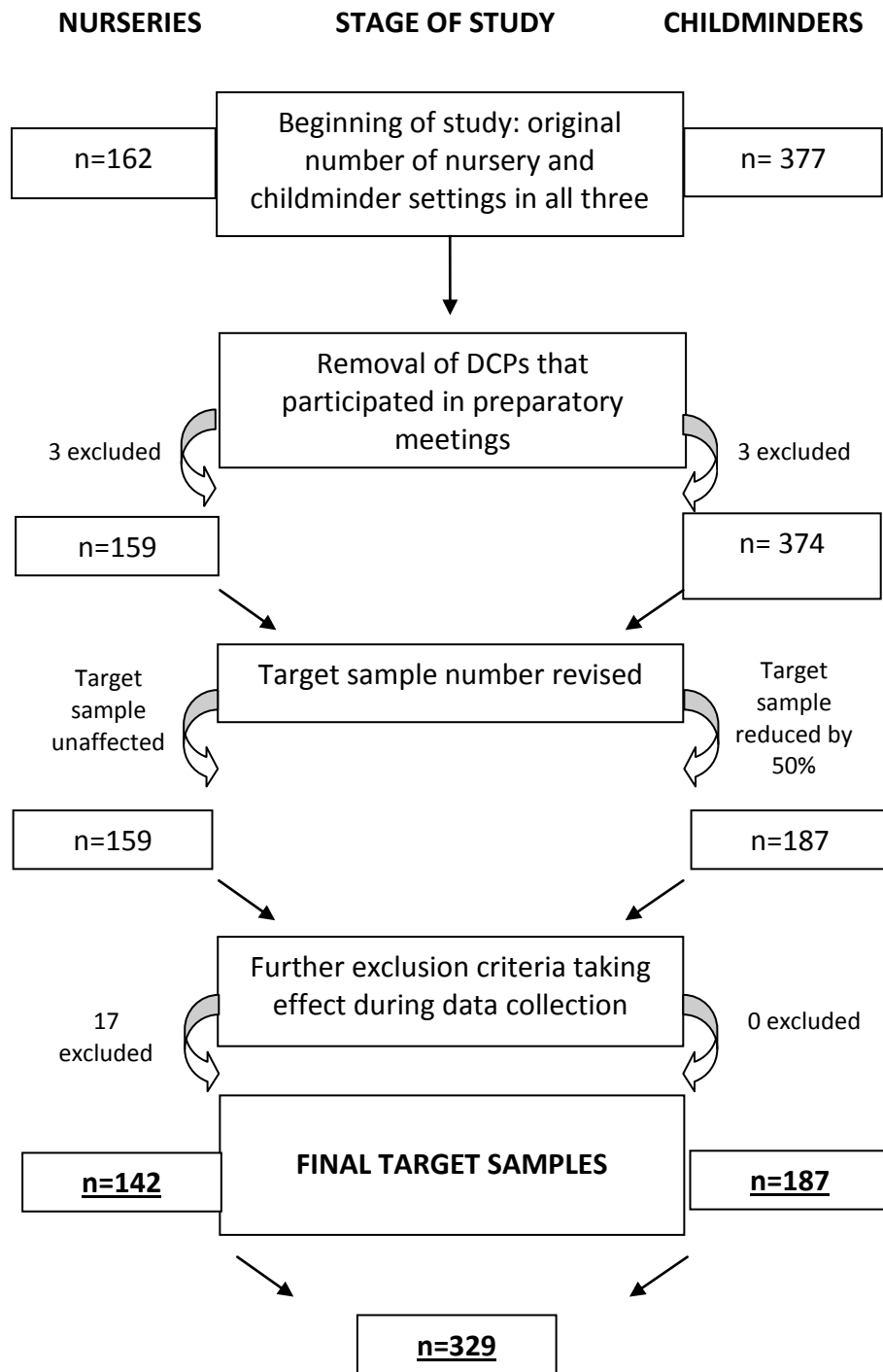
Table 3.2 Number of nurseries excluded from each study area, shown for each exclusion criterion (n=17)

	Study Area				
	Cardiff	Monmouthshire	Merthyr Tydfil	Total	
Reason For Exclusion					
	No longer in business	3	3	2	8
	Incorrect contact details	3	0	1	4
	Excluded as part of franchise	5	0	0	5
	Total	11	3	3	17

Table 3.3 Number of day care settings excluded from each study area throughout key stages of planning the study, and data collection

Area	Type of day care setting	Original number of day care settings in area	Number of day care settings after considering preliminary meetings	Number of day care settings after target sample reduction	Number of day care settings excluded during recruitment/ data collection	Final number of day care settings targeted
Cardiff	Nursery	97	96	96	11	85
Monmouthshire	Nursery	42	41	41	3	38
Merthyr Tydfil	Nursery	23	22	22	3	19
All areas	Nursery	162	159	159	17	142
Cardiff	Childminder	267	266	133	0	133
Monmouthshire	Childminder	81	80	40	0	40
Merthyr Tydfil	Childminder	29	28	14	0	14
All areas	Childminder	377	374	187	0	187
All areas	All DCPs	539	533	346	17	329

Figure 3.1 Changes in target sample size over the course of the study



3.6.3 Incentives for participation

With regards to the actual mail shots, the process of retuning questionnaires was made as simple as possible by using pre-addressed, pre-paid envelopes. Financial incentives usually encourage response rates (Gilbart & Kreiger, 1998), with definite incentives favoured over lottery systems (e.g. prize draw) (Ulrich et al., 2005). A £20 incentive was the maximum the study budget would allow, and was deemed appropriate having taken the length of the questionnaire and the busy nature of day care settings into account.

3.6.4 Questionnaire packs: letters, cover sheets, consent forms and information sheets

Head DCPs from each day care setting received questionnaire packs in the post, consisting of the following:

- 1) A letter explaining the study (appendix 3.2). This was personalised to the DCP in charge of the setting. This has been shown to encourage response (Edwards et al., 2009).
- 2) A participant information sheet (appendix 3.3) that provided DCPs with a justification of the research and what their participation would entail. Instructions on how to fill out and return the questionnaire were outlined. Participants were made aware of the ethical guidelines in place during this research, including their rights to withdraw from the study (or decline initial participation) without giving a reason. The process by which anonymity would be achieved was explained, and participants were assured of the confidentiality of their data.
- 3) A consent form (appendix 3.4), which required participants to confirm that they had read and understood the information sheet, and agreed to participate in the study. Forms were signed and dated, and returned with the questionnaires.

- 4) The questionnaire, with a detachable cover sheet (appendix 3.5). The cover sheet asked for descriptive information (e.g. name, location, and contact details of the DCP). This information was detached once the questionnaire was returned, maintaining participants' anonymity. Each participant was allocated a unique code. This was printed on the actual questionnaire and cover sheet (which were stored separately).
- 5) Pre-paid postage envelopes were included to encourage response (Edwards et al., 2009).

3.7 Analysis

Questionnaire results were analysed quantitatively, producing descriptive summaries of the data (frequencies, proportions etc.).

The main outcome measures of the questionnaire were reported as the proportions of DCPs that chose each of the multiple choice options to particular questions. This information was presented in tables and charts.

Once the descriptive statistics had been summarised, the data were grouped according to the nature of the DCP respondent (i.e. childminder or nursery manager), with the intention of testing for differences between the two groups. It was anticipated that the different nature of care provided by these two groups could be associated with different types of exclusion policies, and different responses to opinion-based questions (e.g. how frequently parents disagree with exclusion, or how frequently parents influence exclusion decisions). Furthermore, the nursery manager/childminder divide was a clear route to categorising respondents, as there are different support organisations associated with nursery and childminder settings. This was known prior to conducting analysis (discovered in preparatory meetings).

Grouped data were sorted into contingency tables, and subjected to Chi-square tests (or Fisher's exact tests, where appropriate). These statistical tests were all

performed within SPSS and Prism, while descriptive statistics were charted using a combination of SPSS (version 16) and Microsoft Excel (Office 2007).

Finally, I carried out an additional analysis of the re-admittance requirements expressed in the sickness exclusion policies returned with questionnaires. A 're-admittance requirement' referred to the conditions that needed to be fulfilled in order for the child to be re-admitted to nursery once excluded. This could be anything from staying away for a stated period of time, to taking specific actions (such as going to the doctor, or receiving treatment). These re-admittance criteria were compared to HPA guidance.

3.8 Chapter 3 Conclusion

This chapter has outlined the methods employed in the first phase of the study. A questionnaire-based survey method was adopted to describe Welsh nursery and childminder settings' sickness exclusion policies, and gather basic descriptive data that would assist in the purposeful selection of interview participants.

The multiple choice questionnaire was sent, via post, to 187 childminders and 142 nursery managers in three socio-demographically contrasting areas of South-East Wales. Data from questionnaire responses were analysed descriptively using SPSS and Microsoft Excel. Tests for statistical differences between meaningful groups of data (childminders versus nursery managers) were conducted where appropriate.

The next chapter of the thesis will describe the main findings of the first phase of the study.

CHAPTER 4: RESULTS OF QUESTIONNAIRE

4.1 Introduction

This chapter will summarise the main results of the questionnaire, presented in the following sections:

4.2: Response Rates- gives details about the sample, disaggregated by geographical area.

4.3: Characteristics of Respondents- considers the types of DCPs that responded, including their years of experience, and details about their day care settings (e.g. size, funding, etc).

4.4: Sickness Exclusion Policies- presents the main findings of the questionnaire, with particular reference to the nature and content of day care sickness exclusion policies.

4.5: Symptom Guidelines- looks at the resources DCPs use to recognise symptoms of common childhood infections.

4.6: Interactions with Parents- presents results concerning: a) the advice DCPs offer parents; b) how frequently parents influence exclusion decisions; and c) how frequently parents challenge exclusion decisions.

4.7 Details of Policies- deals with DCPs' *actual* sickness exclusion policies returned with questionnaires. The content of the policies have been analysed, and the various 're-admittance requirements' for specific infections have been summarised and compared to the HPA's official guidance. As not all DCPs

provided a copy of their policy, this analysis is based on a subset of the original sample.

4.8 Conclusion- provides a summary of the findings.

4.2 Response Rates

Questionnaires were sent to 329 day care settings (142 nurseries, 187 childminders). 216 DCPs returned the questionnaire (78 nursery managers, 138 childminders), creating an overall response rate of 65.7%. Details of response rates by study area and DCP type are shown in table 4.1. Significantly more childminders than nursery managers returned their questionnaire (73.8% vs. 54.9%, $p < 0.001$). There were no significant differences in response rates across areas for either DCP type ($p = 0.3$ for nurseries, $p = 0.7$ for childminders).

Table 4.1 Response rates for nurseries and childminders in the three study areas

Area	Day care setting type	Number of questionnaires sent	Number of responses	Response rate (%)
Cardiff	Nursery	85	51	60.0
Monmouthshire	Nursery	38	17	44.7
Merthyr Tydfil	Nursery	19	10	52.6
All areas	Nursery	142	78	54.9
Cardiff	Childminder	133	96	72.2
Monmouthshire	Childminder	40	31	77.5
Merthyr Tydfil	Childminder	14	11	78.6
All areas	Childminder	187	138	73.8
All areas	All DCPs	329	216	65.7

4.3 Characteristics of Respondents

4.3.1 Nature of day care businesses

All childminders were independent, and funded privately (mainly by clients' fees). For nurseries: 37 were privately funded and independent (47.4%); 11 were privately funded and belonged to a franchise (14.1%); nine were subsidised by local councils (11.5%); 16 were funded by 'other' sources (20.5%); and five gave no answer (6.4%).

4.3.2 Opening hours

One nursery manager did not provide this information. Based on 77 responses, was an equal split of nurseries offering 'full' (n=37, 48.1%) and 'sessional' (n=40, 51.9%) care. Most childminders (n=136, 98.6%) provided full day care, with two operating in the mornings only (1.4%).

4.3.3 Size

The number of children each day care setting could accommodate acted as a proxy for size of settings.

The largest capacity nursery could accommodate 150 children, and the smallest catered for 10 children (range= 140; median= 30; upper quartile= 48; lower quartile= 24). Those nurseries with less than 24 children per day were considered 'small'; those with over 48 were labelled 'large', and those from 24-48, 'medium'.

Childminders operated under a standard policy stating that they were permitted to care for a maximum of six children (including their own) on any given day.

4.3.4 Nursery managers’/childminders’ experience

Nursery managers’ and childminders’ length of childcare experience ranged from one to 38 years. For nursery managers, the mean was 10.2 years (median= 9 years); for childminders, the mean was 11.7 years (median= 10.5 years).

There was no significant difference between nursery managers’ and childminders’ years of experience (data were not normally distributed. Mann-Whitney U= 4415.5, p=0.25).

4.4 Sickness Exclusion Policies

4.4.1 How many DCPs had sickness exclusion policies?

Most DCPs reported having a sickness exclusion policy (n=209, 96.8%). Seven did not have a policy (3.2%). Of those who had a policy, all but one childminder had this in writing. The breakdown of nursery managers and childminders that reported they did/did not have policies can be seen in table 4.2. Table 4.3 shows the number and proportion of DCPs (with policies) that had their policy in writing. Unless stated otherwise, the remaining data in this section concerns *DCPs with a policy* (n=209 for all DCPs: n=76 for nurseries and n=133 for childminders).

Table 4.2: Numbers and proportions of DCPs with and without sickness exclusion policies (n=216)

	Nursery managers (%)	Childminders (%)	All (%)
Have policy	76 (97.4)	133 (96.4)	209 (96.8)
Do not have policy	2 (2.6)	5 (3.6)	7 (3.2)
Missing	0 (0)	0 (0)	0 (0)

Table 4.3: Numbers and proportions of DCPs with policies that had their policy in writing (n=209 for all DCPs, n=76 for nursery managers, n=133 for childminders)

	DCP type		
	Nursery managers (%)	Childminders (%)	All (%)
Is policy in writing?			
Yes	76 (100)	132 (99.2)	208 (99.5)
No	0 (0)	0 (0)	0 (0)
Missing	0 (0)	1 (0.8)	1 (0.5)

4.4.2 Who writes DCPs' sickness exclusion policies?

Table 4.4 shows DCPs' reports of who had written their sickness exclusion policies. Most DCPs (n=194, 92.8%) reported that they had produced their policy themselves.

Table 4.4 Information provided by DCPs regarding who wrote their sickness exclusion policies (n=209 for all DCPs, n=76 for nursery managers, n=133 for childminders)

	DCP type		
	Nursery managers (%)	Childminders (%)	All (%)
Who were DCPs' policies written by?			
Themselves	70 (92.1)	124 (93.2)	194 (92.8)
Other	4 (5.3)	7 (5.3)	11 (5.3)
Unsure	2 (2.6)	1 (0.8)	3 (1.4)
Missing	0 (0%)	1 (0.8)	1 (0.5)

The eleven DCPs that selected 'other' provided written details. In all cases, the name of an organisation or health professional was provided (referred to as 'external body/person'). Tables 4.5 and 4.6 summarise this information. Some DCPs named more than one external body/organisation.

Table 4.5 Written responses provided by nursery managers selecting 'other' (n=4 [one nursery manager wrote two answers])

External body/person	Number of nursery managers
Wales Preschool Providers' Association	2
Care and Social Standards Inspectorate Wales	1
Local Council	1
Health Visitor	1

Table 4.6 Written responses provided by childminders selecting 'other' (n=7 [one childminder wrote two answers])

External body/person	Number of childminders
National Childminding Association	4
Childminders' Group	1
Health Visitor	1
Care and Social Standards Inspectorate Wales	1
Another DCP	1

4.4.3 Resources used to compile sickness exclusion policies

DCPs were asked to select the resources (multiple choice) that had been used to compile their policies. Those reporting that they did not write their own policy were included here, as there was a possibility that they would still know this information. In any case, a 'not sure' option was available. The proportion of DCPs choosing each multiple choice option can be seen in charts 4.1, 4.2 and 4.3, for all DCPs, nursery managers, and childminders, respectively. Some DCPs selected multiple options.

Chart 4.1 Proportion of sickness exclusion policies formed using various resources (data from all DCP respondents: n=209)

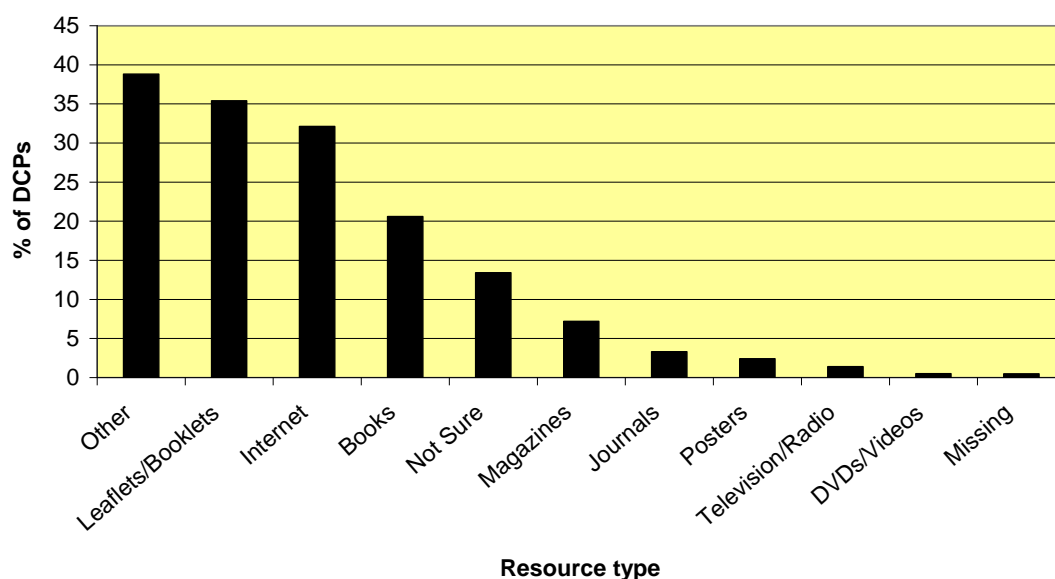


Chart 4.2 Proportion of nursery managers reporting that their policies were formed using various resources (n=76)

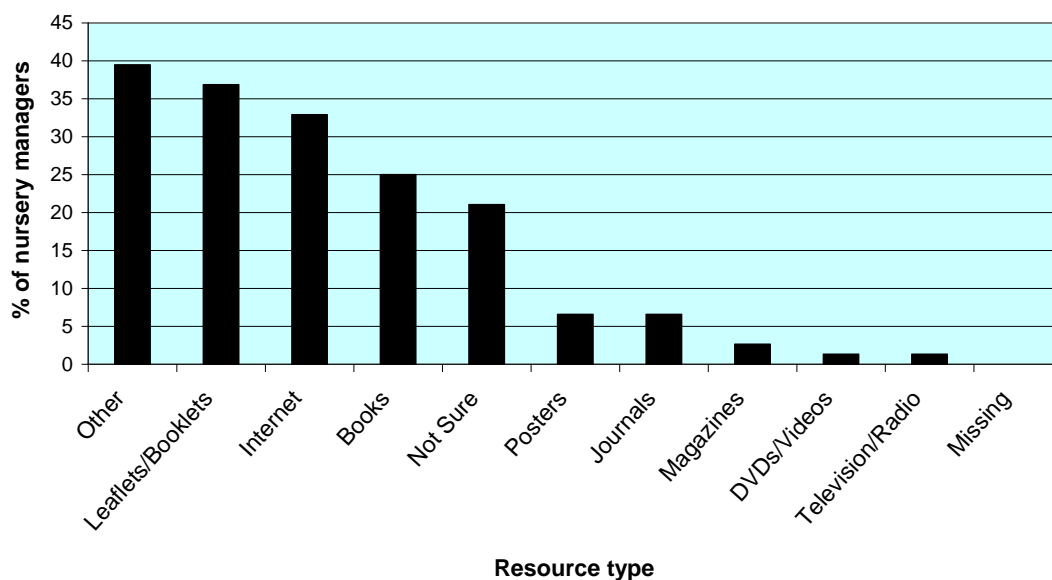
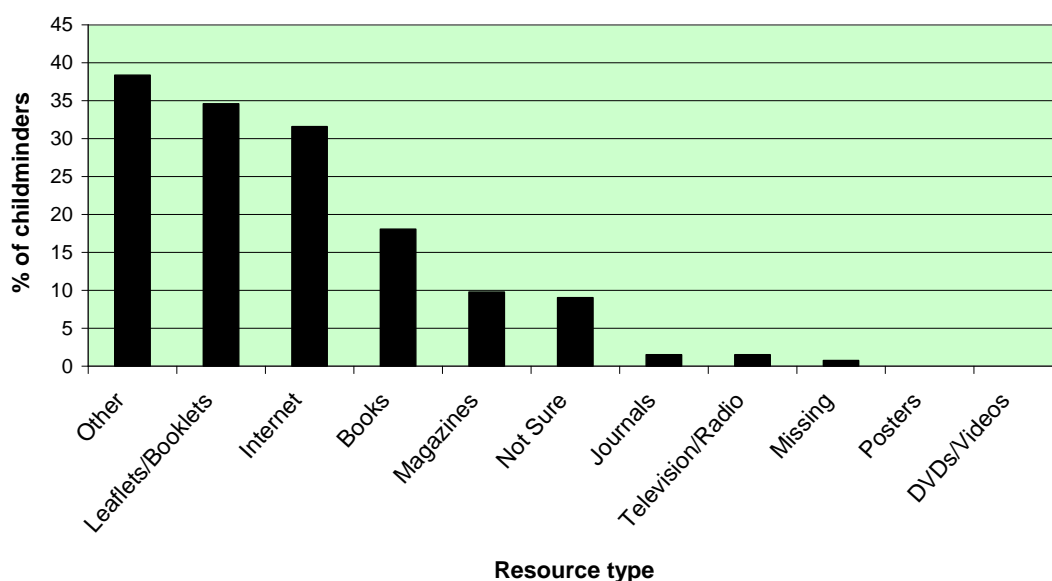


Chart 4.3 Proportion of childminders reporting that their policies were formed using various resources (n=133)



The most popular multiple choice option across all DCPs was ‘Other’, followed by ‘Leaflets/ booklets’, ‘Internet’, and ‘Books’. 16 nursery managers (21.1%) and 11 childminders (8.3%) were not sure what resources were used to produce their policies. Two of these nursery managers and three of these childminders had not produced the policy themselves.

DCPs were also asked to write down specific source names. For example, those who ticked the 'Internet' option (as a resource) could have provided specific websites (as a source), while those ticking 'books' could have provided titles/authors. Not all DCPs provided written details. Of those who did (numbers presented in brackets in table captions), some mentioned multiple sources. The results were organised into categories, and are presented in tables 4.7 and 4.8.

Table 4.7 Number of nursery managers specifying various sources in written responses (n=28)

Named resources	Number of nursery managers
Wales Pre-school Providers Association	14
Health and Safety Guide	3
Care and Social Standards Inspectorate Wales	3
Other Website	2
Other Nurseries	2
NHS Direct	2
National Public Health Service	2
National Day Nurseries Association	2
Local Authority	2
Pharmacist	1
Parent Doctor	1
Health Visitor	1

Table 4.8 Number of childminders specifying various sources in written responses (n=59)

Named resources	Number of childminders
National Childminding Association	42
Care and Social Standards Inspectorate Wales	5
NHS Direct	4
Health Visitor	2
Other Childminder	2
Nursery	2
National Childminding Standards	2
Childminding Course	2
Health Professionals	1
Social Services	1
Health Authority	1
HPA	1

The most popular named source for nursery managers was the Wales Pre-school Providers' Association (WPPA) (n=14, 50%). Most childminders that provided

written answers named the National Childminding Association (NCMA) (n=42, 71.2%).

Some of the sources DCPs reported to have consulted in compiling their policies were identical to the external bodies/organisations that some DCPs claimed had 'written' their policies. Having viewed some of the sickness exclusion policies included with the questionnaires, it was clear that some DCPs had extracted information from documents produced by the WPPA/NCMA to use in their own policies, while others had simply photocopied these documents and used them as the policy itself. There was certainly some overlap in what DCPs interpreted as 'sources' and 'resources'. Inconsistent interpretation of questions (across DCPs) influenced responses here (see chapter nine, sub-section 9.2.1.6).

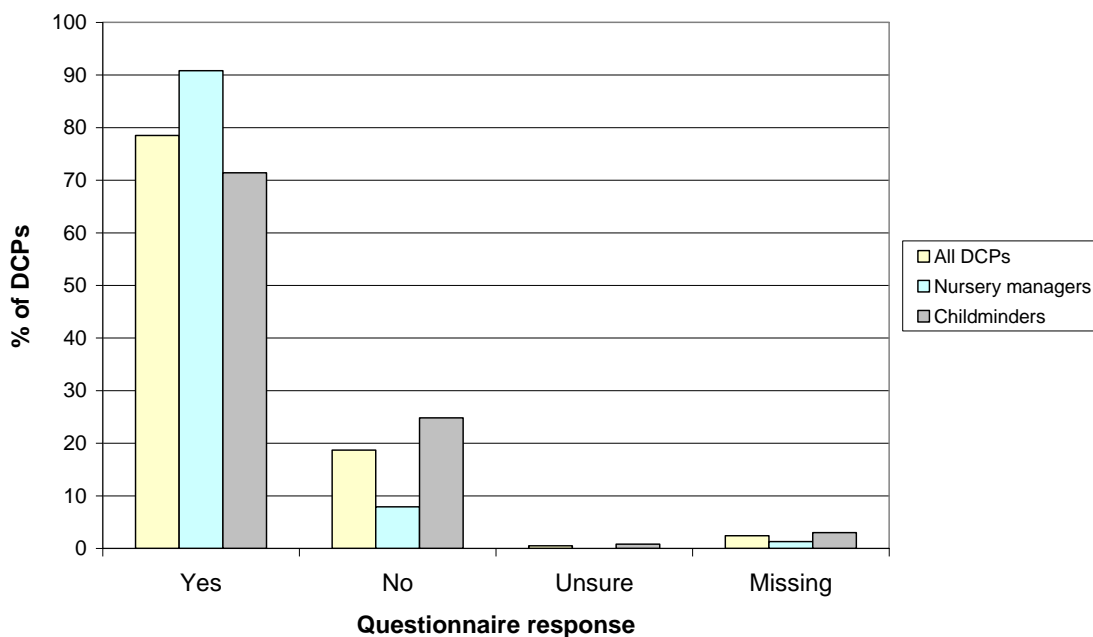
4.4.4 Type of information included in sickness exclusion policies

The questionnaire asked if sickness exclusion policies: a) mentioned periods of exclusion for infections; b) mentioned periods of exclusion in relation to antibiotic treatment, and c) advised GP visits.

4.4.4.1 Exclusion periods

Most DCPs stated that their policies specified exclusion periods (n=164; 78.5%). This included 69 nursery managers and 95 childminders. The proportion of nursery managers that reported this was particularly high (90.8%) and comparatively lower for childminders (71.4%). Only one DCP, a childminder, reported that they were unsure (0.8%). An overview of responses has been represented in chart 4.4.

Chart 4.4 Proportion of DCPs that report having periods of exclusion specified in their policies (n=209 for all DCPs; n=76 for nursery managers; n=133 for childminders)

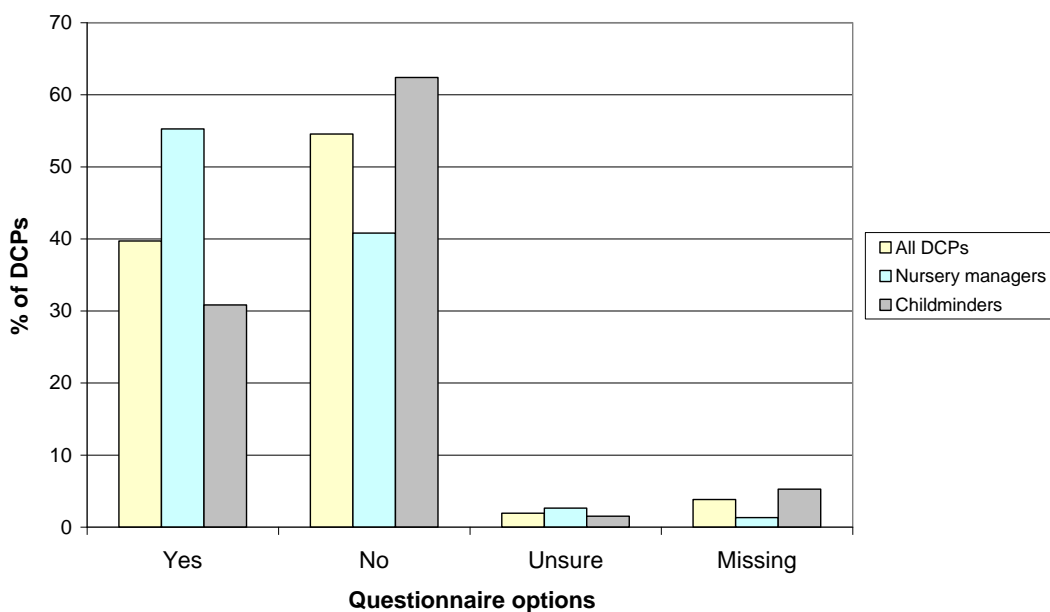


Significantly more nursery managers reported that their policies included periods of exclusion when compared to childminders (Fisher’s exact test: $p < 0.01$; $RR = 1.2$, $95\% CI = 1.1-1.4$), suggesting that nursery policies are more likely to have periods of exclusion mentioned. Contingency tables for Fisher’s exact testing included DCPs that answered ‘Yes’ or ‘No’- missing data and ‘unsure’ answers were not included. This approach has been used for all Fisher’s exact calculations.

4.4.4.2 Antibiotic treatment

DCPs were asked if their policies mentioned specific periods of exclusion for children that were taking antibiotics. 83 DCPs (39.7%) reported having this information in policies. 42 nursery managers (55.3%) had this information in policies, compared to 41 childminders (30.8%). A significantly greater proportion of nursery managers reported this information in their policies, compared to childminders (Fisher’s exact test: $p < 0.001$, $RR = 1.7$, $95\% CI = 1.3-2.4$). A summary is shown in chart 4.5.

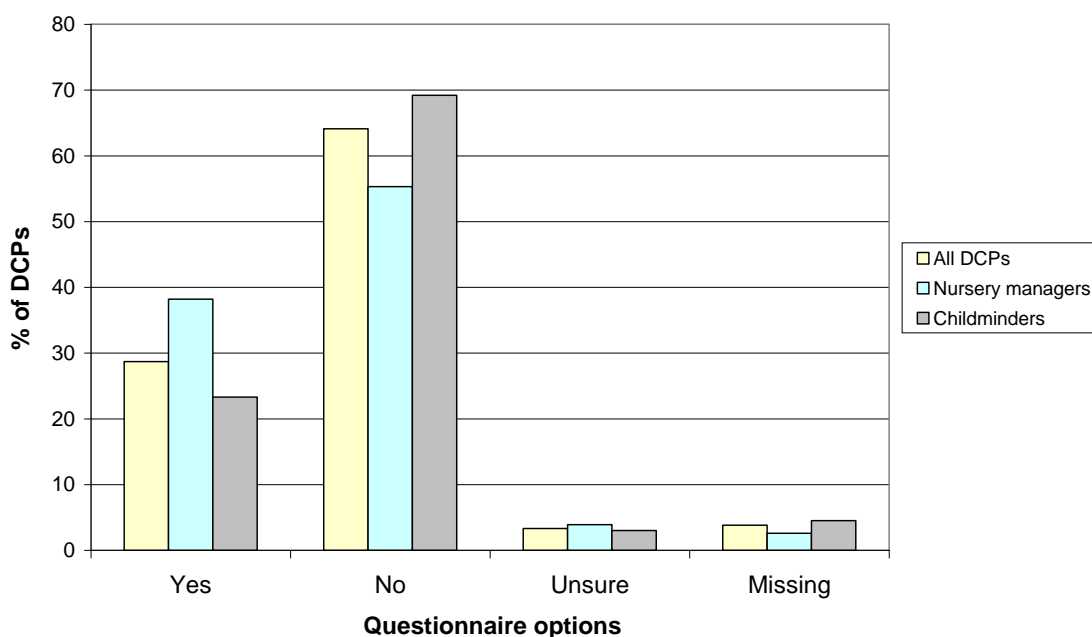
Chart 4.5 Proportion of DCPs that report having periods of exclusion for children who are taking antibiotics mentioned in their policies (n=209 for all DCPs; n=76 for nursery managers; n=133 for childminders)



4.4.4.3 GP consultations

DCPs were asked if their policies mentioned the need to consult a GP. This sort of information was not common within written policies. Only 60 DCPs (28.7%) answered ‘yes’ (29 nursery managers, 31 childminders). Again, a greater proportion of nursery managers (38.2%) specified GP visits in their policies compared to childminders (23.3%). Nursery managers were significantly more likely to report including these details than childminders (Fisher’s exact test: $p < 0.05$, RR= 1.6, 95% CI= 1.1-2.5). Results are presented in chart 4.6.

Chart 4.6 Proportion of DCPs that report having GP consultations specified in their policies (n=209 for all DCPs; n=76 for nursery managers; n=133 for childminders)



4.4.5 Mentioning specific infections in policies

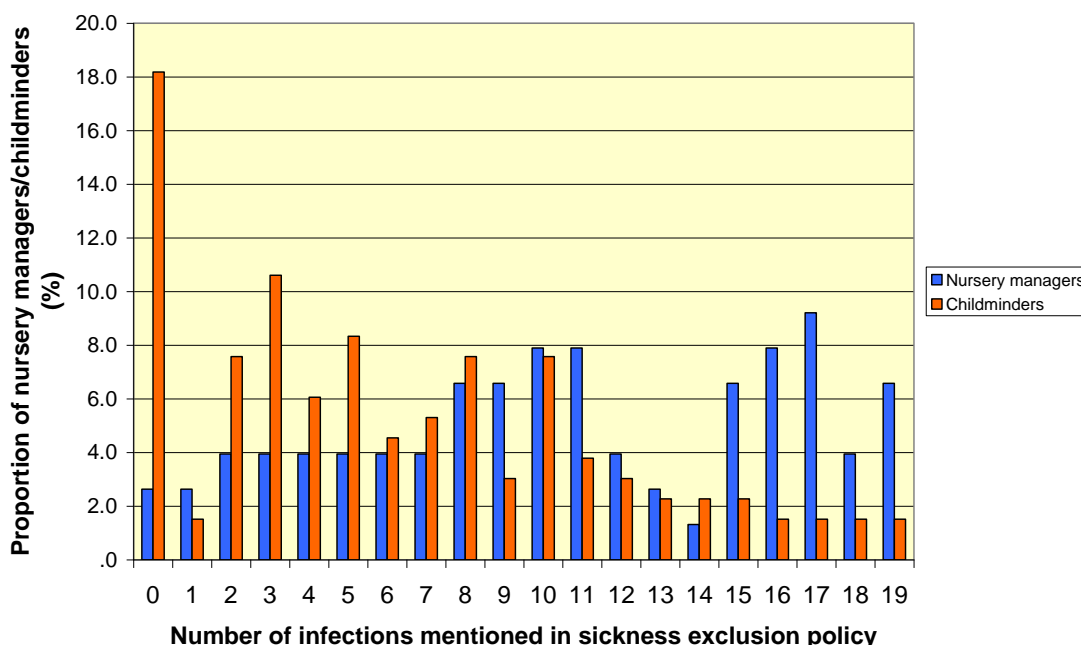
Exclusion policies were extremely varied at the individual DCP level. A list of common childhood infections⁵ was presented in a table within the questionnaire. DCPs were required to: a) tick the infections mentioned in their policies; b) tick the infections they had specified *exclusion periods* for; and c) tick the infections they wanted more information about. No tick was considered to be a negative response (e.g. infection was *not* mentioned in the policy). This had implications for distinguishing ‘missing answers’ from ‘negative answers’. In one case, a DCP had failed to answer any of the questions on this page of the questionnaire, which included other multiple choice questions (where ‘yes’, ‘no’, and ‘unsure’, options were available to tick). It was therefore assumed that this case was a non-respondent. Assuming the blank table reflected ‘negative’ responses in this case would have produced invalid results. Therefore, the total sample size for this section was considered to be 208 (76 nursery managers, 132 childminders), rather than 209 (unless otherwise stated).

⁵ For simplicity, the term ‘infections’ has been used throughout this chapter, although symptoms (‘diarrhoea’ and ‘vomiting’) were also included in the questionnaire.

4.4.5.1 Total number of infections mentioned by DCPs

A total of 19 infections were featured in the table within the questionnaire. The chart that follows shows the proportion of nursery managers (blue) and childminders (orange) that had reported mentioning various numbers of these infections in their policies (minimum of zero, maximum of 19). As the number of infections increased, the proportion of childminders selecting this number decreased. There was no clear pattern in nursery manager responses.

Chart 4.7 Proportion of nursery managers and childminders that reported mentioning various numbers of infections in their policies (for nurseries, n=76; for childminders, n=132)



18.2 % of childminders and 2.6% of nursery managers had not selected any of the 19 infections (discussed as ‘no infections mentioned’⁶). 1.5% of childminders and 6.6% of nursery managers had selected all 19 infections. The median number of infections selected was 10 (inter-quartile range of 10) for nursery managers and 5 (inter-quartile range of 8) for childminders. Based on these data, nursery managers mentioned significantly greater numbers of infections (in the context of those specified in the questionnaire) within their policies (data were not normally

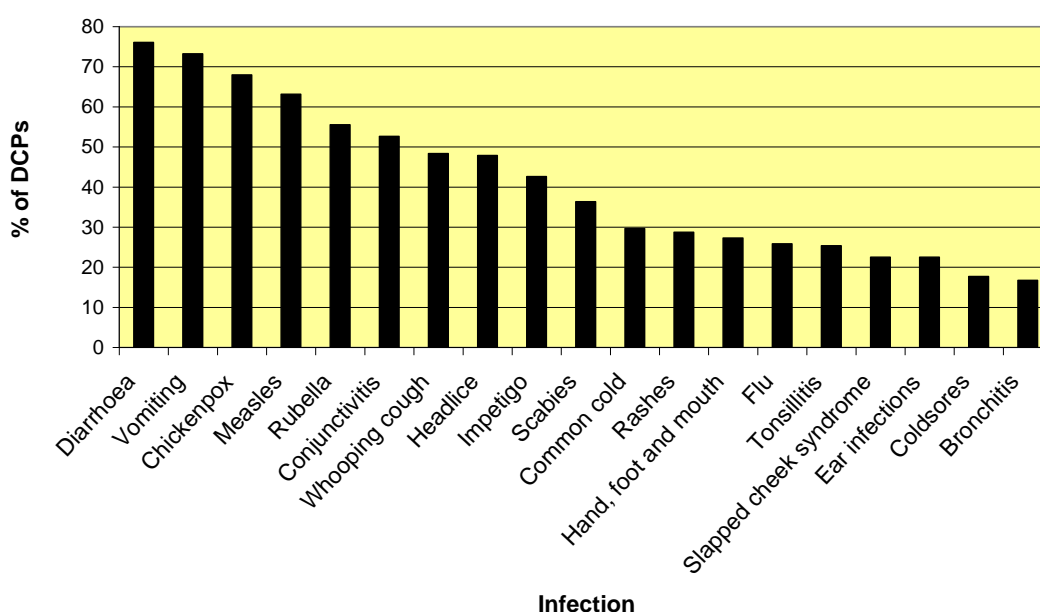
⁶ ‘No infections mentioned’ should be considered within the limits of the infections presented in the questionnaire. Some DCPs may have mentioned infections I did not ask about.

distributed. Mann-Whitney U= 3037; p<0.0001). I also cross-tabulated DCP type against ‘having no infections mentioned in policy’, to find that childminders were significantly more likely to satisfy this criterion (Fisher’s exact test: p<0.002, RR=6.9, 95% CI= 1.7-28.4). The wide confidence interval here makes it difficult to precisely estimate the extent to which childminders were more likely to have ‘no infections mentioned’.

4.4.5.2 Which infections were selected?

The most commonly selected ‘infections’ from the questionnaire included diarrhoea (selected by 76.6% of DCPs), vomiting (73.2%), chickenpox (67.9%) and measles (62.7%). The graph below shows the proportion of DCPs selecting each of the infections. Overall, the most popular infections selected were gastrointestinal or skin-rash related. RTIs were selected less frequently.

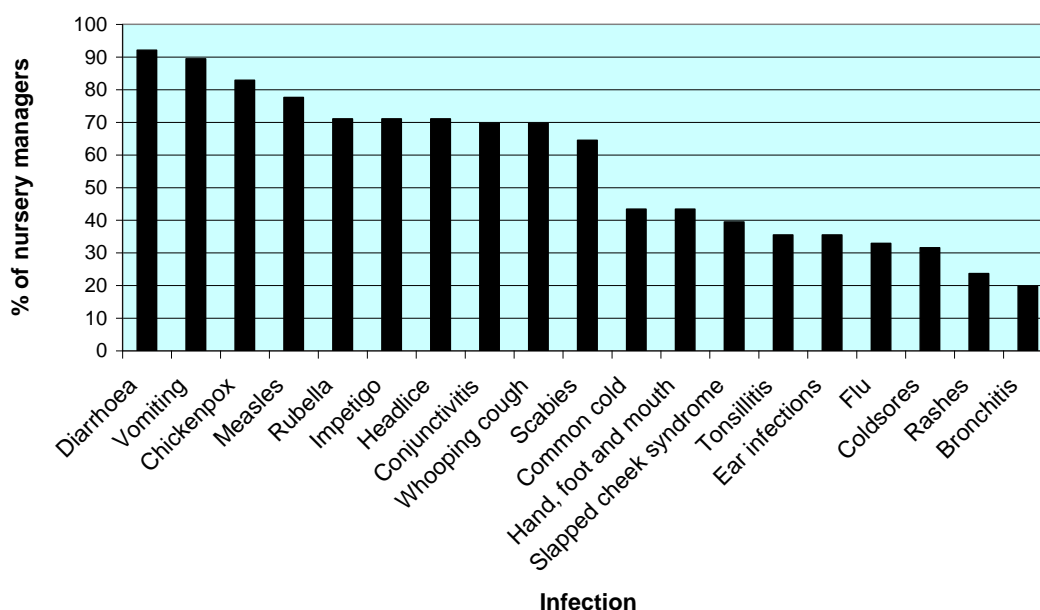
Chart 4.8 Proportion of DCPs that reported mentioning specific infections in their policies (n=208)



a. Summary of results for nursery managers

Chart 4.9 summarises the results based on nursery manager responses.

Chart 4.9 Proportion of nursery managers that reported mentioning specific infections in their policies (n=76)

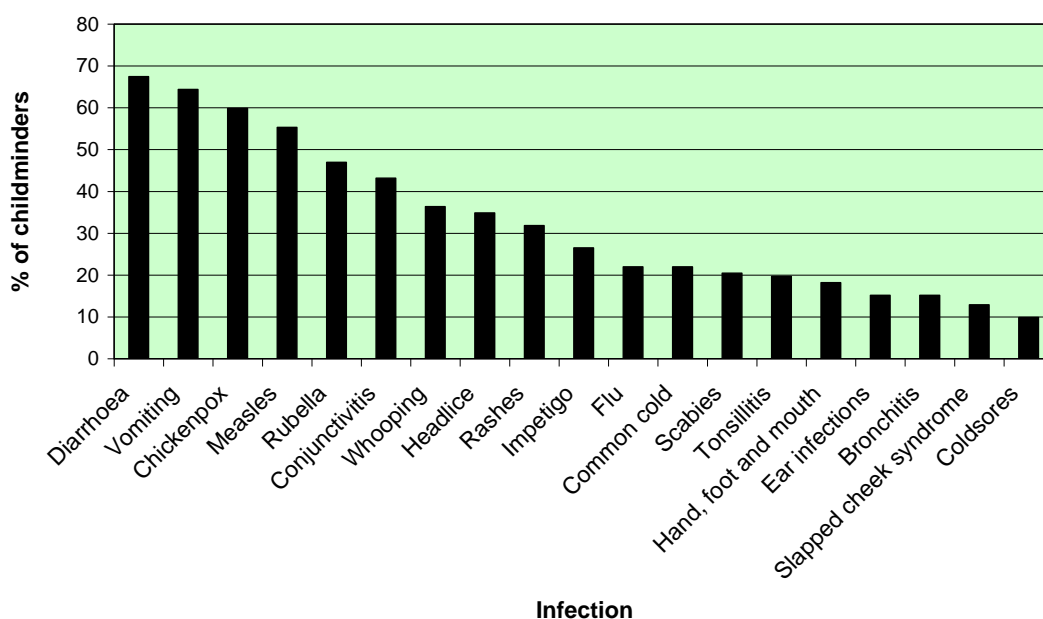


Diarrhoea and vomiting were the most common ‘infections’ selected by nursery managers (ticked by 92.1% of nursery managers). The next most common group can be categorised as infections associated with a skin rash: chickenpox, measles, rubella and impetigo. These infections, alongside head lice, conjunctivitis, and whooping cough, were selected by 70%-83% of nursery managers. Hand foot and mouth, slapped cheek syndrome, and cold sores were not as commonly selected as the above. RTIs including tonsillitis, ear infections, flu and bronchitis were amongst the least common to be selected (ticked by 19-36% of nursery managers).

b. Summary of results for childminders

Chart 4.10 summarises the results based on childminders’ responses.

Chart 4.10 Proportion of childminders that reported mentioning specific infections in their policies (n=132)



The five most popular infections selected by childminders were identical to that of nursery managers, albeit by smaller proportions of the childminder sample. 67.4% of childminders had selected diarrhoea- the most commonly selected infection in policies, followed by vomiting (64.4%). Rashes, including chickenpox, measles, and rubella, were ticked by 45-60% of childminders. The proportion of nursery managers selecting each infection was greater than childminders for most infections, with the exception of ‘rashes’ (as a general term), which was ticked by 31.8% of childminders (compared to 23.7% of nursery managers). Conjunctivitis, in contrast to the nursery sample, was only selected by 43.2% of childminders (compared to 69.7% of nursery managers). Impetigo, selected by 71.1% of nursery managers, was only ticked by 26.5% of childminders. Hand foot and mouth and slapped cheek were only selected by 18.2% and 12.9% of childminders, respectively. The least common infection to be selected by childminders was cold sores (9.8%).

4.4.5.3 Periods of exclusion

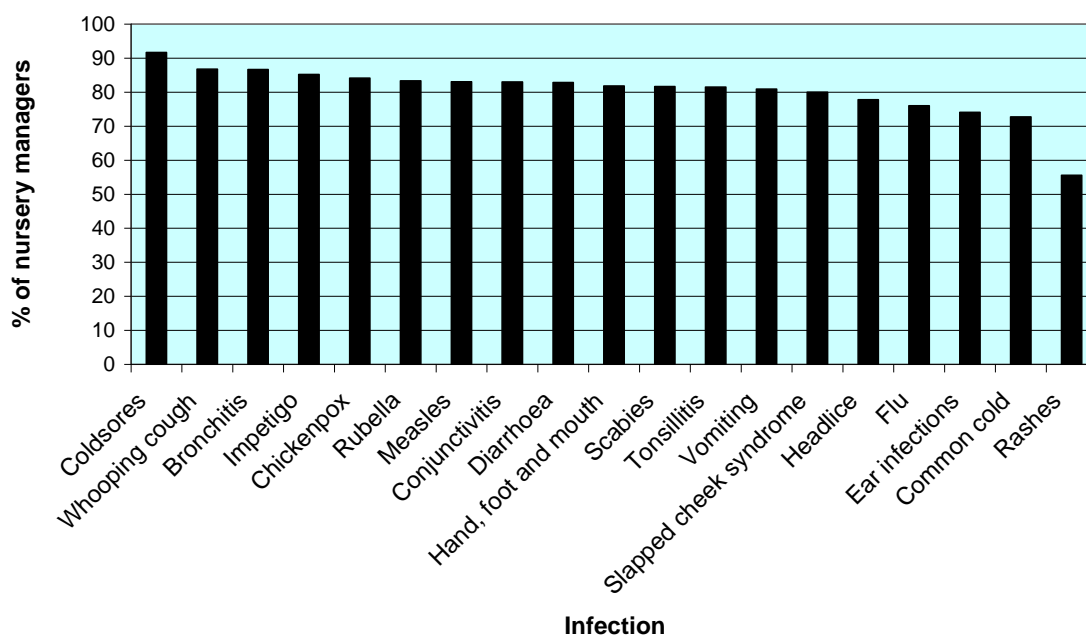
Not all DCPs reported mentioning periods of exclusion for the infections they reported mentioning in their policies. Over half of nursery managers (52.6%) and just under one third of childminders (30.3%) reported that their policies stated

exclusion periods for every infection they had ticked from the questionnaire.

Charts 4.11 and 4.12 show the proportion of nursery managers and childminders that reported mentioning exclusion periods for the infections they had selected as being mentioned in their policies. Proportions were calculated as: (the number of DCPs that reported mentioning periods of exclusion for an infection)/(the number of DCPs that reported mentioning that infection). Thus, the numbers each bar on the charts is based on differ, according to the number of DCPs that reported mentioning the corresponding infection in their policies.

a. Summary of results for nursery managers

Chart 4.11 Proportion of nursery managers that had mentioned exclusion periods for various infections mentioned in their policies



The graph above shows that when nursery managers mentioned an infection in their policies, they tended to have an exclusion period mentioned too.

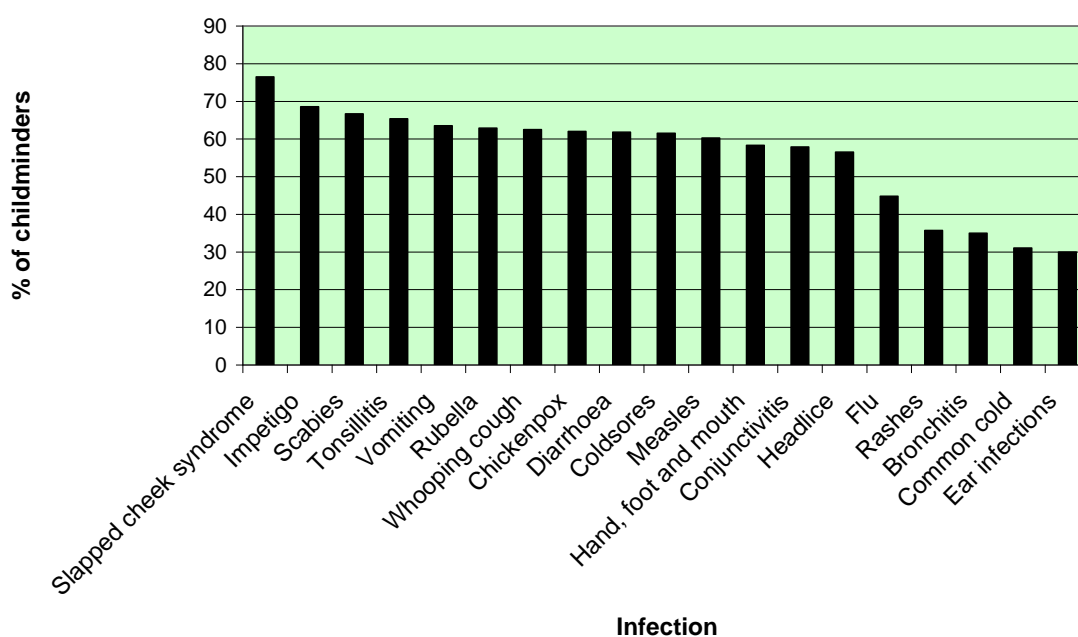
RTIs/ear infections, with exception to bronchitis and tonsillitis, had exclusion periods mentioned the least frequently. Not specifying periods of exclusion does not necessarily reflect a lack of information within a policy; instead, it could be that the policy states that exclusion is not necessary (see chapter nine, sub-section 9.2.1.4). There are also interpretation issues here, as DCPs may have been

unsure of what was meant by ‘period of exclusion’ (see chapter 9, sub-section 9.2.1.6).

b. Summary of results for childminders

The proportions of childminders that reported having specified exclusion periods were considerably lower than nursery managers across all infections. Similar to nursery managers, RTIs/ear infections that were mentioned in childminders’ policies had exclusion periods mentioned the least frequently, although this included bronchitis. The exception to this, as above, was tonsillitis.

Chart 4.12 Proportion of childminders that had mentioned exclusion periods for various infections mentioned in their policies



4.4.5.4 DCPs wanting additional information

The types of infections DCPs wanted more information about were similar for nursery managers and childminders. These were mainly skin infections, with the exceptions of chickenpox, measles, and rubella. This was not surprising, as these three infections were popularly mentioned on exclusion policies (according to DCPs’ responses). The percentages of nursery managers and childminders that reported wanting more information has been presented for each of the symptoms/infections featured in the questionnaire, in charts 4.13 and 4.14.

Chart 4.13 Proportion of nursery managers that wanted more information regarding specific infections (n=76)

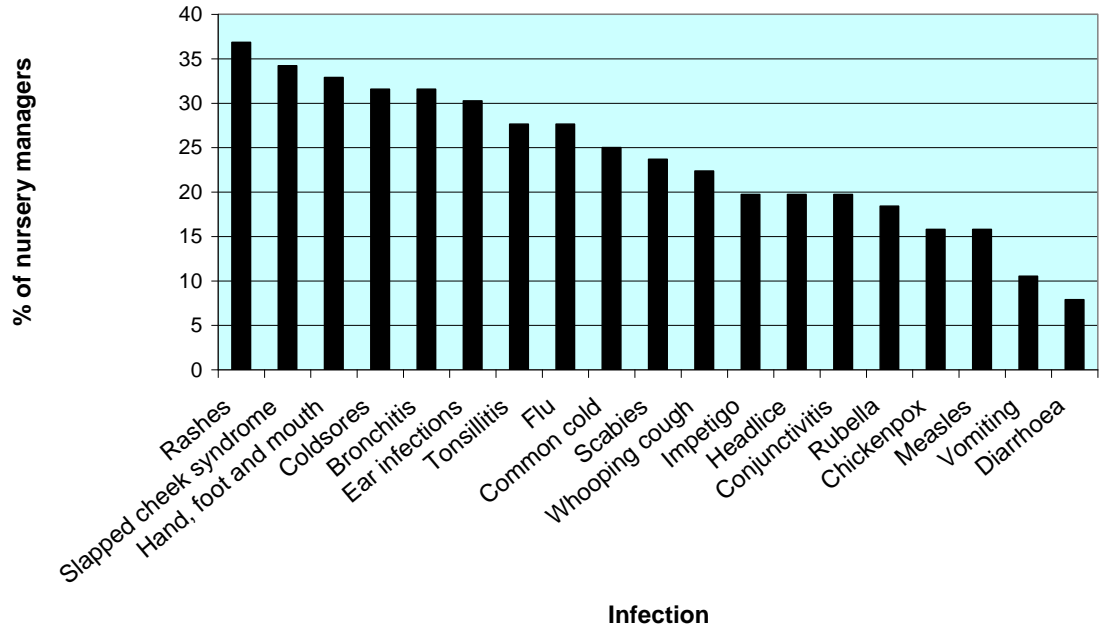
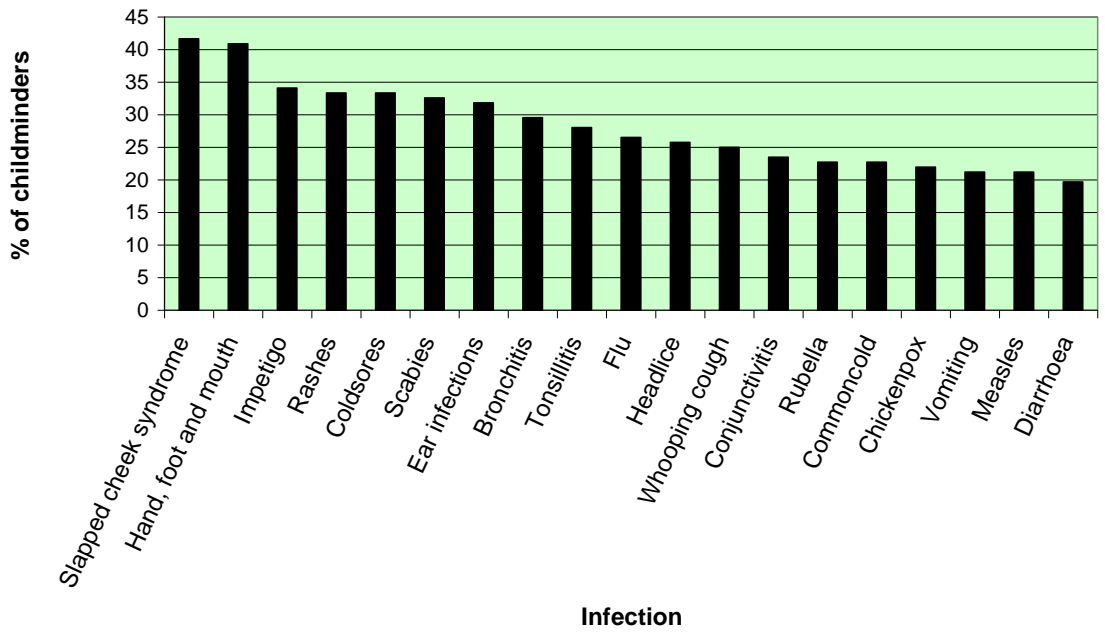


Chart 4.14 Proportion of childminders that wanted more information regarding specific infections (n=132)



4.4.6 Standardised policies

DCPs were asked if they would prefer standardised sickness exclusion policies to replace their current policies. For simplicity, only 'Yes' and 'No' options were provided, although DCPs were informed that they were free to leave further comments (on any aspect of the questionnaire) in a blank space provided beneath this final question.

As shown in the following pie charts, the vast majority of DCPs reported that they would prefer standardised policies (86% of all DCPs, 83% of nursery managers, and 87% of childminders). All DCP respondents were represented by these charts (n=216 for all DCPs, n=78 for nursery managers, and n=138 for childminders). Fisher's exact testing showed no association between DCP type and response (p=1.0).

Chart 4.15 Do nursery managers want a standardised policy? (n=78)

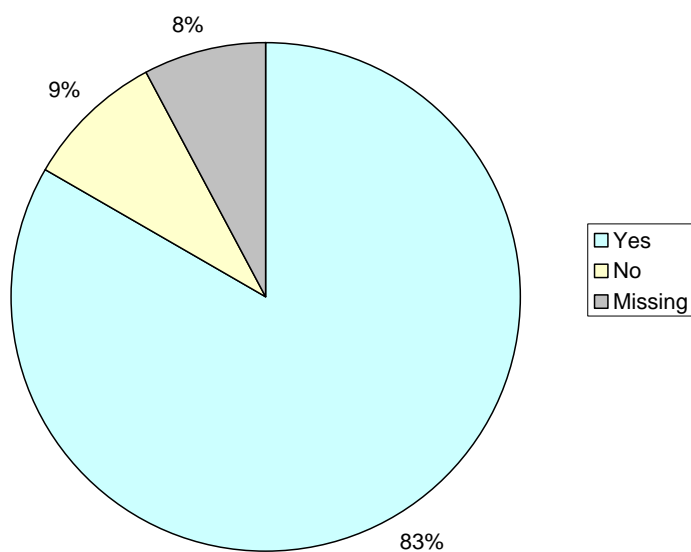
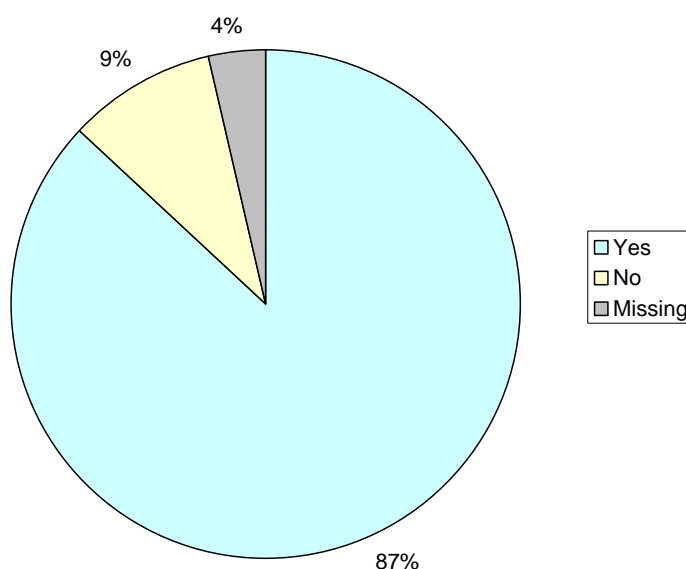


Chart 4.16 Do childminders want a standardised policy? (n=138)



4.5 Symptom Guidelines

The second section of the questionnaire dealt with the resources DCPs use to identify symptoms of common infections ('symptom guidelines'), as well as sources of general advice. As these questions were not reliant on the DCPs having an exclusion policy, all respondents were used as the denominator in calculations, unless stated otherwise (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders).

4.5.1 Recognising symptoms

94 DCPs (43.5%) reported having 'symptom guidelines'. This comprised 44 nursery managers (56.4% of all nursery managers) and 50 childminders (36.2% of all childminders). Fisher's exact testing showed that nursery managers were significantly more likely to report having symptom guidelines than childminders ($p < 0.01$, RR= 1.5, 95% CI= 1.1-2.1).

Of those with guidelines, 31.9% of DCPs reported that their guidelines were the sickness exclusion policy document itself (31.8% of nursery managers, 32.0% of childminders). This implied that the majority of DCPs' symptom guidelines were separate documents to their sickness exclusion policies. Symptom guidelines were obtained from a range of resources, as shown through written responses. Tables 4.9 and 4.10 summarise the resources used by nursery managers and childminders. 39 nursery managers and 45 childminders provided written responses, some of whom named more than one resource. Similar to the data concerning exclusion policies, the most popular resources were the internet, books, and publications from external bodies such as the Wales Pre-school Providers Association and the National Childminding Association. Some DCPs' responses were a specific source, while others were a general resource (issues associated with this are discussed in the final chapter, sub-section 9.2.1.2).

Table 4.9 Number of nursery managers reporting that their symptom guidelines were obtained from various resources (n=39)

Source/Resource	Number of nursery managers
Internet	12
Books	9
Health and Safety Guide for Playgroups	6
Local Authority	5
Wales Pre-school Providers Association	5
Nursery	3
Health and Safety Authority	2
National Health Service Website	2
Nursery World Magazine	2
Public Health and Communicable Disease Publication	2
Local Council	1
Experience of Management	1
Health Clinic	1
Health Visitor	1
Health Protection Agency	1
Journal	1
Welsh Assembly Government	1
School Nurse	1

Table 4.10 Number of childminders reporting that their symptom guidelines were obtained from various resources (n=45)

Source/Resource	Number of childminders
National Childminding Association	17
Book	9
Internet	8
Doctor/Nurse	4
Care and Social Standards Inspectorate Wales	4
Childminder	4
Leaflets	3
Other Day Care Provider	2
Public Health Department	2
Local Health Authority	2
Health Visitor	2
Childminding Course	2
First Aid Course	1
First Aid Manual	1
Family Information Service	1
Community Practitioners and Health Visitors Association	1
Social Services	1
Infection Control Nurses Association	1
Family Health Guide (Chemist/Pharmacy Supplied)	1

Based on those with symptom guidelines, most DCPs thought that their symptom guidelines were easy to understand (89.4% of all DCPs, 90.9% of nursery managers, and 88.0% of childminders). Fewer believed their guidelines were extensive enough (69.1% of all DCPs, 68.2% of nursery managers, and 68.0% of childminders).

DCPs were asked which resources they used for recognising symptoms of infection. This question was included to account for DCPs who did not have 'symptom guidelines', or those whose symptom guidelines were insufficient. A list of resources was provided, alongside a space for 'other' responses. Some DCPs selected multiple resources. The results are shown in the following tables:

Table 4.11 Numbers and proportions of DCPs that reported using various resources to help recognise symptoms (n=216)

Type of resources used to identify symptoms	Number of DCPs	%
Personal Judgment	184	85.2
Booklets/ Leaflets	102	47.2
Internet	95	44.0
Books	79	36.6
Other	29	13.4
Posters	21	9.7
Television/ Radio	21	9.7
Magazines	13	6.0
Journal	11	5.1
DVD/Video	0	0

Table 4.12 Numbers and proportions of nursery managers that reported using various resources to help recognise symptoms (n=78)

Type of resources used to identify symptoms	Number of nursery managers	%
Personal Judgment	63	80.8
Booklets/ Leaflets	43	55.1
Internet	34	43.6
Books	32	41.0
Posters	15	19.2
Other	14	17.9
Television/ Radio	8	10.3
Journal	5	6.4
Magazines	3	3.8
DVD/Video	0	0

Table 4.13 Numbers and proportion of childminders that reported using various resources to help recognise symptoms (n=138)

Type of resources used to identify symptoms	Number of childminders	%
Personal Judgment	121	87.7
Internet	61	44.2
Booklets/ Leaflets	59	42.8
Books	47	34.1
Other	15	10.9
Television/ Radio	13	9.4
Magazines	10	7.2
Posters	6	4.3
Journal	6	4.3
DVD/Video	0	0

For both nursery managers and childminders, ‘personal judgment’ was the most popular response (85.2% of all DCPs, 80.8% of nurseries, 87.7% of childminders). Leaflets and booklets (47.2% of all DCPs, 55.1% of nurseries, 42.8% of childminders), the internet (44 % of all DCPs, 43.6% of nurseries, 44.2% of childminders), and books (34.6% of all DCPs, 41% of nurseries, 34.1% of childminders) were once again the next most popular answers selected.

DCPs were asked to provide written details if they selected ‘Other’. Tables 4.14 and 4.15 summarise the categories that emerged from written responses. Not all DCPs that selected ‘other’ provided written details, whilst others wrote down more than one resource. Talking to health professionals, especially parent doctor/nurses (who use the nursery’s services), was mentioned by a number of nursery managers. Talking to parents was also the most popular written answer by childminders, although no childminders specified the parents’ professions.

Table 4.14 Nursery managers' written answers for 'other' resources used for recognising symptoms (n=12)

Other	Number of nursery managers
Parent Doctor/Nurse	3
Health Visitor	3
Health Centre	1
NHS Direct	1
Public Health	1
Doctor	1
Health and Safety Guide for Playgroups by Health Promotion Wales	1
Wales Pre-school Providers Association	1
Discuss with parent	1

Table 4.15 Childminders' written answers for 'other' resources used for recognising symptoms (n=19).

Other	Number of childminders
Talking to Parents	6
National Childminding Association	4
Talking to Colleagues	2
NHS Direct	2
Other Day Care Provider	2
Doctor	2
Care and Social Standards Inspectorate for Wales	1
Infection Control Policy Department	1
Health Visitor	1
Training Course Advice	1

4.6 Interactions with Parents

Three items on the questionnaire considered DCPs' interactions with parents. The first looked at the possibility of parents influencing DCPs' exclusion decisions. The second enquired about how frequently parents disagreed with DCPs' exclusion decisions. The third considered the advice DCPs offer parents. This third topic was

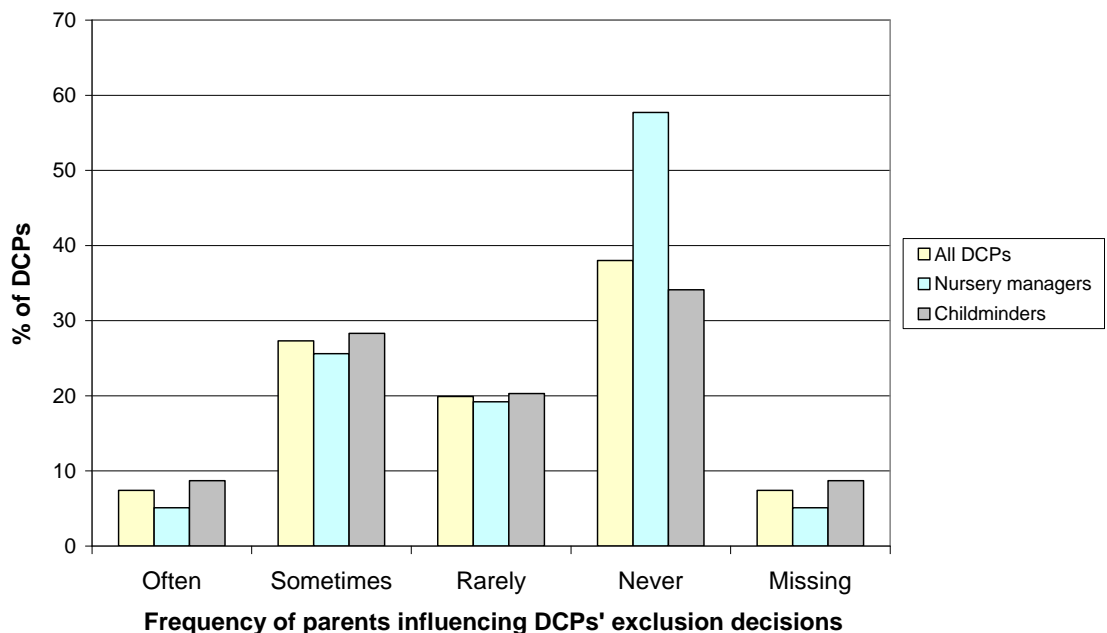
split into three areas: advice on how children might recover, advice to consult the GP, and advice regarding antibiotic treatment.

4.6.1 Parental influence on exclusion decisions

DCPs were asked if parents ever influenced their exclusion decisions. An ordinal scale, ranging from ‘never’ to ‘often’ was used for multiple choice options.

The results were similar for nursery managers and childminders. It was more common for DCPs to choose mid-range answers (i.e. ‘sometimes’ or ‘rarely’), and the ‘never’ option, rather than the ‘often’ option. The proportion of childminders that chose ‘often’ was slightly higher than that of nursery managers (8.7% vs. 5.1 %), and the proportion of nursery managers answering ‘never’ was considerably higher than childminders (57.7 % vs. 34.1 %). The proportion of DCPs choosing each option has been summarised in chart 4.17:

Chart 4.17 Proportion of DCPs choosing various responses when asked how frequently parents influence their exclusion decisions (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders)

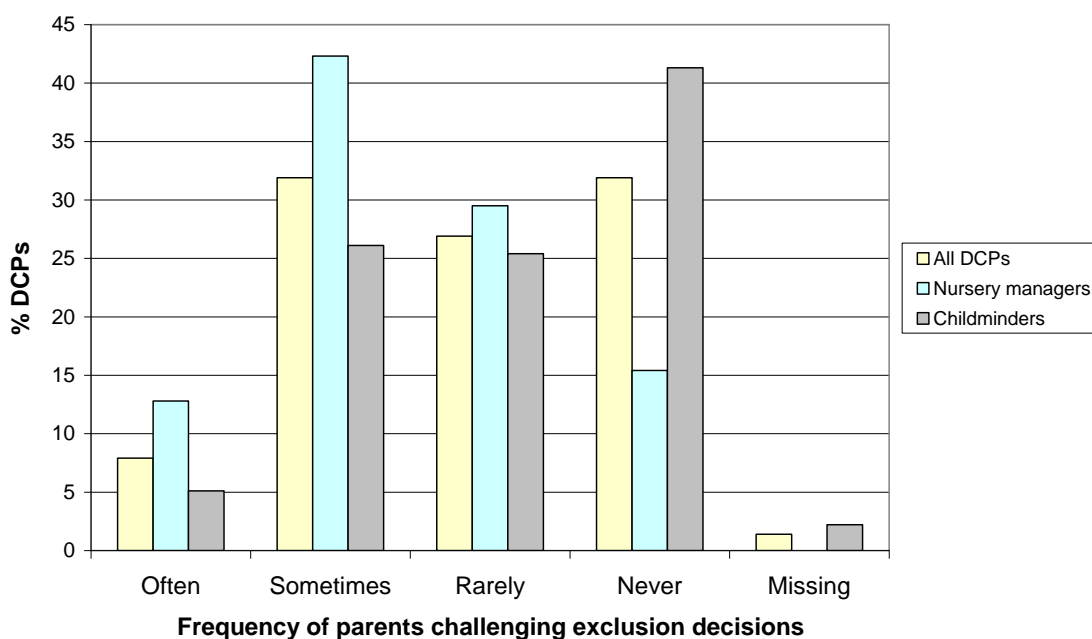


The data were subjected to a Chi square test, though there seemed to be no association between DCP type, and reported frequencies of parents influencing exclusion decisions ($p > 0.1$). As ordinal level data was involved, the p value for linear-by-linear association⁷ was also considered. As would be expected, this was also not significant (Chi square value [linear by linear association]= 2.2, $p > 0.1$).

4.6.2 Disagreement over exclusion decisions

DCPs were asked to report how frequently parents challenge their exclusion decisions. The results can be seen in chart 4.18.

Chart 4.18 Proportion of DCPs choosing various responses when asked how frequently parents challenge their exclusion decisions (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders)



The proportion of nursery managers answering ‘often’ or ‘sometimes’ was greater than childminders (12.8% of nursery managers vs. 5.1% for childminders; 42.3% for nursery managers, vs. 26.1% of childminders). The proportions answering ‘rarely’ were similar for both groups (29.5% for nursery managers, and 25.4% for childminders). In contrast, the proportion of childminders who stated parents

⁷ Also known as Chi square test for trend, in Prism software.

never challenge their exclusion decisions was much higher than that of nurseries (15.4% for nurseries vs. 41.3% of childminders).

DCP type was cross tabulated with the reports of how often parents challenge exclusion decisions, and a Chi- square test was conducted. A highly significant relationship was found between DCP type, and the extent to which parents challenge exclusion decisions (Chi square value= 18.6, $p < 0.001$). Linear by linear association (to account for the ordinal scale of frequency), also showed a highly significant relationship (Chi square [linear by linear association]= 17.4 $p < 0.001$). Based on this, it seems that nursery managers' exclusion decisions are challenged significantly more frequently (by parents) than childminders' decisions.

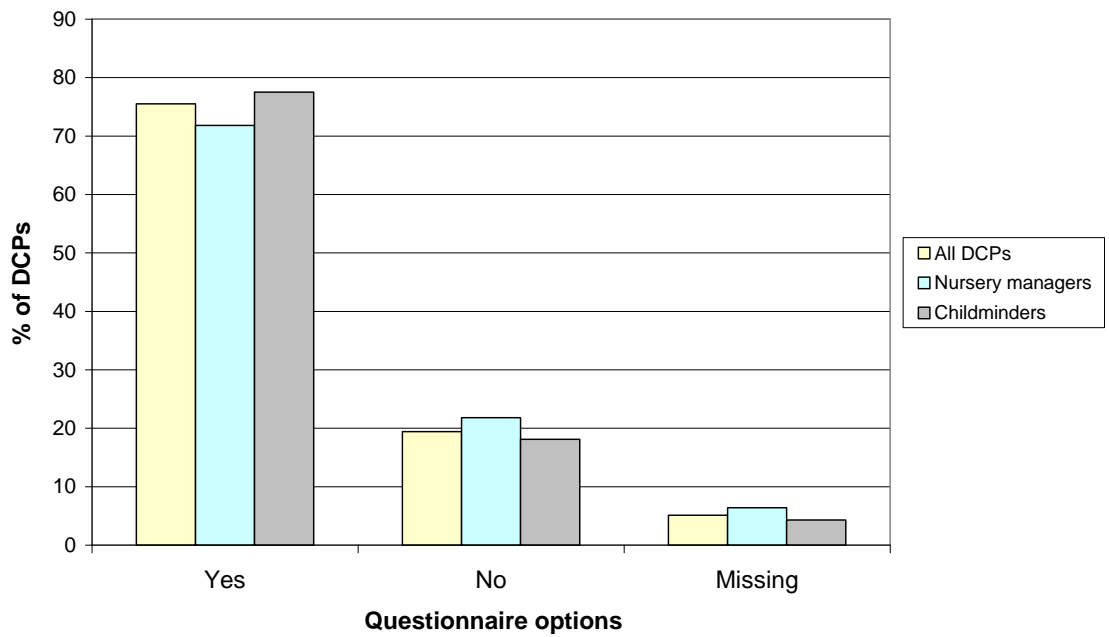
4.6.3 Advice offered to parents

DCPs were asked if they ever: a) advise parents on how their child might recover; b) advise parents that their child might need antibiotics, and c) advise parents that their child should consult a doctor. The results follow.

4.6.3.1 Advice for recovery

Most DCPs reported that they would offer parents advice on how their child might recover (75.5% of all DCPs, 71.8% of nursery managers, and 77.5% of childminders). Results have been presented in chart 4.19. According to Fisher's exact testing, DCP type did not appear to influence tendencies to offer advice to parents (Fisher's exact test: $p > 0.1$).

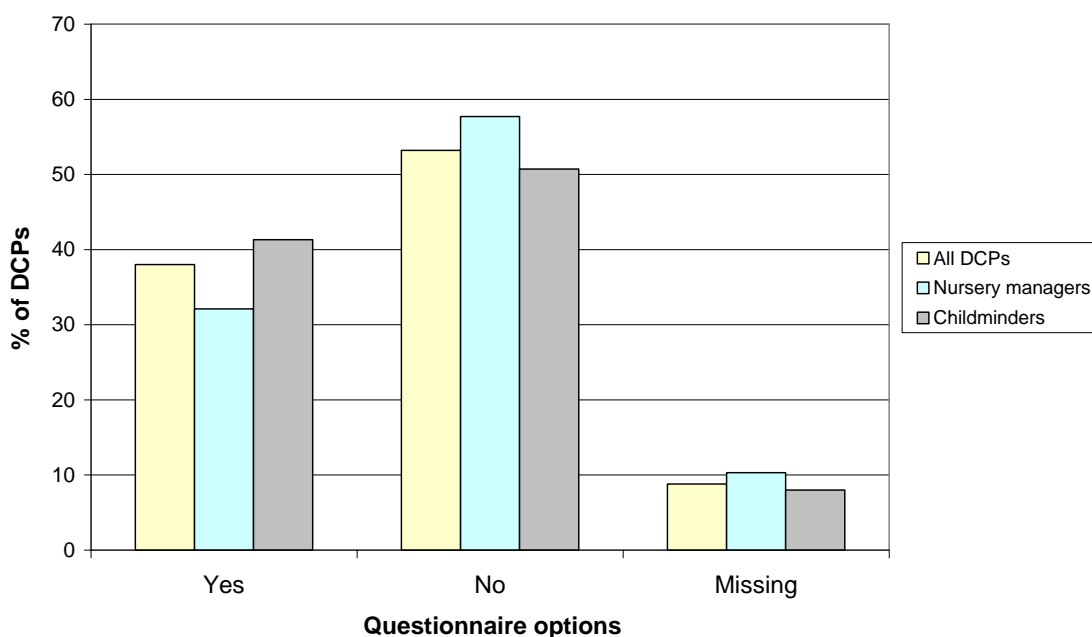
Chart 4.19 Proportion of DCPs selecting each response when asked if they ever advise parents on how their child might recover (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders)



4.6.3.2 Advising antibiotics

38.0% of all DCPs reported that they advise parents that their child might need antibiotics (32.1% of nursery managers, 41.3% of childminders). Results are shown in chart 4.20. There was no significant difference between nursery managers and childminders (Fisher's exact test: $p > 0.1$).

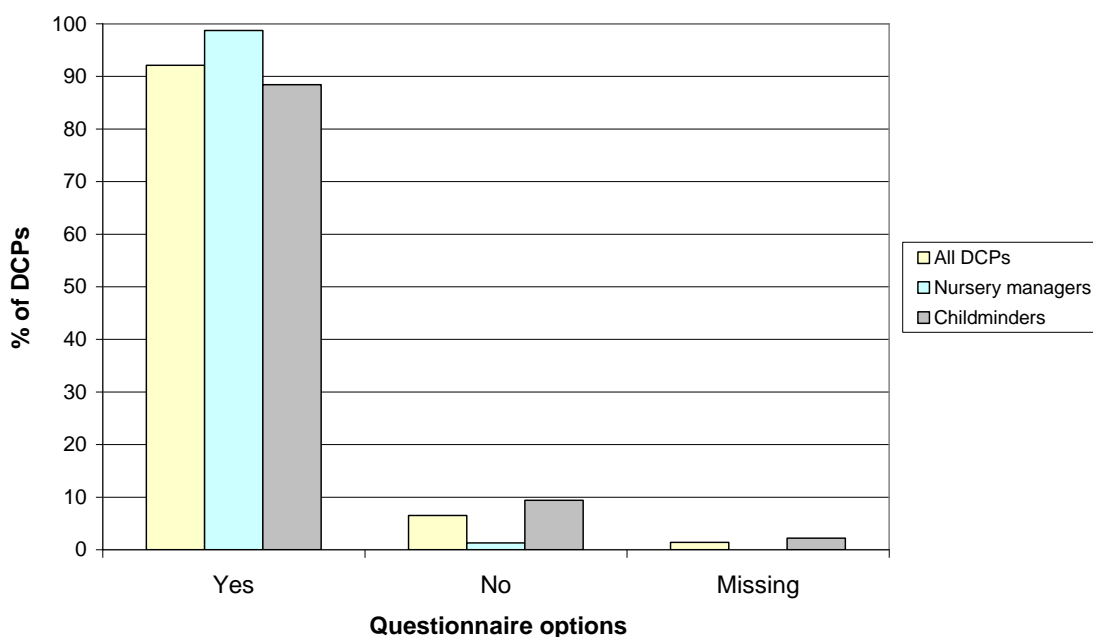
Chart 4.20 Proportion of DCPs selecting each response when asked if they ever advise parents that their child may need antibiotics (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders)



4.6.3.3 Advising GP consultations

Almost all DCPs advised parents that their child should consult the GP (92.1% of all DCPs, 98.7% of nurseries, and 88.4% of childminders). Results are presented in chart 4.21. According to Fisher's exact testing, nursery managers were significantly more likely to report that they advise GP consultations, although the small relative risk suggests that this increased tendency is likely to be minor ($p < 0.05$, RR= 1.1, 95% CI= 1.02-1.2).

Chart 4.21 Proportion of DCP selecting each response when asked if they ever advise parents to consult a GP (n=216 for all DCPs, n=78 for nursery managers, n=138 for childminders)



4.7 Re-admittance Requirements

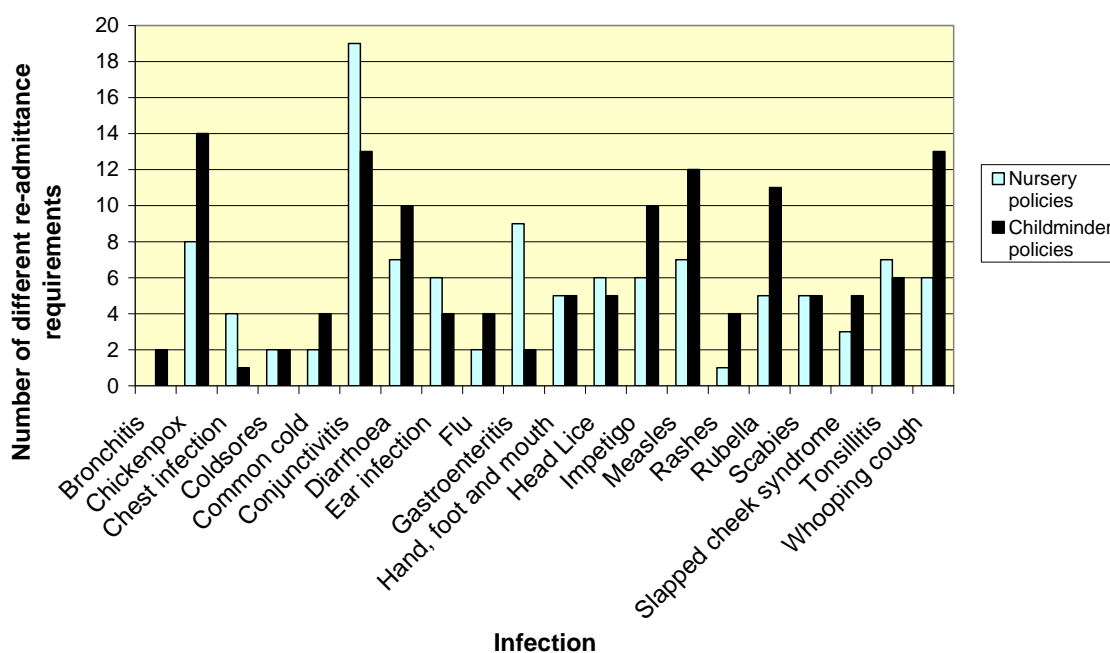
The results up until this point have focused on DCPs' reported information from questionnaires. Of the total respondents, 139 DCPs (64.4%) also sent a copy of their sickness exclusion policy (44 nursery managers [56.4%] and 95 childminders [68.8%]). These were analysed to describe exclusion periods or other re-admittance requirements for specific infections.

Looking through the actual policies, 20 DCPs had written a general statement concerning excluding unwell children, but left this fairly open ended (without mentioning specific infections). All of these DCPs were childminders.

4.7.1 Varied re-admittance requirements, and discrepancies with HPA guidance

The requirements for re-admittance to day care expressed in actual policies were noted for each infection featured in the questionnaire. Re-admittance requirements were not always stated. In these instances, the infection was categorised under “*just mentions exclusion*”, unless the policy had mentioned that exclusion was not necessary. A full list of the various re-admittance requirements I came across, alongside the frequencies of nursery and childminder policies that had stated these requirements, can be seen in appendix 4.1. Chart 4.22 presents the total *number* of different re-admittance requirements observed for each infection. Though not strictly a ‘re-admittance requirement’, policies that specified that no exclusion was necessary were included here. For consistency, I have focused on the infections featured in this thesis (i.e. in the questionnaire, later in interviews). I have added in ‘chest infection’, as it could be another term for bronchitis.

Chart 4.22 Number of different re-admittance requirements observed in nursery and childminder policies, for specific infections (results taken from 44 nursery policies and 95 childminder policies)



There were clear variations of policies- particularly in the cases of conjunctivitis, whooping cough, and numerous skin infections. The above results need to be considered in light of the number of policies that actually mentioned each infection. The table below presents the above data, alongside the total number of DCPs mentioning each infection in their policies. A ratio has also been calculated (the number of different re-admittance criteria/number of policies mentioning infection) to show the number of different re-admittance requirements, with respect to the number of policies that mentioned the infection.

Table 4.16 Number of different re-admittance requirements for infections, with consideration to the total number of policies that mentioned these infections

Infection	Nurseries			Childminders		
	Number of different re-admittance requirements	Total number of nurseries mentioning infection in policy	Ratio	Number of different re-admittance requirements	Total number of childminders mentioning infection in policy	Ratio
Bronchitis	0	0	0.0	2	2	1.0
Chickenpox	8	38	0.2	14	46	0.3
Chest infection	4	4	1.0	1	1	1.0
Coldsores	2	3	0.7	2	4	0.5
Common cold	2	3	0.7	4	7	0.6
Conjunctivitis	19	31	0.6	13	27	0.5
Diarrhoea	7	37	0.2	10	54	0.2
Ear infection	6	10	0.6	4	5	0.8
Flu	2	5	0.4	4	7	0.6
Gastroenteritis	9	19	0.5	2	6	0.3
Hand, foot and mouth	5	15	0.3	5	8	0.6
Head Lice	6	26	0.2	5	11	0.5
Impetigo	6	33	0.2	10	16	0.6
Measles	7	32	0.2	12	36	0.3
Rashes	1	3	0.3	4	10	0.4
Rubella	5	29	0.2	11	33	0.3
Scabies	5	29	0.2	5	11	0.5
Slapped cheek syndrome	3	12	0.3	5	7	0.7
Tonsillitis	7	11	0.6	6	7	0.9
Whooping cough	6	30	0.2	13	27	0.5

A high ratio could indicate that an infection was not popularly mentioned in policies. This is why I decided against looking at ratios in isolation. For descriptive purposes, the table shows that there were variations in re-admittance requirements for every infection I looked at.

If all DCPs followed standard policies, differences in re-admittance requirements would not exist. However, this was not the case. For example, there were nineteen different re-admittance requirements for conjunctivitis out of 31 nursery policies. Policies were considered to be 'distinct' if they carried different meanings. Some examples are described in section 4.7.2.

I used the data obtained from sickness exclusion policies to record the proportion of policies that did/did not comply with HPA guidelines for each infection featured in the questionnaire. Bronchitis, ear infections, chest infections, and 'rashes' (in general) were not applicable here, as the HPA does not include these in its guidance. Policies for specific infections were categorised as 'agreeing' or 'disagreeing' with HPA guidance. This was often a difficult decision to make, as some policies expressed similar ideas to those expressed by the HPA, yet had minor differences. These policies were categorised as 'unsure'. There were a number of criteria which led to a policy being labelled as 'unsure'. These included ambiguous cases where the policy:

1. Only mentioned that exclusion was required (didn't mention exclusion period).
2. Stated 'exclusion until well/recovered'⁸.
3. Stated 'exclusion until no longer contagious'.
4. Had mentioned aspects of the HPA guidelines, and omitted other parts. For example, the HPA's guidance for impetigo stipulates that children should be excluded "*Until the lesions are crusted and healed, or 48 hours*

⁸ The subjective nature of the statement 'until recovered' made it difficult to know exactly what DCPs' specific requirements were for certain infections (e.g. at what point has a child 'completely recovered' from diarrhoea- is it 48 or 24 hours from the last episode?). However, the 'until recovered' statement was considered to be in disagreement with HPA policies for non-excludable infections (e.g. conjunctivitis, hand, foot and mouth etc.).

following commencement of antibiotic treatment.” Some DCPs had either mentioned the former or latter option.

5. Was similar to the HPA guidance, but had added additional details (such as GP visits).
6. Specified that advice regarding exclusion periods must be sought from a doctor.

The graphs on the next page show the proportion of nursery policies (chart 4.23) and childminder policies (chart 4.24) that agreed or disagreed with the HPA guidelines. The third category ('unsure') has also been included, although strictly speaking, these cases also deviated from HPA guidance.

Chart 4.23 Proportion of nursery policies that agreed/disagreed with HPA guidelines (proportions based on number of nursery policies that mentioned each infection)

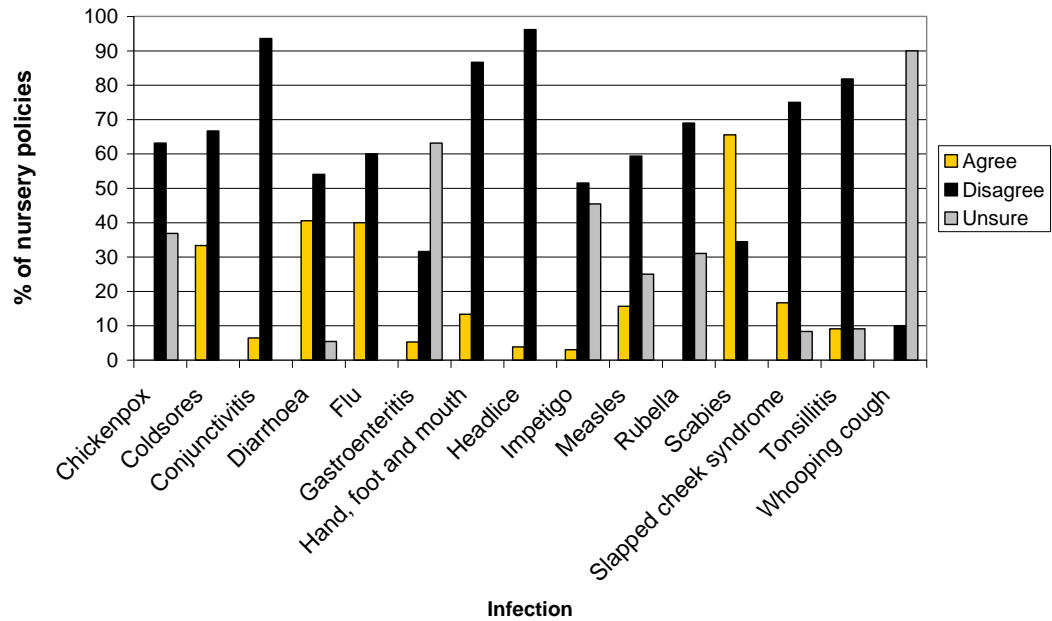
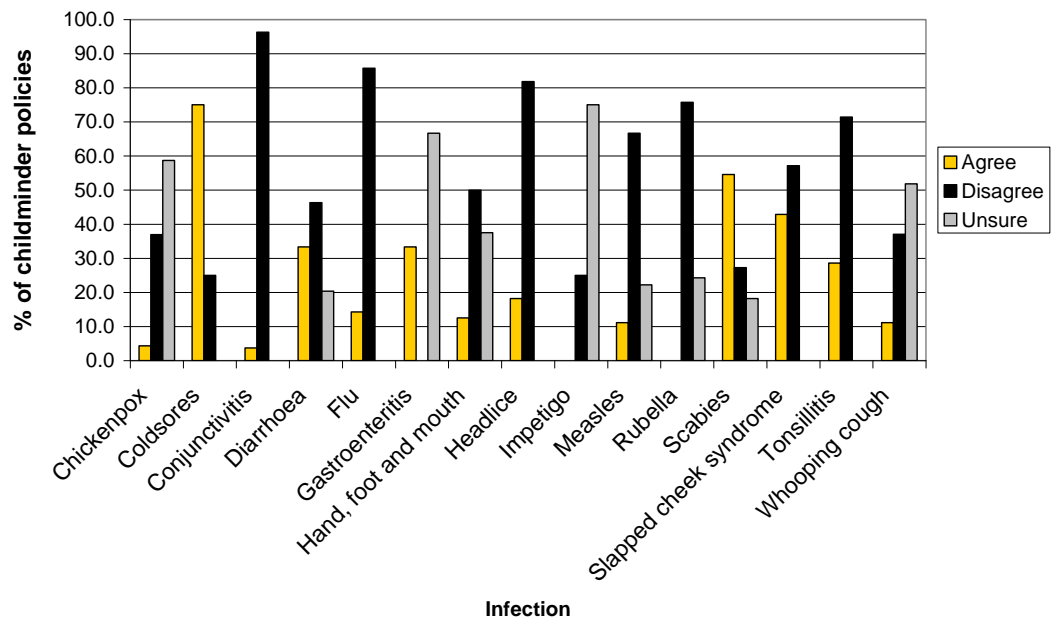


Chart 4.24 Proportion of childminder policies that agreed/disagreed with HPA guidelines (proportions based on number of childminder policies that mentioned each infection)



4.7.2 Summary of re-admittance criteria

Inconsistencies between the HPA guidelines and day care policies were particularly apparent for conjunctivitis, head lice, and tonsillitis, for both nurseries and childminders. None of these conditions warrant exclusion according to the HPA. In addition to this, a particularly high proportion of nursery policies on certain rashes contradicted HPA guidelines (hand, foot and mouth, slapped cheek syndrome, and chickenpox).

A detailed description of day care re-admittance requirements has been provided in appendix 4.2. From this, we can see how there are sometimes substantial, and often slight variations in policies which alter the reader's interpretation of what is required. What follows is a brief description of the range of re-admittance requirements I encountered for diarrhoea, conjunctivitis, and chickenpox. These infections/symptoms have been selected as they were the most frequently mentioned gastrointestinal, skin and RTI-related⁹ infections in policies (see sub-section 4.4.5.2).

4.7.2.1 Gastrointestinal infections

According to HPA guidelines, all gastrointestinal infections require 48 hours of exclusion from the last bout of symptoms. '48 hour' and '24 hour' periods of exclusion were commonly mentioned in policies. However, these periods of exclusion were presented in different contexts, giving rise to different re-admittance requirements. Some policies required 48 hours to pass from the time of the *last bout of symptoms* (as in the HPA guidelines), while others stated that 48 hours needed to pass after the first *normal* stool (in cases of diarrhoea). Other policies were similar to those mentioned above, with the exception that they specified a 24 hour period.

⁹ Conjunctivitis is often considered alongside RTIs, as it can be related to colds.

4.7.2.2 Chickenpox

The HPA states that chickenpox requires five days of exclusion, beginning from the onset of the rash.

None of the nursery policies complied with this directly, although four (10.5%) used this guideline, but made it dependent on the spots having “*scabbed over*”.

Two childminder policies agreed with HPA guidelines directly (4.3%), while another three also included information about spots scabbing over (6.5%). The most popular requirement amongst childminders stated that spots just needed to be scabbed over (n=13, 27.1%). Periods of exclusion (from onset of symptoms) ranged from five to 15 days in childminder policies, with the majority stating six to seven days (23.9%). For nursery policies, the range was five to 10 days, with the majority specifying six or seven days (60.5%).

4.7.2.3 Conjunctivitis

Conjunctivitis had the greatest number of different re-admittance requirements (nursery policies: 19 different requirements, out of 31 policies, childminder policies: 13 different requirements out of 27 policies).

Some policies specified resolution of symptoms (e.g. “... *until no longer inflamed*”, “... *until eyes are no longer running*,” “... *until eyes are no longer weeping*”, “... *until completely recovered*”) as their requirements for re-admittance. Some of these descriptions were connected to minimum exclusion periods. For example, one requirement read: “...*minimum of 2 days, then until the eyes have stopped running*”. A number of re-admittance requirements for conjunctivitis were based on treatment (29% of nursery policies, 33.3% of childminder policies). Some of these specified antibiotic treatment (9.7% of nursery policies, 7.4% of childminder policies), while the rest used the phrases “*treatment*”, “*medication*”, or “*medication from the doctor*”. 12.9% of nursery policies and 14.8% of childminder

policies mentioned that a doctor needed to be consulted. Only two nursery policies (6.5%) and one childminder policy (3.7%) permitted children with conjunctivitis to attend day care, in accordance with HPA guidelines.

4.7.3 GP visits, antibiotic treatment, and non-specific treatment

Policies were scanned for requirements of GP visits, antibiotics treatment, or non-specified treatment (e.g. “... *excluded until treated with medication*”). Only infections that did not mention these requirements (according to HPA guidelines) were considered.

Of the 44 nursery policies, approximately 15.9% mentioned antibiotics (inappropriately), 13.6% mentioned general treatment/medication (inappropriately), and 18.2% specified GP visits.

Of the 95 childminder policies viewed, 9.1% mentioned antibiotics (inappropriately), 20.4% mentioned treatment/medication (inappropriately), and 13.6% mentioned GP visits.

4.8 Summary of Questionnaire Results

4.8.1 Overview of DCPs' sickness exclusion policies

Almost all DCPs participating in the study had a self-written sickness exclusion policy. These policies tended to be produced using information from the internet, books, and booklets/leaflets.

4.8.1.1 Type of information in policies

Most DCPs reported that their policies mentioned periods of exclusion, as opposed to just mentioning that exclusion was necessary.

According to DCPs' responses, nursery policies were more extensive and detailed than childminder policies. Nursery managers described significantly more infections in their policies (of those specified in the questionnaire), and were significantly more likely to describe periods of exclusion than childminders (according to their reports). Of course, this conclusion must be viewed in light of the fact that 'periods of exclusion' might not have been an appropriate description for the information stated in some policies, and therefore may have affected responses (see chapter 9, sub-section 9.2.1.6).

According to DCPs' responses, nursery policies were significantly more likely to have mentioned exclusion periods for children taking antibiotics. Just over a half of nursery managers and just under a third of childminders reported stating this information in their policies. Nursery managers were also more likely to report specifying GP consultations in written policies (just under 40% of nursery managers and just under a quarter of childminders).

4.8.1.2 Content of policies

The types of infections DCPs reported mentioning in their policies were similar for nurseries and childminders; these tended to be gastrointestinal and skin infections (with the exception of hand foot and mouth, and slapped cheek syndrome). Interestingly, RTIs were less commonly mentioned in policies.

4.8.1.3 Preferences for standardised policies

The majority of DCPs said they would prefer standard exclusion policies, written by professionals.

4.8.2 Recognising infections

According to DCPs' responses, less than half had 'symptom guidelines' in place to help them recognise infections. Some of these symptom guidelines were the sickness exclusion policy itself, but the majority were separate documents. Most DCPs reported that they used their personal judgment to recognise symptoms, when asked about this in a more general sense.

4.8.3 Interactions with parents

The third running theme in the questionnaire considered DCPs' interactions with parents, although this area was not explored in depth.

Most DCPs stated that they *do* advise parents regarding their child's recovery, with no significant differences found between nursery managers and childminders. Just under 40% of DCPs expressed that they advise parents that antibiotics might be needed, with no significant differences between nursery managers and childminders. In contrast, almost all DCPs stated they advise GP consultations, with nursery managers being statistically more likely to report offering this advice than childminders.

According to DCPs' responses, parents tend not to influence their exclusion decisions. When asked how often parents influenced their exclusion decisions, the number of nursery managers selecting 'never' was higher than all other categories of answers combined. For childminders, the majority of responses fell under the 'sometimes' and 'rarely' options. However, statistical testing revealed no significant differences between nursery managers and childminders.

Finally, nursery managers reported that parents challenged their exclusion decisions significantly more frequently, when compared to childminders' reports.

Parents' tendencies to challenge exclusion decisions may be related to how flexible the exclusion decision is. Though not explored in this questionnaire, parents' interactions with DCPs could depend on their relationship with the DCP. Are there differences in childminder/parent, and nursery manager/parent relationships? This was something that was noted for further investigation in the qualitative phases of the study.

4.8.4 Analysis of actual policies

Based on the *actual policies* analysed, there were a great range of re-admittance requirements for most infections. Variability was found in exclusion periods, requirements for treatment, and requirements to consult the GP. Furthermore, there was a lack of consistency in definitions of 'symptom resolution'. For example, for conjunctivitis, different DCPs focused on different symptoms (e.g. inflammation, streaming eyes, etc).

Whilst differences in exclusion periods might appear minor for some infections, (e.g. 48 hours from last normal stool, vs. 48 hours from last episode of diarrhoea), some of the discrepancies could translate into a number of additional days off (even weeks, in some cases).

Inconsistencies in symptom descriptions not only have implications for exclusion periods, but also raise questions surrounding the certainty of DCPs' diagnoses. Streaming eyes, for example, are a common symptom of colds, yet children with apparent conjunctivitis were excluded until the "*...eyes are no longer streaming*" by some DCPs. Diagnosing was not considered in the questionnaire. However, DCPs' diagnostic-skills are directly relevant to periods of exclusion, and the decision to exclude in the first place.

DCPs' stated exclusion periods often failed to comply with official HPA guidelines. This could imply that inappropriate exclusion practices are occurring in day care

settings; this is only a possibility, because it cannot be said that the exclusion policies encountered reflect actual practice.

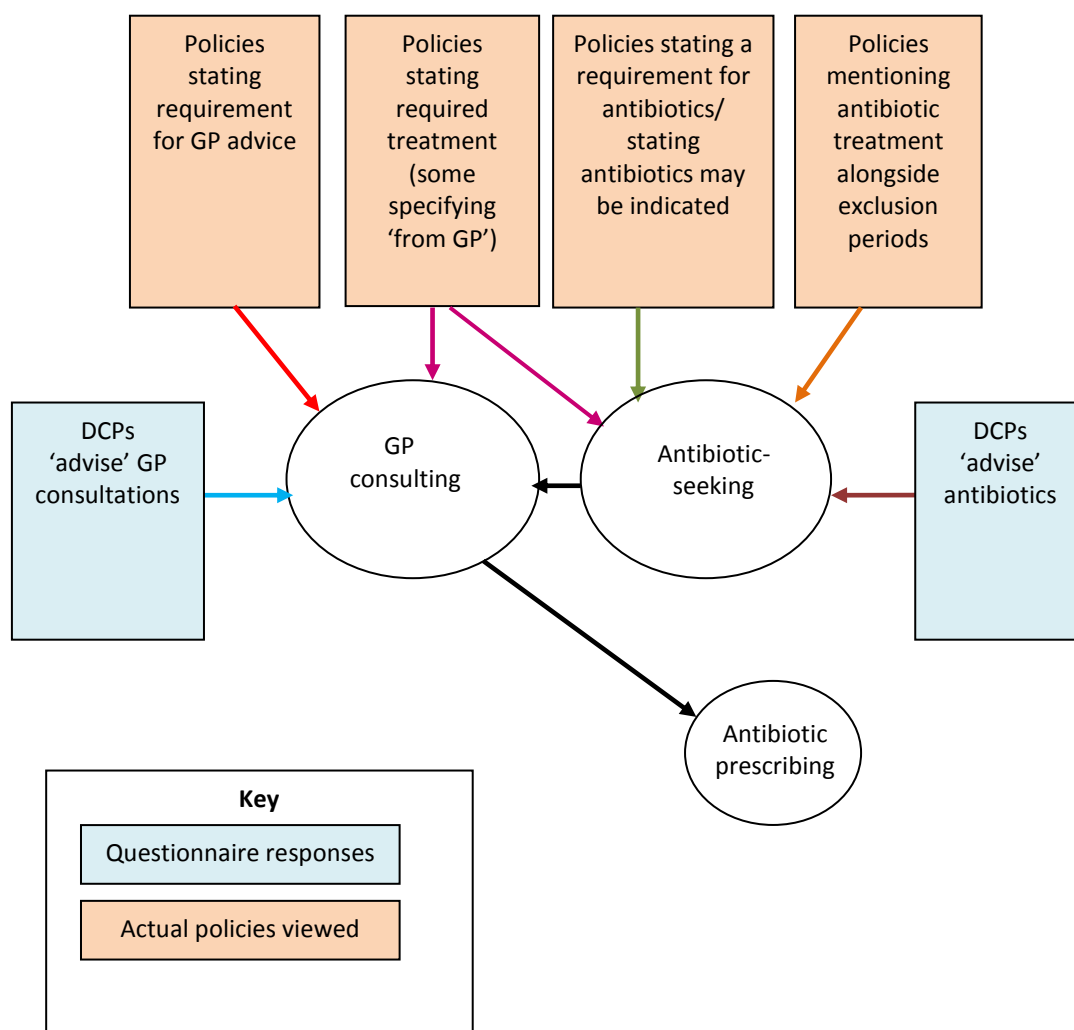
4.9 Chapter 4 Conclusion

To conclude, the questionnaire results show that DCPs' sickness exclusion policies are markedly varied, not only in terms of the infections they discuss, but also in their re-admittance requirements. For a given infection, some policies specify the need for GP consultations or medication, while others may not. Likewise, exclusion periods for the same infection vary from one day care policy to the next. These variations occurred at the level of the individual day care setting- not at the level of day care typology. In other words, there were no clear similarities in requirements amongst childminder policies or nursery policies.

The differences found across sickness exclusion policies suggest that not all policies are evidence-based. This was supported by the fact that in many cases, very small proportions of policies reflected HPA guidance.

Considering the main aims of the research, the questionnaire results have shed light on possible direct and indirect pathways through which DCPs may encourage GP consulting and inappropriate antibiotic prescribing (often mediated through parents' antibiotic-seeking behaviours). These pathways have been summarised in figure 4.1.

Figure 4. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on survey results and actual policies viewed



As mentioned throughout this thesis, merely consulting a GP can lead to inappropriate prescribing through the non-clinical factors that can influence prescribing decisions. These factors are likely to be especially pronounced when parents consult with an intention to receive treatment (i.e. “antibiotic-seeking”). For simplicity, one arrow links ‘GP consulting’ with ‘antibiotic prescribing’ in figure 4.1. The boxes arranged on the periphery of figure 4.1 show the various day care-related triggers that can lead to GP consulting or antibiotic-seeking behaviours, both of which have potential to be followed by eventual antibiotic prescribing.

The factors presented in the red boxes have been derived from the actual sickness exclusion policies viewed. Any mention of GP consultations or GP advice could directly encourage parents to consult. Any Specification of a need for treatment

could also encourage GP consultations, and potentially, antibiotic-seeking behaviour (albeit less directly). Policies that: a) express a requirement for antibiotic treatment, b) suggest antibiotics are indicated, or c) mention antibiotic treatment alongside an exclusion period, can also drive antibiotic seeking-behaviour, which will naturally be followed by GP consultations, and possibly antibiotic prescribing. Also shown in the diagram is the potential for DCPs' advice (blue boxes) to directly influence GP consulting and antibiotic-seeking behaviours. This information was derived from questionnaire responses.

Although the survey found that exclusion policies are often not evidence-based, I felt reluctant to include this in figure 4.1, as the survey did not address how inappropriate exclusion could *lead* to consulting and antibiotic-seeking behaviours. I acknowledge the theoretical possibility that inappropriate exclusion can indirectly lead to inappropriate prescribing, but this is based on previous researchers' suggestions- not the results of this survey.

Figure 4.1 is more detailed than the earlier representation of pathways in figure 2.1 (which was based on the literature). Examination of actual policies revealed an array of information communicated in different manners. This allowed me to be more specific with regards to how written policies may influence GP consulting/antibiotic-seeking behaviours. However, the pathways are still fraught with the same issues brought about through using survey methods, and failing to incorporate parents' perspectives.

The first question to ask is this: do written policies reflect practice? For example, are children with certain infections really excluded immediately, and are antibiotics really a requirement for some infections? The decision making processes DCPs engage in when faced with an ill child could involve situational factors, or details that cannot be expressed through a written questionnaire. Likewise, it is very difficult to design a questionnaire that is capable of extracting this type of information, if there is little knowledge to inform and focus the questions. The questions featured in this questionnaire were broad and fairly non-specific, but served the purpose of providing a descriptive overview of sickness

exclusion policies. Understanding the process of exclusion, and the ways in which sickness exclusion policies are used, might help to uncover why DCPs generally reported a preference for standardised policies.

The questions that asked about DCPs' tendencies to advise antibiotics/GP visits provide little information regarding whether this advice is warranted (DCPs could be basing their advice on HPA guidelines). This level of information could have been derived from additional questions, but the manner in which advice is communicated, and the reasons for advice, would not come across easily. These lines of enquiry are better pursued with an inductive approach to research, where DCPs' accounts can help shape theories of how infections are managed, how advice is communicated, and the reasons behind these behaviours. These are the main topics dealt with in phases two and three of this study. The questionnaire set a foundation for these phases, as participants could be selected in a meaningful way, and interview topics were easier to approach (after being introduced through the questionnaire).

This thesis will now focus on the qualitative work undertaken, beginning with an overview of the methods employed.

CHAPTER 5: QUALITATIVE METHODS

5.1 Introduction

This chapter will discuss the qualitative methods used in phases two and three of the study. These phases were concerned with interviewing DCPs (phase two) and the parents that used their services (phase three). Although phase three began slightly after the initiation of phase two, parent and DCP interviews took place concurrently. The sampling strategies and recruitment methods differed for DCPs and parents.

Section 5.2 provides a justification and overview of the chosen research method.

Sections 5.3 and 5.4 both follow a similar format, describing the methods employed in the DCP (5.3) and parent (5.4) interviews. Each section will provide a reminder of the objectives for each study phase, followed by a description of sampling, recruitment methods, topic guides, and the interview procedures.

Section 5.5 considers DCP and parent interviews together, outlining data collection and processing methods, and the approach to analysis. These methods were identical for DCP and parent interviews. A reflexive account of some of the difficulties experienced in interviews, and how they were overcome, is available in appendix 5.1.

5.2 Justification of Method

The main aim of both phases was to explore whether or not DCPs, and the exclusion policies they follow, encourage parents to consult GPs and inappropriately seek antibiotic treatment. This is a complex question, which could

only be tackled by building an understanding of the realities of the stakeholders involved.

Qualitative research methods offer a means to understanding the different ways in which individuals interpret the world (Willig, 2001). Face to face, semi-structured interviews were selected as the main mode of data collection, but there were other candidate qualitative methods that had potential to provide answers to the research question. These included overt observations, focus group discussions, and in-depth (unstructured) interviews.

Whilst conducting observations of DCPs would have achieved a more realistic view of their day to day practices, there would have been little opportunity to gauge DCPs' beliefs and individual perspectives. Furthermore, it was anticipated that DCPs might need to refer to retrospective events and experiences in order to discuss the full range of childhood infections I wanted to explore. It was not guaranteed that cases of interest would occur during the period of observation. Observations, in collaboration with interview techniques, would have been ideal as part of an ethnographic study design, but I intended to include a range of day care facilities in my study in the given time frame- not just one or two as would be customary for the depth required for an ethnography. Observations would also have needed to be overt for ethical reasons (given the nature of the day care environment), which had potential to bring about what participants might perceive to be socially desirable behaviour. Finally, observing childminders in their own homes as they care for one or two children on any given day would probably have constituted poor use of research time and resources.

Focus groups are a form of group interview in which several participants are asked to discuss a clearly defined topic in the presence of a 'facilitator' (the researcher) (Bryman, 2008). The role of the researcher is to moderate or facilitate the group by guiding them through a schedule of pre-pared questions or activities, and can be considered to be more passive when compared to individual interviews. The advantage of focus groups is the potential to observe for group interactions, which should form a key part of analysis. This method has previously been used in

research about DCPs' perspectives on managing enteric infections in day care (Taylor et al., 2008) and parents' views on alternative care for excluded day care attendees (Slack-Smith et al., 2000). Focus groups were successfully used in both of these studies, but the nature of research involved gathering a range of perspectives on a given topic, with less attention devoted to understanding individuals' perspectives at great depth. Focus groups can be incredibly effective for generating discussion amongst a group- a feature which could have been used to achieve interesting findings from DCPs groups, parent groups, and groups consisting of both stakeholders. However, having no prior knowledge or experience of day care myself, I felt that capturing the individual perspective (and story) in depth was key to helping me understand the participants' realities (i.e. what it means to be a parent or day care provider). I felt an in-depth engagement with individuals would be particularly helpful during analysis. Furthermore, focus groups can sometimes result in imbalances in terms of the contributions made by participants, with some members of the group dominating, with others remaining less vocal. This was thought to further impede opportunities to understand each person's perspective and the context in which they were operating. In terms of validity, there were doubts about the trustworthiness of information arising from a group where the participants are business competitors (in the case of nursery managers). Parents may also have felt unable to discuss their actual behaviours in the presence of others parents, as their actions may have had consequences for other parents in the group (due to issues of infection transmission). There is also potential for individuals' apparent views to converge toward popular views, or views expressed by more dominant participants. Finally, my preliminary meetings with DCPs had given a strong sense of how busy these individuals and the parents using their services are. There was therefore a concern surrounding the practicalities of finding a common time-slot and convenient setting suitable for all targeted participants.

The third form of data considered was the interview- perhaps the most common of all qualitative methods. Britten (1995) identifies three types of research interview: 'structured', 'semi-structured' and 'in-depth'. Structured interviews are conducted in a standardised manner, and are in effect a questionnaire delivered

through an interviewer. Questions are typically fixed choice, and data can often be analysed quantitatively. Semi-structured interviews usually make use of a 'topic guide', which consists of questions/talking points the researcher wishes to address. The order and depth of these questions is not rigid, and the typically open-ended nature of questions encourages conversations to develop, and new lines of enquiry to be pursued. In-depth interviews are the least structured, and normally consist of one or two overriding questions/topics which are designed to generate a discussion. Further questions arise as follow ups to what participants say. Most qualitative interviews are in-depth or semi-structured, with the aim being to explore topics in detail, and uncover new areas or concepts that were not anticipated at the outset of the research (Britten, 1995).

One of the predominant reasons for choosing a semi-structured form of interviewing was the potential to uncover new lines of inquiry, within a loose framework of questions/topics that needed to be covered. The lack of current understanding in this area called for a method that would allow for the emergence of themes that were not previously anticipated. Furthermore, as mentioned earlier, I had no personal understanding of the reality of being a DCP or parent. As a result, the interview schedule needed to be flexible, to incorporate issues that were important to the participants. This flexibility allowed me to develop as an interviewer and improve the topic guide, particularly during the early stages of interviewing.

Unstructured interviews might have resulted in interesting data, but could not guarantee generating information suitable for the study objectives. The rigid nature of structured interviews had the danger of creating an unnatural environment, in which participants would not have the chance to reflect. A balance needed to be met between discussing pre-determined themes, and offering a relaxed environment in which participants were at ease to speak freely. Rich, meaningful data can be extracted from discussions that occur more naturally, where participants feel at ease (King & Horrocks, 2010). Participants may recall information later, be reminded of past experiences that are triggered by comments, or go off on tangents that may address other areas of interest.

These eventualities were made possible by adopting a semi-structured interview method.

It was important to reassure DCPs and parents that they were not being tested for their competency or judged for their actions. Looking after other people's children carries great responsibility. I was conscious that DCPs may feel under scrutiny, constantly being monitored to abide by regulations (in their day to day work). Similarly, discussing children's health matters with parents could be seen as a test of competency. The risk of participants producing socially desirable answers is always present in interviews, and there are valid criticisms that interviews do not act as a pipeline to participants' actual experiences and perspectives (Given, 2008). In this study, the subject of children and their care was seen as a particularly sensitive issue, making socially desirable answers a substantial concern. There are techniques which can be employed to encourage participants to give accounts that more closely reflect their internal representations. These techniques essentially aim to build trust through establishing a rapport between the researcher and participant (King & Horrocks, 2010). Numerous techniques were employed to build rapport, most of which will be discussed throughout this chapter. The semi-structured approach facilitated this process. For example, the flexible topic guide enabled me to emphasise different topics in accordance with what seemed important to individual participants, helping to empower participants, and lessen the impression that I was in total control.

Another limitation of interviews is the risk of recall bias, where a participant's recall of previous events is inaccurate, or influenced by more recent experiences. Researcher bias is another concern, where the researcher (unknowingly) interprets participants' accounts through a particular lens, or influences participants' responses through loaded questions (or other subtle methods, such as body language). The impact of these issues, and the strategies employed to minimise them, have been discussed at length in Chapter 9 (section 9.2.2).

5.3 Day Care Provider Interviews

5.3.1 Overview and objectives

The purpose of DCP interviews was to explore their attitudes and beliefs around common childhood infections, and how they are managed in day care settings. There were two different branches to the interviews: 1) confirming and reviewing information provided in the questionnaire, and 2) acquiring new information by exploring ideas in greater depth.

The interviews were an opportunity to revisit some of the ideas the questionnaire had touched upon, allowing me to check that participants had interpreted the questions correctly. Some questionnaire items, particularly those that required expression of opinions/judgments, served the purpose of becoming 'talking points'. This demonstrates a key advantage of using mixed methods. The survey allowed me to select a range of participants that provided different initial answers in their questionnaires, maximising the potential to understand a range of different perspectives in interviews. Follow up questions could then be asked in relation to most questionnaire items, helping to build context around responses. Each interview was mainly concerned with exploring DCPs' beliefs and experiences, relevant to the themes discussed below.

5.3.1.1 Exclusion

One of the reasons for interviewing DCPs was to explore sickness exclusion policies in greater depth. This included the details of the exclusion policy, and the role it plays in the day care setting. DCPs' thresholds and reasons for exclusion were explored in depth, as well as their re-admittance criteria.

5.3.1.2 Relationships and communications with parents

Interview questions explored whether or not parents were ever able to persuade DCPs to change their mind about exclusion. Another topic explored was the healthcare advice DCPs offer parents. This included advice regarding consulting GPs, and seeking treatment. Context in which this advice was offered was particularly important.

5.3.1.3 Antibiotic knowledge

DCPs' views on antibiotic indications were explored, in relation to symptoms and infection names. This was particularly relevant if DCPs were found to advise parents about antibiotic treatment. Reasons for advising/not advising antibiotic treatment, and general attitudes to the culture of antibiotic prescribing/consumption, were also explored (when appropriate).

5.3.2 DCP sample

5.3.2.1 Sample size

The sampling frame for participant selection consisted of all DCPs that had returned their questionnaires, with the exception of those who had declined participation for phase two. Non-probabilistic sampling methods, in the form of purposeful sampling, were used to select participants. As is customary in qualitative research, there was no target sample size, but it was predicted that 20-30 interviews would be a feasible number. Concurrent data collection and analysis determined whether or not further interviews needed to be conducted. There was a goal to continue recruitment until the point of 'data saturation', but practical factors such as time also had a prominent role to play in influencing the final sample size. As Sandelowski (1995) points out, "*determining adequate sample size in qualitative research is ultimately a matter of judgement and experience*". Being a new area of investigation, it was clear that an adaptable research approach was needed.

In total, 24 interviews were conducted with DCPs, nine of which were with childminders, and the remaining 16 with nursery managers. Similar themes began to emerge from childminder interviews earlier than nursery manager interviews. Consequently, the recruitment of nursery managers took priority during the latter stages of the study.

5.3.2.2 Sampling method

The goal of this research was not to make statistical generalisations, but to explore the range and depth of attitudes and beliefs that govern individuals' behaviours. Random sampling was of no interest here, as participant selection needed to be reasoned and meaningful. Questionnaire data provided a means of selecting participants purposefully. It could be argued that most qualitative sampling methods are purposeful in nature - a view taken by some authors in the literature (Patton, 1990; Sandelowski, 1995). By this, it is meant that qualitative researchers select subjects that they feel will be information-rich and fit the purposes of their study. How they choose these participants varies. For example, they may choose to interview typical cases, divergent cases, a range of cases that vary along certain variables, or appropriate cases presenting themselves (opportunistic sampling). No matter which path is taken, the researcher's decision-making dictates who will be approached. In contrast to this, others accept the existence of purposeful sampling and random sampling, but assert that opportunistic sampling is distinct, in that the participants are not chosen on the basis of any characteristics (Cohen & Crabtree, 2006). The view that all qualitative sampling is purposeful has also been challenged by Coyne (1997), who believes that 'theoretical' sampling should be considered separately. Theoretical sampling is an idea born from the grounded theory approach to qualitative research (Glaser & Strauss, 1967). This approach relies on the researcher delving into a topic of interest with no preconceived ideas or theories. Theories are generated through the data, and refined over time, through sampling subjects in accordance to where the previous data has directed the study.

Theoretical sampling was considered in this study, as it was possible that decisions over who to interview next would be shaped by emerging research findings. After careful consideration, I decided that selecting participants on the basis of previous interviews did not always serve the purpose of ‘testing theories’. Some participants were selected because previous interviews had not been information-rich cases. Some respondents were also selected on the basis of a *priori* factors that were judged as being important to the study. These factors were based on issues from the literature. Selection of cases was thus not purely a consequence of emerging theories, although this did play a role.

Overall, the sampling method employed in this research is best described as being purposeful in nature.

5.3.2.3 The purposeful sample: how were participants chosen?

A heterogenic sampling method approach was taken to select ten nursery managers and ten childminders at the onset of data collection. I aimed to interview a sample of DCPs that exhibited maximum variation on the basis of characteristics which I anticipated to be relevant to the study objectives. The different variations of these characteristics were obtained from questionnaire data. For example, the interview sample needed to include a mix of DCPs who reported that they did and did not advise parents about antibiotic treatment. Physical characteristics of the day care settings (size, location, source of funding) were also considered, as these factors could have directly or indirectly influenced the way DCPs manage infections. The complete list of criteria used for sample selection is shown in table 5.1.

Table 5.1 Categories and criteria for purposeful selection of DCPs

Sickness Exclusion Policy

A respondent with:

- No sickness exclusion policy
- A comprehensive sickness exclusion policy (all 19 infections mentioned)
- No named infections in sickness exclusion policy

Advice

A respondent that:

Gives advice to parents regarding how to make the child feel better

Does not give advice to parents regarding how to make the child feel better

Advises antibiotics may be required

Does not advise antibiotics may be required

Suggests parents consult doctor

Does not suggest parents consult doctor

Symptom Guidelines

A respondent that:

Has symptom guidelines

Has no symptom guidelines

Views on Standard Policies

A respondent that:

Disagrees with having standard sickness exclusion policies

Agrees with having standard sickness exclusion policies

Parents

A respondent who claims that parents:

Often protest against their exclusion decisions

Sometimes protest against their exclusion decisions

Rarely protest against their exclusion decision

Never protest against their exclusion decision

Characteristics of Day Care

Setting

A respondent from a:

Private independent nursery in Cardiff*

Private independent nursery in Monmouthshire*

Private independent nursery in Merthyr Tydfil*

Private chain nursery in Cardiff*

Private chain nursery in Monmouthshire*

Private chain nursery in Merthyr Tydfil*

Council-funded nursery in Cardiff*

Council-funded nursery in Monmouthshire*

Council-funded nursery in Merthyr Tydfil*

Nursery with 24 children or less*

Nursery with 25-59 children*

Nursery with at least 60 registered children*

The DCP

A respondent that has:

No more than four years of experience

At least 10 years of experience

The criteria used to select participants were arranged into seven categories, as shown in table 5.1. For example, one category would have been 'Sickness Exclusion Policy', and a criterion under this might be 'A respondent with no exclusion policy'. One nursery manager and one childminder were needed for each criterion. Not all the criteria in the table were applicable to childminders, in which case they were ignored (marked with an asterix).

To begin with, I aimed to represent the above criteria by a 'starting' sample of 20 DCPs. As mentioned above, it was estimated that 20-30 DCP interviews would be conducted, but the lower limit of this estimate was used to allow room for additional interviews. DCPs that fulfilled as many criteria as possible were selected in order to keep the sample size manageable. For example, a nursery manager who fulfilled four categories would be prioritised over one that only fulfilled two. Certain DCPs had to be interviewed if they were the only participants to satisfy particular criteria. These tended to be associated with the more extreme multiple-choice options from the questionnaire.

Once each item on the table had at least one childminder and one nursery manager corresponding to it, the initial target sample was complete.

5.3.2.4 Inclusion and exclusion criteria

All questionnaire respondents who indicated interest in participating in phase two were eligible for interview.

5.3.2.5 Increasing the sample size

Some of the originally chosen interview participants were selected on the basis of the area their day care settings were based in, although it became clear that average deprivation scores of the study areas were meaningless in the case of some day care settings. Not surprisingly, there were exceptions to the average statistics within each study area. In particular, the overall sample was biased against DCPs in charge of day care settings that catered for more deprived

families. For example, the nurseries managed by DCPs from Merthyr Tydfil (the most deprived of the three areas featured) seemed to serve middle class families. Day care settings serving poorer, more deprived communities were rare, but a still existed within the boundaries of the study area. Most day care settings in the sample were private and independent, simply because these types of establishments are the most common within the wider population. As a result of this imbalance, DCPs known to run day care settings for more deprived families were invited to participate in interviews, even if they had failed to return their questionnaire. This action resulted in two additional DCPs being recruited. Two additional DCPs were also recruited as a result of poor response rates in parent interviews (see 5.4.2.3).

5.3.3 Recruitment

Purposefully selected DCPs were contacted via post and telephone. Recruitment packs were sent out, consisting of the following:

- A covering letter (appendix 5.2)
- A participant information sheet (appendix 5.3)

Similar to recruitment methods in the questionnaire phase, potential participants were made aware of all relevant details of the study through the information sheet. They were informed that they would receive travel cost compensation (if required), in addition to £30 for an interview that lasted up to an hour.

DCPs were asked to contact me if interested in being interviewed. Telephone reminders were made if no response was received within two weeks of dispatching recruitment packs. Those who refused interview were not contacted again. Those who agreed completed consent forms on the day of interview (appendix 5.4).

5.3.4 Topic guide

The topic guide formed the backbone of each interview, providing guidance through the discussion. For simplicity, questions were organised into sections, and ordered based on how interviews were predicted to flow. This order was usually abandoned in favour of attempting to engage in 'natural' conversation, where participants' answers informed the questions/comments that followed. With time, I became less reliant on the topic guide, to the point where it merely served the purpose of a checklist.

5.3.4.1 Developing the topic guide

The topic guide underwent numerous iterations, and evolved as data collection progressed. According to Bryman (2008), creating a topic guide begins with having a clear understanding of what the specific research objectives are. He summarises nine steps to creating the guide. These are: 1) knowing the general research area; 2) understanding specific research questions; 3) creating general interview topics; 4) formulating questions; 5) revising questions; 6) piloting questions; 7) identifying novel issues; 8) revising questions; and 9) finalising the interview guide.

One criticism of Bryman's recommendations is the final step, 'finalising the interview guide', which suggests that the topic guide has an eventual fixed state. This is not strictly the case with qualitative interviews. There came a point when no new topics were added to the guide, but this was a result of a saturation of ideas/concepts, which could only occur as data collection progressed.

Having fulfilled the first two steps in Bryman's sequence, the general interview topics were considered. These were: 'Characteristics of day care setting'; 'Exclusion policies'; 'Specific infection management'; 'Guidance for identifying infections'; 'Advising parents'; 'Relationships with parents'; 'Antibiotics'; 'Wider issues surrounding antibiotic prescribing', and 'Changes in guidance'. Questions relating to the wider issues of prescribing were only raised if there was sufficient

time, and if the participant was able to engage in this type of discussion. The topic of 'specific infection management' was relevant throughout the whole interview, often being the context within which other areas were discussed. With time, I was able to address questions from other topics whilst allowing participants to discuss their experiences and share accounts in a more 'narrative' style. These accounts usually revolved around specific infections or exclusion cases. The topic guide changed to accommodate my evolving style of interviewing. A copy of the topic guide used in the first interview, alongside the topic guide used in the last interview, is presented in appendix 5.5. Comparing the two documents will show how the topic guide evolved by becoming less structured, and more tailored around encouraging participants to discuss their experiences.

5.3.4.2 Vignettes

Hill (1997) describes vignettes as: "*Short scenarios in written or pictorial form, intended to elicit responses to typical scenarios.*" The key word here is 'typical'. Vignettes were used to explore DCPs' reported reactions to scenarios that mimicked their day to day practice, in the hope that their responses would more closely reflect their previous experiences, and most likely course of action. The vignettes were based on childhood infections that were known to be common in day care settings, and/or those anticipated to evoke a range of reactions and information-rich accounts. For instance, conjunctivitis was known to be a controversial infection, which can result in unnecessary exclusion from day care and inappropriate antibiotic treatment (Rose et al., 2006).

A second advantage of using vignettes was the potential to explore DCPs' tendencies to diagnose. Presenting symptoms of infections in a familiar context encouraged DCPs to talk about the different considerations that they would make, and other factors that might influence their exclusion decisions. In addition to this, the assumptions that DCPs make when faced with symptoms could be elucidated (e.g. additional symptoms they assume would also be present).

The vignettes used in the interviews (table 5.2) were written using medical websites, and presented to a clinical primary care colleague to check for validity. The specific vignettes presented in interviews varied, depending on the infections that had already been discussed. There was no fixed point to discuss vignettes in the interview- often, they were raised when deemed relevant to the discussion.

Table 5.2 Vignettes used in DCP interviews

- 1. A 5 year old girl has a runny nose consisting of green mucous. Her eyes are watery, and she is sneezing frequently. Her mother says she developed her symptoms over the weekend.**
- 2. A 3 year old has a chesty cough and wheezes occasionally. She complains that it hurts whenever she coughs, and points to her chest. Her parents tell you she has been coughing up green/yellow mucous, the night before.**
- 3. A 4 year old boy refuses to eat lunch because his throat hurts. When you examine his throat, you notice his tonsils are red, inflamed and have patches of white pus on them.**
- 4. A 2 year old comes in to nursery with a red, inflamed left eye, which seems to be watering.**
- 5. An 8-month old baby seems irritable, and keeps tugging on his right ear, which seems to be a little redder than the left ear. He seems to have a slightly raised temperature.**
- 6. A 2 year old girl comes into nursery with a red rash on her cheeks. On closer inspection, you notice there is also a red rash on her arms. There are no spots or scabs, but the skin appears to have been 'slapped'.**
- 7. A 4 year old girl has had an episode of diarrhoea, about an hour after arriving into nursery.**

5.3.5 Pilot interviews

Three pilot interviews were conducted: one with a nursery manager, and two with childminders. The nurseries/childminders from the pilot questionnaire sample with the most extensive and least extensive sickness exclusion policies were invited to interview. Piloting interviews was vital, as it helped to gauge the speed at which I needed to move through topics, and gave an opportunity to make initial revisions to the topic guide. Some of the issues associated with interviewing were also experienced for the first time, allowing me to better prepare for these

eventualities. This included developing the confidence to steer the discussion back to topics of relevance when the interview deviated substantially. Pilot interviews revealed DCPs' tendencies to focus on describing peripheral health and safety issues (such as healthy meals, outdoor play precautions, etc). This was understandable, given that some of these issues have received media attention. Pilot interviews gave an insight into the types of deviations I would need to contend with, and enabled me to strategise how to relate these topics back to my research without disrupting the flow of conversation. The pilot interviews were not included in the dataset for this study.

5.3.6 Interview procedure

5.3.6.1 Preparation and settings

Interviews were arranged via telephone. DCPs were free to choose where the interview took place, but were advised that a private, quiet room was recommended. The majority of interviews with childminders were conducted within their homes, although accessibility issues resulted in one interview taking place in a coffee shop. All interviews with nursery managers took place at the nursery premises.

Before each interview, DCPs were shown a consent form, and given sufficient time to read the statements. Participants were verbally reminded that their names and any identifiable details would not appear in any dissemination of the research, and permission to audio record the interview was requested. Interview duration ranged from 25-50 minutes, not including interruptions, during which the recording device was switched off. Ethical and researcher safety considerations are outlined in appendix 1.2.

5.4 Parent Interviews

5.4.1 Overview and objectives

The interviews with parents formed the third and final phase of data collection. This phase 'matched' the second phase, in that only parents who used the day care settings run by DCP interview participants were eligible. This was to ensure that parents' perspectives could be captured in relation to policies/practices that had already been discussed with DCPs. This was extremely important, given the individual nature of sickness exclusion policies and DCPs' management of infections. The main aims of the parent interviews were:

1. To explore parents' perceptions of DCPs' sickness exclusion policies (and compare these to DCPs' descriptions).
2. To gain insight into when and why parents consult GPs, and whether or not DCPs influence this.
3. To explore whether DCPs influence parents' tendencies to seek antibiotics.

The main questions of interest were those surrounding GP consultations and antibiotic treatment. This phase of the study was the point at which I could begin to elucidate what effect (if any) exclusion policies and DCPs' practices were having on parents.

5.4.2 Sample

5.4.2.1 Changes to the sampling methods

When the project protocol was originally devised, parents were to be randomly selected from each of the day care settings featured in the interview stage of the

study. An overall sample size of 30-40 was a practically realistic range, although, as with DCPs, there was no fixed predetermined sample size (there was an aim to sample until the point of saturation). The estimated range needed to be broken down to the level of each day care setting. It was decided that the number of parents selected from each day care setting would be proportional to the total number of children enrolled in that setting (for the initial 'starting sample').

Each nursery manager interviewed was asked to number their registered families, so that parents could be randomly selected through random number selection (by myself). The number selected would depend on the size of the nursery. The DCPs were asked to distribute the recruitment packs to the randomly selected parents. This method was designed to be adopted for the nurseries only, as childminders cared for fewer children (often from two families), making random selection inappropriate. Consequently, childminders were given recruitment packs for all parents that used their services.

This method of random selection was chosen as a means of bypassing the possibility of DCPs selecting parents of their choice, which could have led to a biased sample of parents. However, this sampling method had two major drawbacks: one methodological, and the other practical. The first related to the fact that random sampling is an unnecessary requirement in qualitative research, and one which can distract from pursuing potentially interesting data. The stratified approach would have limited the number of parents that could be selected, which could have stunted opportunities to vary sampling in accordance with pursuing information rich cases. For example, one DCP's extreme policies provoked a mixture of views and opinions from parents, and sampling needed to occur until I was satisfied that I had captured enough parental perspectives in response to these extreme policies. Secondly, the response rates from the pilot nursery, followed by the initial two nurseries interviewed in the study, were poor. I did not want to change the protocol based on one nursery's poor outcome (at the pilot stage), but it became clear that an alternative approach was needed once actual interviews commenced. In light of these issues, the random sampling method was replaced by opportunistic sampling.

5.4.2.2 Finalised sampling method: opportunistic sampling

Opportunistic sampling has its limitations, the most obvious of which is the effects of sample bias. For example, parents that had negative experiences of exclusion policies may have been more likely to respond, as the research interview could be viewed as an opportunity to 'vent'. It could also be argued that parents who had a particular interest in healthcare topics, or academic research, were more likely to volunteer. Despite these concerns, opportunistic sampling was the only route to achieving a satisfactory response rate that was still practically and ethically feasible. Any other type of purposeful sampling would have required some degree of knowledge or background information about the sampling frame. As described in the 'recruitment' section which follows, ethical guidelines prevented me from obtaining prior information about parents.

5.4.2.3 Sample size

28 parents were interviewed in total. The final number was influenced by the point at which data saturation was achieved, the success of recruitment efforts, and the time-constraints of the study.

Data saturation was considered at two levels: at the level of each day care setting, and at the level of parent interviews as a whole. When similar themes were consistently emerging from a particular nursery or childminder setting, further recruitment efforts would be 'relaxed' for that particular setting (although all parents that responded were interviewed, if eligible, as long as the study was running). Recruitment efforts were an ongoing process for some settings that yielded low response rates. For example, extra posters would be displayed, or DCPs would be contacted as a reminder to distribute recruitment packs.

I aimed to continue interviewing across all day care settings until no new themes were emerging from parent interviews as a whole. Consequently, two extra DCP interviews were sought as a means of recruiting more parents, in cases where

further exploration was needed. This was relevant to childminding establishments, which yielded very low parental response rates. Therefore, parent interviews acted as a driver for the further sampling of DCPs. Ideally, both parent and DCP interviewing would have continued until data saturation had been achieved across all groups (i.e. parents and DCPs), but as mentioned before, I also had to contend with timing issues.

5.4.2.4 Inclusion and exclusion criteria

The first inclusion criterion for parent participants stated that they needed to have a child enrolled within one of the day care settings run by a DCP interview participant.

The second criterion required parents to have sufficient experience of infections and exclusion in order to contribute meaningfully. This criterion had to be exercised with caution, in a manner which did not filter out parents with potentially relevant experiences. Parents needed to have experienced exclusion for at least one infection, with the exception of chickenpox. Chickenpox is a common childhood infection, for which there is a general acceptance that exclusion is required. This was evident in the sickness exclusion policies sent in with questionnaires. It was anticipated that interviews with parents who had only experienced managing chickenpox would result in minimal contributions to answering the study objectives. A balance therefore needed to be reached between recruiting information rich cases, and recruiting sufficient numbers to capture a range of perspectives.

I opted to keep the exclusion criteria simple, to avoid filtering out too many parents. As shall be described in the 'recruitment' section, these criteria were reiterated to the parents who had expressed interest in the study (via telephone or e-mail).

5.4.3 Recruitment

Recruitment of parents was more complex than the recruitment of DCPs. Research governance and ethical guidelines prevented DCPs from releasing parents' details. Consequently, I was not able to directly contact parents prior to them initiating contact with me.

Two methods of recruitment were considered: the first relied on parents responding to a poster displayed in the nursery (not applicable for childminders); the second, more favoured option, involved DCPs handing out recruitment packs to *all* parents. Both of these methods were eventually employed for nurseries, while childminders simply handed out recruitment packs. In some cases, a second poster was displayed in a different location within a nursery, if response rates had been poor. A copy of the poster used can be seen in appendix 5.6.

As data collection progressed, it became apparent that parents who used childminders were less willing to take part. As a result, (following ethical approval), childminders were offered financial incentives (£20) for every parent they helped to recruit. Despite these efforts, no additional parents came forward to be interviewed. This limitation will be considered in the final chapter (sub-section 9.2.2.3).

5.4.3.1 Recruitment pack

Following similar methods adopted in the recruitment of DCPs, recruitment packs were compiled for parents. These consisted of:

1. A covering letter (appendix 5.6)
2. A participant information sheet (appendix 5.7).

The letters introduced the researcher (myself), the study, and outlined the incentives for participating. This was payment of £30, in addition to travel expenses. Once they had expressed interest, parents were asked a series of

questions to confirm their eligibility to participate via phone or e-mail (depending on their mode of contact). Similar to DCP interviews, consent forms were completed on the day of interview (appendix 5.4).

5.4.4 Topic guide

Although two pilot interviews were conducted with parents, there was far less predictability regarding the content of parents' interviews, which were considerably less structured than discussions with DCPs. The infections experienced were a key focal point for parent interviews, and often shaped which topics would be emphasised with each parent. As I progressed with parent interviews, a series of questions relating to groups of common infections were planned, largely inspired from the issues raised in DCP interviews. For example, with regards to gastrointestinal problems, the period of exclusion was deemed an important topic to discuss (given the variation observed in policies).

Parent interviews differed to DCP interviews in that they were more concerned with previous experiences, rather than work practice and routines. According to Wilkinson and colleagues (2004), the most trustworthy qualitative data can emerge through participants' extended accounts and stories, which are encouraged through asking open questions that are relevant to the participant's experiences. Abstract questions can be difficult to engage with, and are more likely to result in socially desirable answers. Similarly, specific questions that are directly concerned with the research aims are more likely to influence participants' responses in line with their assumptions of what they are expected to say (or, what is socially desirable). Similar to DCP interviews, the topic guide for parents evolved as I gained experience. The original topic guide had more questions, many of which directly addressed the research aims. The most recent topic guide was more tailored around eliciting the information of interest through listening to participants' experiences of infections and exclusion. Although some of the original 'direct' questions from the first topic guide were still present, these were only used as a 'last resort'. On the whole, asking participants to speak about

their previous experiences, with occasional probing, was an effective approach to gathering in-depth, personalised data that was relevant to the research aims.

Copies of the original and most recent parent topic guides can also be seen in appendix 5.5. Briefly, the *most recent* topic guide consisted of seven broad categories. These were: 1) Background information; 2) Experiences of infections and exclusion; 3) Views on exclusion; 4) Advice from DCPs; 5) Normal management of childhood infections; 6) Wider issues of antibiotic prescribing, and 7) Future improvements. For most interviews, the third category and above would be covered as parents discussed their experiences of infections and exclusions. As with DCP interviews, the more complex issues, such as wider issues of antibiotic prescribing, were generally reserved for the end stages of interviews, and only raised if I felt the participant was able to engage with the topic.

5.4.5 Interview procedure

Interviews with parents were conducted in pre-agreed, mutually convenient locations. This often took place in the parent's home. Before any of the interviews took place, participants were given a consent form to read and fill out. The procedures followed were similar to that of DCP interviews (see sub-section 5.3.6.1).

Parents were asked to complete a demographics sheet at the end of the interview (appendix 5.8). This provided information such as their educational background, employment and the structure of their households (e.g. single parent, number of children, etc.). These factors could shape parents' beliefs and behaviours, and therefore needed to be explicit for transferability purposes.

5.5 Data Collection Methods and Analysis

This section will now turn to describing the process of data collection and analysis. The methods used for these processes were identical for DCP and parent interviews.

5.5.1 Audio recording and transcribing

Interviews were audio recorded, enabling me to actively listen to participants and develop a natural rapport. This would not have been possible if I was relying on note-taking alone. Some basic notes were taken during the interview, mainly for purposes of ensuring that all relevant topics were pursued, and noting non-verbal information that was deemed relevant to analysis. More detailed field notes were taken once I had left the interview, including an overview of the main topics emphasised, and any other context-related details I felt would be important when it came to analysis (notes presented in appendix 5.1).

Interview recordings were transcribed in full, as close to the interview time/date as possible. Transcription refers to the process of reproducing spoken words into written text (Kvale, 1996). Depending on its purpose, non-verbal cues (e.g. pauses, body language) and emotive details (laughs, anger, etc) may also be included in the transcript. The theoretical underpinnings of the qualitative approach call for the researcher to be as close to the data as possible. In this case, personally transcribing interviews was integral to bridging the gap between collecting the data in person, and conducting analysis on a de-contextualised written document.

Poland (1995) asserts that human error during the transcription process is inevitable, and that written transcripts can never fully reflect the full and true content of the interview. Transcription is an interpretative process, and one that is open to the subjectivity of transcribers' perceptions. Transcribing the interviews myself helped to maintain consistency, and was more likely to result in a more

accurate portrayal of the interview scenario (aided by my personal experience of having been there, and the use of my field notes).

Transcription forms part of the data analysis process, in that the researcher is actively engaging with the data. Wellard and McKenna (2001) argue that as an analytical process, the approach to transcription should be disclosed in the methodology of a study. This allowed me to ensure my approach was consistent across the dataset.

All interviews were transcribed in full. Even sections of the interview that bore little relevance to the research were deemed appropriate for context, as there was danger that isolating parts of the interview could affect meaning. The interviews were not transcribed verbatim, as this level of detail was deemed unnecessary for the purposes of the study. Halcomb and Davidson (2006) provide an interesting discussion on the benefits and setbacks of verbatim transcription, concluding that its value depends on the nature and purpose of the research. Whereas the exact utterances of participants may be important for linguistic analysis, my approach to analysis focused on the meanings in what was being said. As a result, meaningless utterances (e.g. 'um'), or repetition of words were removed unless they carried meaning in their own right, or altered the meaning of surrounding text.

Finally, I decided to include my basic interpretations of how speech was being delivered when this was relevant (e.g. "*sounded unsure*"), as well as emotive details, and pauses. Breaks in the interview were also included due to their potential to interfere with the flow of the discussion.

Paying close attention to the quality of transcriptions can add rigour to qualitative studies (Poland, 1995). In light of this, transcriptions were read alongside audio recordings to ensure that they were an accurate portrayal of the recording. Of course, the transcripts were still constructions, shaped by my interpretations of what I could hear. The idea/theories emerging during data collection, and my past experiences, could have influenced these interpretations.

5.5.2 Analysis

5.5.2.1 Choice of analytical approach

There is not a standard approach to qualitative data analysis (Kvale, 1996). The choice of analytical technique is guided by the purpose of the research, and the researcher's philosophical assumptions. Those that subscribe to a purely relativist view of the world are particularly interested in the use of language and storytelling to construct meaning, and thus commonly use discourse, conversational or narrative analysis techniques (King & Horrocks, 2010). Researchers, such as myself, whose stances more closely align with the critical realist view are usually more concerned with understanding participants' lived experiences and positions, and thus focus on the content of what is said. Furthermore, the aim of my analysis was to draw out the main concepts interpreted from the entire set of interviews, by looking for patterns of meaning within and between different interviews.

The grounded theory approach to qualitative analysis attempts to develop theories that are 'grounded' in the data collected, through looking for patterns in the data. Although different versions of grounded theory exist, the above aim is at the heart of all approaches. The pioneering work by Glaser and Strauss (1967) gave birth to the idea of developing theories through the process of constant comparison. This involves making comparisons between data items, emerging theories, and the data set, in an iterative manner that spans the research process. However, a true grounded theory approach is bound by numerous requirements that made it a methodologically unsuitable approach to analysis here. For example: the researcher is required to enter the research scenario without any preconceived ideas or theories; the selection of participants must be carried out on a theoretical basis (guided by emerging theories), and data collection must continue until the point of theoretical saturation.

Not all of the requirements for a true grounded theory approach were satisfied in this study, although I was still able to apply some of the core principles of grounded theory in the analysis. Thematic Analysis (TA) involves coding data, organising codes into themes, and refining those codes and themes through constant comparison (as described above). Overall, TA is characterised by the segmentation, categorisation and summarising of data. However, TA has not been recognised as a standalone method of analysis by some previous researchers, who have viewed it as an analytical process that is embedded in other approaches (such as grounded theory, discourse analysis, etc). Braun and Clarke (2006) argue that TA should be recognised as an analytical approach to analysis in its own right. In order to facilitate the transition of TA from a 'tool' to a standalone analytical approach, Braun and Clarke have provided a clear commentary on the planning and execution of TA. This involves: 1) familiarisation with the research, 2) line by line coding of the data, 3) interpretation of codes into themes, and 4) the organisation of themes into 'over-arching', higher level themes. These higher level themes will represent the most important concepts that emerged from the dataset, and may represent a new or pre-existing theory.

Initially, the interview transcript is read in full to develop an overview of the data; this facilitates the understanding of specific data extracts in light of comments that might be made later in the interview. The second stage is a descriptive process that involves applying initial codes to data. A code should say something meaningful, and identify a feature of the data that appears interesting to the researcher. Depending on the researcher's philosophical stances and/or aims of research, these initial codes may or may not be related to the research objectives. The list of codes developed from the first interview can grow as other interviews are analysed. In the third phase, this extensive list of codes are interpreted and organised into similar groups, forming 'themes'. Not all codes will fall into a theme, and some single codes may form a theme in their own right. Eventually, themes will split into different hierarchical levels, forming 'sub-themes' and 'overarching themes'.

The process described by Braun and Clarke can occur in numerous cycles in the analysis of a single transcript. A theme developed from codes may have multiple dimensions which might not be obvious in the early stages of analysis, but may become apparent as new data is added to the dataset. Likewise, the interpretative formation of themes may bring to light additional codes that are relevant to the data, which in turn could help to develop new interpretations, themes, and so forth. Therefore, the process of TA involves jumping from one phase to another, and does not necessarily run in a linear, one directional manner.

5.5.2.2 Thematic template analysis

The process described above is the standard approach to TA. King and Horrocks (2010) assert that there are multiple variations of this analytical approach. One lesser known version of TA is 'template analysis', which best describes the style of TA used in this study. Template analysis follows the same principles of basic TA, with a few exceptions. Firstly template analysis makes use of a coding structure (a 'template') which is devised early in the research process, and revised as new data is collected. Revisions of the template continue until it captures a full representation of the researcher's understanding. Unlike basic TA, as described by Braun and Clarke, template analysis does not rely on a fixed number of coding levels, but leaves this open to the researcher's discretion. This allowed for more pertinent themes (i.e. those related to the research objectives) to be coded to more levels than peripheral themes.

5.5.2.3 Theoretical or inductive analysis?

According to Braun and Clarke, TA can be conducted in a theoretical or inductive manner. Theoretical approaches involve focusing on elements of the dataset that are of theoretical interest to the researcher, or relate directly to the objectives of the research. Inductive analytical approaches are less constrained by pre-existing theories or ideas, and result in themes that are data-driven (as is the case in grounded theory).

In this research, there were certainly some broad *a priori* themes that I was aware of at the outset of the research. For example 'advice to consult the GP' would have been one of these themes. These broad categories formed the initial framework for the template, which became increasingly complex as data collection (and analysis) progressed.

Due to the limited pre-existing work and my lack of theoretical frameworks, most of the analysis was conducted inductively, where many themes unrelated to the research objectives emerged. Furthermore, even in cases where broad *a priori* themes were considered, the sub-themes that provided dimension and depth to these concepts were derived inductively. Consequently, a mixture of theoretical and inductive coding occurred during the analysis.

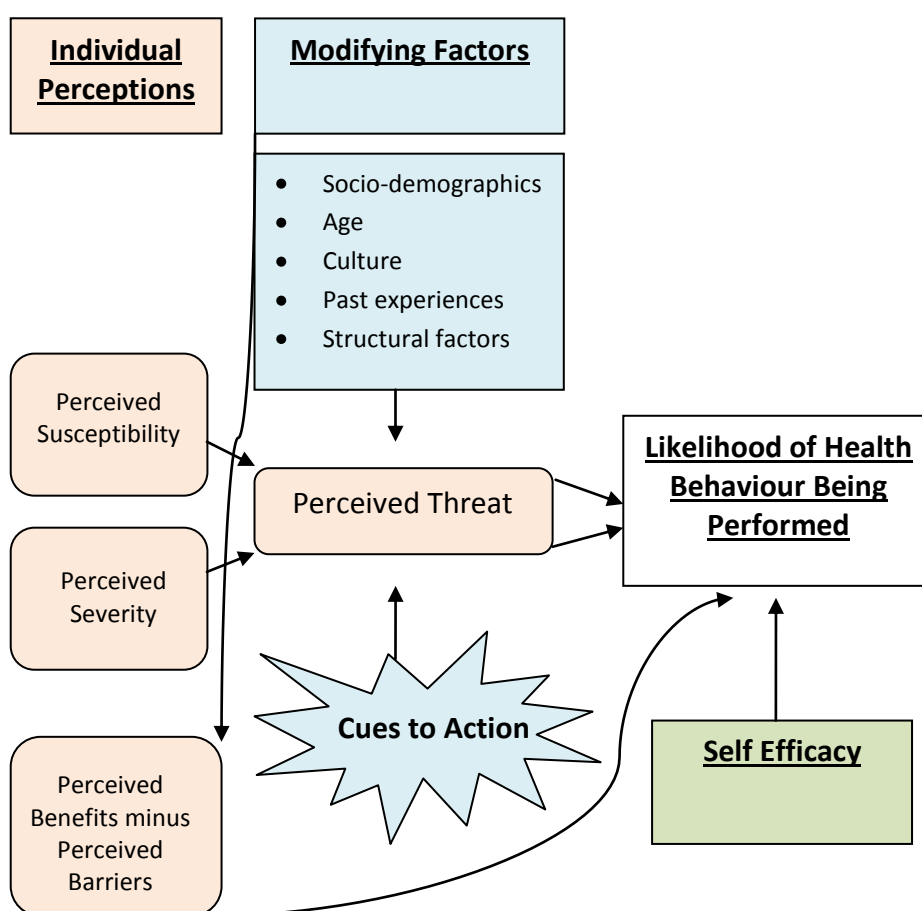
During the mid to latter stages of analysis (of both parents and DCP interviews), it became apparent that some of the developed themes loosely resembled constructs of the Health Belief Model (HBM) (Becker, 1974; Hochbaum, 1956; Rosenstock, 1966). This theoretical model consists of a number of constructs which are thought to play a role in bringing about a given health behaviour (Janz et al., 2002). Whether or not a health behaviour is performed is influenced by individual perceptions, modifying factors, and a person's self-efficacy. Two main broad constructs can help predict the likelihood of a health behaviour occurring in response to a health issue. These are a person's perception of threat, and their overall assessment of the benefits, minus the barriers, of performing the health behaviour. Perceived threat is composed of two 'sub-constructs', in the form of a person's perceived susceptibility to the health issue, and their perception of how serious the health issue is. Overall, the higher the perceived threat, and the greater the net benefits of adopting the health behaviour, the more likely it is that the behaviour will be performed.

All of these individual perceptions are modified by a host of factors ('modifying factors') including socio-demographic status, age, culture, and particular 'cues to action'. Cues to action can be internal or external, such as the emergence of a

particular symptom (internal), or the influence of media campaigns (external). These cues can act as triggers that encourage the health behaviour occurring.

Finally, whether or not the health behaviour is performed has also been proposed to be influenced by the individual’s self efficacy- their belief that they will be able to carry out the behaviour successfully (Janz et al., 2002; Rosenstock et al., 1988). These ideas have been represented in figure 5.1.

Figure 5.1 Diagrammatic representation of the Health Belief Model



In the context of this thesis, some of the HBM constructs were initially considered in relation to parents’ decisions to consult GPs. How the HBM related to the data has been described in the empirical chapters. Rather than informing analysis, the HBM’s role here is best described as a framework that was used for re-naming and reorganising themes that had already been constructed. For example, the theme titled ‘symptom severity’ was re-named as ‘perceived severity’, while

specific symptomatic triggers for consulting behaviour were re-named as 'cues to action'. The model was not used for theoretical coding of the data intentionally, but it is possible that this naturally occurred towards the end stages of data collection. However, this more theoretical approach to analysis is inevitable towards the end of data collection, as most researchers have formed thematic and theoretical frameworks towards these end stages.

I refrained from over-emphasising the importance of the HBM as a whole model, as there was a danger of subconsciously manipulating the data to fit in with a predetermined theoretical framework that only loosely related to this study. Only some of the constructs were considered, if they were directly relevant, and aided organisation of data. There were certainly some data that *could* have been theoretically coded under HBM constructs if described in the appropriate way, but this did not always occur as this was not the aim of my analysis. On a broader level, the model was not directly relevant to this study, as the behaviours considered were carried out on the behalf of dependents (children). Dealing with the health of other people can present extra pressures to managing one's own health, especially in the case of young children who cannot communicate. Furthermore, the HBM is normally attributed to health behaviour change (e.g. stopping smoking, choosing to exercise, etc.), usually with an emphasis on health promotion. This is slightly different to the issues dealt with in this study, which focused (on the most part) on what actions are taken in response to acute, mild infections. Having said this, everyday health promoting behaviours have also been described using HBM constructs. For example, research into patients' reasons for consulting general practice has been conducted using the HBM as a guiding framework (Campbell & Roland, 1996; Vandekar et al., 1992). 'Consulting GPs' can be viewed as a health promoting/preventative behaviour, and this is where most of the HBM constructs were relevant in this study. Thus, the ideas presented in models can be useful for helping researchers to develop their ideas.

5.5.2.4 What represented a theme?

A 'theme', according to Braun and Clarke, must capture something important within the data that relates to the research topic. There were no pre-requisites for labelling a concept as a theme. The process of identifying and naming themes was based on my judgments of whether a concept contributed to my understanding of the phenomena under research. In general, most of the themes identified in this study were constructed from at least two different cases (i.e. interviews), although the prevalence of a theme was not a measure of how important it was. A theme could also have been identified if it represented just one participant's perspective.

I have made some references to how prevalent some themes were in the reporting of findings. Although qualitative research does not place value on quantifying data, I still felt it was important to give an overview of 'common perspectives', the less popular views, and divergent perspectives, by specifying this where appropriate. This level of detail is useful for creating a broader picture of the research findings.

5.5.2.5 Computer-assisted data analysis

NVivo 8, software developed for qualitative data analysis, was used to manage and store qualitative data. Qualitative data analysis can be conducted manually through using coloured pens to code sections of data, writing in margins, and cutting and pasting sections of transcripts into relevant categories. The iterative nature of qualitative analysis, and the need to be flexible with coding/theme development, can make this an extremely time-consuming process. The introduction of computer-assisted qualitative data analysis (CAQDAS) software in the 1980s has given way to a multitude of software that allow for the coding of text while working at the computer, and the retrieval of groups of codes (Bloor & Wood, 2006). Software can also perform complex searches, where strings of characters or words are retrieved from vast quantities of data at the click of a button. These features have led to criticism of CAQDAS, as there is a temptation

to over-emphasise the frequency of codes, and a danger of the researcher becoming detached from the data (Bryman, 2008). These criticisms were taken into account in my decision to use CAQDAS. According to Bloor and Wood (2006), CAQDAS should be viewed as a tool, rather than a replacement for the researcher's analysis. In light of this, transcripts were still read in full, and the principles of manual coding were used (without the use of search tools). I found the speed with which codes/themes could be adapted actually facilitated the analysis, in that more time could be devoted to interpretation and the development of the thematic template. Example screenshots of the coding framework can be found in appendix 5.9.

5.6 Chapter 5 Conclusion

This chapter has set out the qualitative phases of the study. DCPs and parents took part in semi-structured interviews that explored their perspectives on how common infections are managed in day care, the tendencies of DCPs to advise GP consultations and/or antibiotic treatment, and the consequences of this advice for parents.

A purposeful selection of DCPs were interviewed, selected to form a sample of maximum variation on the basis of characteristics measured via the questionnaire. Parents were selected opportunistically via the DCPs that participated in this research.

Data collection and analysis occurred simultaneously, with emerging concepts and theories contributing to the selection of additional participants. Interviews were audio-recorded, transcribed, and subjected to thematic template analysis that used the constant comparison method.

This thesis will now turn to the results of the qualitative interviews. The next chapter will provide demographic information about the DCP and parent participants, and explain how the qualitative findings will be presented. Chapter

seven considers DCP and parents' perspectives on infection management and exclusion policies. Chapter eight addresses DCPs' advice-giving from the perspectives of DCPs and parents.

CHAPTER 6: OVERVIEW OF QUALITATIVE EMPIRICAL CHAPTERS

6.1 Introduction

This chapter presents an overview of the parent and DCP interview samples, followed by an explanation of how the data have been presented in the next two chapters.

6.2 Sample

A total of 24 DCPs and 29 parents were interviewed between November 2009 and June 2011. Of the 24 DCPs, nine were childminders, and 15 were nursery managers. Two parents were childminder users, and 27 used nurseries. Tables 6.1, 6.2 and 6.3 provide some basic characteristics of DCP and parent participants. Case profiles/reflections of each interview are available in appendix 5.1, with individual level data presented in appendix 6.1. The number of parents recruited from each day care setting (run by the interviewed DCPs) is shown in table 6.4.

6.2.1 Nursery managers

Most nursery managers interviewed were from Cardiff-based nurseries (47%). All were female, and had a range of childcare experience (from three to 24 years). Most of the nurseries in the sample were privately funded (i.e. from nursery fees), independent businesses. Most nurseries offered full care, but sessional care was usually an option (where parents could opt to send their child for half a day). Based on questionnaire responses, all nursery managers reported advising GP

consultations to parents, and almost half reported advising antibiotic treatment (n=7).

Table 6. 1 Summary of characteristics of nurseries run by nursery manager participants (n=15)

Area	Cardiff: 7 (47%)	Monmouthshire: 4 (27%)	Merthyr Tydfil: 4 (27%)	
Full or sessional	Full: 14 (93%)	Sessional: 1 (7%)		
Experience of DCP (years)	Mean: 13	Median: 10	Range: 3-24	
Funding/type of setting:	Private, chain: 3 (20%)	Private, independent: 10 (67%)	Council/Charity funded, chain: 1 (7%)	Council funded, (one of two branches): 1 (7%)
Subsidised care available?	Yes: 4 (27%)	No: 11 (73%)		
Size of setting	Small: 3 (20%)	Medium: 8 (53%)	Large: 4 (26%)	
Advise GP consultations?	Yes: 15 (100%)	No: 0 (0%)		
Advise antibiotics?	Yes: 7 (47%)	No: 8 (53%)		

Table 6.1: Explanation of characteristics

Area: refers to the area the nursery is based in.

Full or sessional: refers to the hours the day care setting could offer care (four hours or more for full care, less than four hours for sessional care).

Experience of DCP: refers to the nursery manager's number of years of experience (in childcare).

Funding/type of setting: refers to the source of funding, and the private/chain status of the nursery. Privately funded nurseries are funded through fees from parents.

Subsidised care available: refers to whether or not the day care setting offered subsidised care to certain parent groups (e.g. unemployed, students, single parents, etc.)

Size of setting: refers to size, based on the maximum number of children the nursery can accommodate at a time; small (<24 children), medium (24-48 children), large (>48 children).

Advise GP consultations: refers to nursery manager's response on the questionnaire.

Advise antibiotics: refers to nursery manager's response on the questionnaire.

6.2.2 Childminders

Most childminders interviewed were based in Cardiff. All were female (with the exception of one childminding couple) and had a range of childcare experience (also from three to 24 years). Childminders' residential postcodes were researched using an online geo-demographic information database (A Classification Of Residential Neighbourhoods, 'ACORN'). According to ACORN, all childminders lived in middle-class/affluent areas, with the exception of two (classified as 'hard pressed', and 'moderate means'). Based on questionnaire responses, all but one childminder reported advising GP consultations (89%), and just under half reported advising antibiotic treatment (44%).

Table 6. 2 Summary of characteristics of childminder participants and their day care settings (n=9)

Area	Cardiff: 6 (67%)	Monmouthshire: 2 (22%)	Merthyr Tydfil: 1 (11%)	
Full or sessional?	Full: 9 (100%)	Sessional: 0 (0%)		
Experience of DCP (years)	Mean: 12	Median: 15	Range: 3-24	
ACORN classification	Wealthy achievers: 3 (33%)	Comfortably off: 4 (44%)	Moderate means: 1 (11%)	Hard pressed: 1 (11%)
Care for own children?	Yes: 2 (22%)	No: 7 (78%)		
Advise GP consultations?	Yes: 8 (89%)	No: 1 (11%)		
Advise antibiotics?	Yes: 4 (44%)	No: 4 (44%)	No response: 1 (11%)	

Table 6.2: Explanation of characteristics

Area: refers to the area the day care setting (childminder's home) is based in.
Full or sessional: refers to the hours the childminder could offer care (four hours or more for full care, less than four hours for sessional care).
ACORN classification: refers to the area category offered by ACORN, based on childminder's postcode.
Experience of DCP: refers to the childminder's number of years of experience (in childcare).
Care for own children: refers to whether or not the childminder has their own pre-school aged child(ren) under their care.
Advise GP consultations: refers to childminder's response on the questionnaire.
Advise antibiotics: refers to childminder's response on the questionnaire.

6.2.3 Parents

Most of the parents interviewed used day care providers within Cardiff. Two of the 29 parents were male (7%). The sample of parents was dominated by nursery users- only two used childminders. All but two of the parents were in employment. Most parents were university-educated, and the majority categorised themselves as 'minor' or 'major' professionals. A mixture of full time (five full days a week, n=9) and part-time (less than five full days a week, n=20) day care users were interviewed. Only two cases were single-parents. Over half of the parents had no previous experience of having children enrolled in day care (i.e. no older children that went through day care).

Table 6. 3 Summary of parent characteristics (n=29)

Age (years)	Mean: 36	Median: 36	Range: 23-46			
Nursery or childminder user?	Nursery: 27 (93%)	Childminder: 2 (7%)				
Area	Cardiff: 18 (62%)	Monmouthshire: 7 (24%)	Merthyr Tydfil: 4 (14%)			
Hours child uses day care	Full time: 9 (31%)	Part time: 20 (69%)				
Previous experience of day care?	Yes: 11 (38%)	No: 18 (62%)				
Single parent?	Yes: 2 (7%)	No: 27 (93%)				
Educational status	University completed: 17 (59%)	University uncompleted: 2 (7%)	Professional training completed: 4 (14%)	Secondary school completed: 6 (21%)		
Occupational status	Major professional: 8 (28%)	Minor professional: 14 (48%)	Technician: 3 (10%)	Administrator: 1 (3%)	Home-maker: 2 (7%)	Other: 1 (3%)
Medical training?	Yes: 4 (14%)	No: 25 (86%)				

Table 6.3: Explanation of characteristics

Age: refers to the parent's age in years.

Nursery or childminder user: refers to the type of day care setting the parent was recruited from (nursery or childminder).

Area: refers to parent's area of residence.

Hours child uses day care: refers to whether the child uses day care 'full time' (5 days a week) or 'part time' (less than 5 days a week).

Previous experience of day care: whether the parent has had other children who have used day care (excluding those attending day care at the time of interview).

Single parent: refers to whether the parent lives with any other adults that can help care for their child(ren).

Educational status: refers to the highest education level reached by the parent.

Occupational status: refers to current occupational status of the parent.

Medical training: refers to whether the parent has received any formal medical training in the past.

Table 6.4 Number of parents recruited per day care setting featured in study (DCP code refers to the DCP in charge of setting)

Recruited parents								
DCP code	First parent recruited	Second parent recruited	Third parent recruited	Fourth parent recruited	Fifth parent recruited	Sixth parent recruited	Seventh parent recruited	
	CC5							
CC12								
CC15								
CC17								
CC60	PCC60.1							
CC91								
MTC5								
MTC12								
MC22	PMC22.1							
CN3	PCN3.1							
CN5	PCN5.1	PCN5.2						
CN11	PCN11.1	PCN11.2	PCN11.3	PCN11.4	PCN11.5	PCN11.6	PCN11.7	
CN22	PCN22.1							
CN25	PCN25.1	PCN25.2						
CN35	PCN35.1	PCN35.2						
CN72	PCN72.1	PCN72.2						
MTN21	PMTN21.1	PMTN21.2						
MTN23	PMTN23.1							
MTN26								
MTN18	MTN18.1							
MN2	MN2.1							
MN4	MN4.1	MN4.2						
MN8	MN8.1							
MN40	MN40.1	MN40.2						

6.3 Presentation of Data

To support the main concepts discussed in the findings, quotations from participants have been provided throughout the two chapters. Quotations that were particularly illustrative of themes were selected. Where appropriate, negative cases- no matter how infrequent- were included to demonstrate the breadth of perspectives encountered. Participant characteristics also influenced selection of data extracts, in that I attempted to provide a balanced account of individuals, that varied on the basis of features I anticipated to be important in the study. Including a variation of participants helped to support statements about differences or similarities between participant groups (mainly, childminders versus nursery managers).

Participant identifiers have been included in brackets beneath each quotation. Figure 6.1 provides an example. In extracts where there is dialogue between the interviewer and participant, certain codes have been used before quotations to indicate who is speaking:

- 'C' refers to 'childminder'
- 'NM' refers to 'nursery manager'
- 'P' refers to 'parent'
- 'I' refers to 'interviewer'

Figure 6. 1 Explanation of participant identifiers

DCP: [CC60, Childminder, Cardiff, 22 years]

<p>The unique study code applied to the participant.</p>	<p>The type of DCP (childminder or nursery manager)</p>	<p>Area the day care setting is based in (Cardiff, Monmouthshire, or Merthyr Tydfil)</p>	<p>DCP's experience (in years)</p>
--	---	--	------------------------------------

Parent: [PCN11.2, full-time nursery user, Cardiff, Major professional]

<p>The unique study code applied to the participant. The 'CN11' part of this code refers to the DCP in charge of the day care setting used (in this case, the nursery manager identified as 'CN11'), while the '.2' refers to the fact that this was the second parent interviewed from this DCP's day care setting.</p>	<p>Child's part time/full time status at the day care setting, and the type of day care used.</p>	<p>Area of parent's residence</p>	<p>Parent's occupational status</p>
--	---	-----------------------------------	-------------------------------------

CHAPTER 7: SICKNESS EXCLUSION POLICIES AND BELIEFS

7.1 Introduction

This chapter will explore DCPs' beliefs of how common infections should be managed. I will try to build a realistic account of how exclusion occurs in day care, looking at the symptoms that trigger concern and the factors that shape final exclusion decisions. The contents and role of exclusion policy documents will also be considered, building on the questionnaire results.

Section 7.2, 'Nature of Policies', will consider how policies are formed, and what purposes they serve. DCPs' opinions regarding the prospect of 'standardised policies' have been explored towards the end of the section.

Section 7.3, 'Exclusion Beliefs', presents DCPs' beliefs surrounding specific infections or symptoms and the need for exclusion. Re-admittance requirements are also discussed for specific infections.

Finally, DCPs' exclusion decisions and their consequences will be considered from the perspective of parents in the final section (7.4, 'Parents' Attitudes to Exclusion').

7.2 Nature of Policies

7.2.1 Origins of policies

This section will consider the origins of policies, looking specifically at which sources and resources were initially used to construct sickness exclusion policies.

7.2.1.1. Guidance from external bodies

Most DCPs were directly involved with developing their policy. A few nursery managers' policies were created by their predecessors or other organisations/people.

A few DCPs mentioned contacting their local council for guidance, but were fairly non-specific in their descriptions of the type of information they received. Consequently, I contacted each of the councils for the study areas myself. Cardiff County Council referred DCPs to the HPA's guidelines (but only *if* the DCP contacted them for advice). Monmouthshire County Council offered no official guidance for day care settings, claiming that it was the DCPs' responsibility to form their own policies. Merthyr Tydfil County Council had a separate organisation dedicated to children's welfare ('Integrated Children's Centre' [ICC]), which routinely sent out advice to all registered DCPs in Merthyr Tydfil. This advice was usually related to news of local outbreaks. The ICC directed DCPs to the Welsh Assembly Government-produced booklet entitled 'Mind the Germs'. This booklet presents a selection of common childhood infections and recommended exclusion periods, taken from the HPA's guidelines.

For childminders, the National Childminding Association (NCMA) was mentioned frequently. The NCMA is a members-only organisation offering childminders support and guidance at a cost of £70 per annum. A number of childminders explained how they had adapted a sample exclusion policy provided by the organisation, although this sample only mentions sickness and diarrhoea. Most

childminders had mentioned additional infections, inspired from different sources. In contrast, nursery policies were not based on sample statements.

Most DCPs gave the impression that the CSSIW plays no role in determining the content of their policies, but dictated that they needed to have a policy in place.

Only two childminders and two nursery managers interviewed has consulted the HPA guidelines in the formation of their policies. Even those that had seen these guidelines had conflicting exclusion policies in place for specific infections. None of these DCPs relied solely on HPA guidance, mainly due to the fact that they had carried out research prior to coming across HPA literature. The four DCPs saw this as rough guidance, and continued to exclude children on an individual basis, relying on their own judgment and policies.

In general, it seemed that external organisations were mainly used to form outlines of verbal exclusion policies, although they offered very little advice with regards to specific infections. The only exception to this was the HPA guidelines, but these were discussed fairly infrequently by DCPs.

7.2.1.2 The internet: reference and communication

The questionnaire indicated that the internet is a common source of information for forming exclusion policies. This finding was confirmed and expanded upon in interviews. The 'NHS Direct' website was mentioned a number of times, although DCPs showed little regard for actual website names, claiming that they simply browsed through the results of search queries. Search queries were either specific infection names, or general phrases such as 'childhood infections'.

Some DCPs mentioned that they had used the internet to research other day care policies. One manager emphasised that she only took information from Welsh nurseries, in order to comply with the requirements set out by CSSIW. Another manager from an independent, rural nursery felt that she could trust the

information presented by nurseries that operated as franchises, as these were more likely to seek professional advice.

The internet's role in helping DCPs to form policies extended beyond reference purposes. DCPs also used this resource to share information and work collaboratively. One of the childminders purchased her policies from another childminder via an online auctioning site. These policies were subsequently modified, and passed on to friends who were newly registered childminders.

C: Oh yeah, I bought all my policies from Ebay, then personalised them...[...]...because to actually start without knowledge, and to build a policy could take me days, or weeks! So, to have something like that as a template was fine. So we could just personalise them. A lot of friends are using our policies.

I: You're passing it around?

C: Yes, then they can be redone. I don't see that as cheating.

[CC60, Childminding couple, Cardiff, 22 years]

The quote above highlights the difficulties some DCPs faced with forming policies without initial guidance. Policies are also shown to be a commodity with a value, presumably due to the work and effort that needs to go into their formation. In accordance with CSSIW standards, DCPs are required to have numerous policies in place (e.g. for behaviour, safety, sickness, etc). The difficulties associated with writing policies with no 'starting point' were raised on numerous occasions by childminders, by those who reminisced about their early careers, and those who were just starting out. One of the less experienced childminders interviewed did not have any specific infections named in her policy, and proceeded to ask me (the interviewer) for information:

You know, if you could send information, I'll be happy to read up on anything you send me. [Later] I mean, the thing is, they [CSSIW] generally say you can look on the internet, or find out for yourself, or through books, but it would be nice to have some information that you can put in your policies to start off with.

[CC15, Childminder, Cardiff, 3 years]

Finally, childhood reference books were owned by both nursery managers and childminders, but this was less commonly discussed relative to the internet. The

childminder below gives the impression that referring to books is a dated means of acquiring information; despite having reference books, she presents using the computer as the obvious choice:

Well, basically I've got an old childhood health encyclopaedia knocking around somewhere which I always used to just use to look for basics, and obviously now, I tend to just look on the computer.

[CC91, Childminder, Cardiff, 20 years]

The widespread reliance on the internet could help to explain the large variation seen in policies (from the questionnaire results), as the information accessed could be inconsistent between sources, and over time. However, DCPs' knowledge of managing childhood infections extended beyond what they had gleaned from websites. Sickness exclusion policies were often seen as flexible documents, subject to change, and constantly undergoing revisions in light of DCPs' experiences.

7.2.1.3 Knowledge through experience

DCPs' experience with childhood infections often shaped their sickness exclusion policies. One childminder claimed that her policy was based purely on experience. Like many others, she had started her business at a time that preceded the requirement to have a sickness exclusion policy:

Well, I've been doing it for so long now. Policies and procedures weren't brought in (until) about five years ago, I think it must have been. I already had knowledge of what most children had by then anyway.

[CC17, Childminder, Cardiff, 15 years]

In terms of the policy itself, this childminder had not specified exclusion periods for specific infections, but enforced general rules to cover all scenarios. A policy of this nature would not necessarily require research into specific infections.

The majority of DCPs discussed their 'experience' as a means of altering their policies over time. Some of these alterations would be based on GP advice, which was sometimes relayed through parents:

No, no, but you know, if a parent did come in and say "Well, the doctor has said this, this and this," then I would look at my exclusion chart, and obviously, if I thought that something wasn't right, then I will change it, you know. I'm not saying that I'm a doctor, and I'm saying this, then I will maybe phone our local GP, and get some advice, and maybe change it.

[MTN26, Nursery manager, Merthyr Tydfil, 14 years]

The nursery manager above gives the impression that her sickness exclusion policy is a working document, which is subject to change- a view held by many DCPs. Some were very conscious of changing recommendations:

C: [on discussing whether she incorporates GPs' advice into her policies:] At the end of the day, it's a bit like fashion- children's things, as to what you're supposed to do, you know.

I: Ok. What kind of things have changed then?

C: Um, I can't think now. I just....perhaps it's more to do with general health care really, about what you're supposed to eat, and don't do, and...

[CC91, Childminder, Cardiff, 20 years]

The childminder above had a very relaxed approach to managing infections. Her use of the term 'fashion' as an analogy for changing health recommendations was interesting, and could be a reflection of her preference for managing infections using personal judgment, rather than written guidelines/policies. Her reference to the fickle nature of health advice suggests that she questions the credibility of sickness exclusion recommendations. She had heard of the HPA guidelines, but had not sought to incorporate these into a personal policy.

For most other DCPs, community doctors, pharmacists and health visitors were the usual sources of information for any amendments or additions to policies. In contrast to this, some felt that enforcing their sickness exclusion policy took precedence over external advice:

I know the guidelines on that say that there's no need for exclusion, but, I've found in my experience it is, and I've sent somebody home last week with it.
[CN35, Nursery manager, Cardiff, 3 years]

7.2.2 Perspectives on standardised policies

Most DCPs were conscious of the fact that there were variations across day care settings' sickness exclusion policies. Most participants were asked to talk about why they thought standard exclusion policies, written by an external body, would/would not be a good idea.

7.2.2.1 Credibility

The most commonly reported advantage of having policies written by an external body was the credibility that standardisation would lend to the document. Consistency of information was seen as one method of increasing credibility. For example, the childminder below felt that if all childminders had consistent policies, parents would eventually accept these as 'standards' that needed to be complied with. Parents' realisation that all childminders' policies are the same was thought to lead to acceptance:

Um, and then, it does go around. You know, parents do talk to other parents. So, once they get the message, they think "Oh yeah, it is right..." you know?
[CC60, Childminding couple, Cardiff, 22 years]

Rather than focusing on consistency of information, the nursery manager below felt that the names of well known, respected organisations would lend credibility to policies:

I think if it was, you know, a bit like a sheet saying "Cardiff County Council" on top, and it was laminated, and smacked on the board...maybe people would take it a bit more seriously?
[CN25, Nursery manager, Cardiff, 10 years]

7.2.2.2 Less confusion

The childminder below also mentioned parents' tendencies to talk with one another and compare their childminders' policies. She felt that this would lead to confusion on the parents' part, and called for a need to make policies clearer to parents. She felt that standardised policies would solve this problem:

You hear it in the school: "Oh, my childminder doesn't send him home for that," "Oh mine does," "Oh, well that's not fair!" You hear parents talking about it and I think, like anything else, they need it set in their head.

[CC12, Childminder, Cardiff, 3 years]

7.2.2.3 DCP-parent relationship and business protection

Childminders were more likely to talk about the *personal* difficulties they face in excluding children. Generally, most childminders expressed their discomfort in raising exclusion issues with parents. The childminder below is one of many that discussed the pressures associated with keeping parents happy:

The parents ring you up saying "Oh, look my child's got this illness, would it be all right if they come in." They sort of do it in a way where it makes you feel guilty. If there was another source that they could ring, instead of the childminder or the nursery, where they could tell them the symptoms of the child... because there's somebody that they don't know.

[CC15, Childminder, Cardiff, 3 years]

This childminder wanted to pass on the responsibility of exclusion decisions to an independent, external body, to maintain her relationship with parents. This relationship with parents was extremely important to childminders, partly due to the financial consequences of losing an unsatisfied parent:

It took me a few years before I implemented all this, and I got confident enough to say to parents. You're not confident in the beginning because it's all so new as well. Also, it is your income at the end of the day, and you don't want to lose the children as well.

[CC17, Childminder, Cardiff, 15 years]

The childminder above made this comment whilst justifying why she felt it was important for childminders to use standardised exclusion policies. She felt that parents might use flexibility in exclusion policies as a criterion for selecting their childminder. This childminder was highly experienced, and was reflecting on the first few years of her career. It was interesting to see that this problem is still experienced now, as expressed by this relatively inexperienced childminder:

One little boy that I have, he used to go to another childminder two days a week, and I had him three days a week, and her policy was slightly different to mine. She would still take children if they needed antibiotics, and I used to find it quite awkward because I would say "No," and she would say "Yes."
[CC12, Childminder, Cardiff, 3 years]

It seems that there was a sense of competition amongst childminders which was not apparent in nursery managers. This could be a reflection of the contrasting nature of their careers: childminders were self-employed, whilst nursery managers had a constant and secure wage from the business owner(s). Furthermore, childminders were in greater abundance than nurseries in each study area.

7.2.2.4 Confidence in exclusion

Some DCPs expressed a desire to have more confidence in the exclusion decisions they make. Their uncertainty regarding exclusion was often attributed to having written their own policies:

Sometimes I do think, "Am I being too harsh," or, "What are other places doing?" and stuff, and you don't know whether you're doing the right thing.
[CN22, Nursery manager, Cardiff, 7 years]

The childminder below felt standard policies would be a helpful change to the conflicting information she currently receives from various sources:

Oh, I suppose that would be useful...because, as I said, there is conflicting information, because if you look at different places, you ask different medical professionals, often you'll get different answers.

[CC91, Childminder, Cardiff, 20 years]

7.2.2.5 “No” to standardised policies

Not all DCPs felt that standardised policies would be a good idea. The two DCPs (one nursery manager, one childminder) that held this view rarely referred to their sickness exclusion policies. These DCPs both felt that regardless of how medically accurate policies are, they can never replace human judgment. Both referred to the ‘grey areas’ of making exclusion decisions, where factors such as the child’s behaviour (e.g. ‘wellness’) needed to be considered:

I just feel that there’s always grey areas. It’s not always cut and dry is it, because it depends on the child and what they can cope with.

[MN4, Nursery manager, Monmouthshire, 20 years]

It should be noted that these DCPs interpreted ‘standardised policies’ as a set of rules that would be enforced, removing the flexibility of them being able to act on their judgments. There are clearly wider issues to be discussed here, related to participants’ interpretations of interview questions. For the purposes of the results chapter, it should be emphasised that all DCPs (not just these two) excluded on the basis of personal judgment- never on the basis of policies alone. When standardised policies were presented as *guidance* to the two DCPs mentioned above, they viewed these as being potentially helpful, although they seemed less enthusiastic relative to other DCPs. This could be partly explained by the relatively low importance they placed on their exclusion policies. The utilisation of sickness exclusion policies will be considered next.

7.2.3 How are sickness exclusion policies used?

DCPs were asked what purpose their sickness exclusion policies served. For the most part, childminders’ and nursery managers’ responses were similar in that the policies were used to prevent infection transmission- the immediate response that came from every participant. There were, however, a few points raised that were specific to childminders.

Firstly, childminders used their policies as a means of distancing themselves from exclusion decisions. One childminder described exclusion via a document as being less “awkward” than appearing to make the decision herself (CC15, 3 years of experience). As discussed earlier, childminders were more likely to be conscious of unsettling their relationship with parents- a theme that will recur throughout this chapter. Secondly, a number of childminders gave the impression that their policy ensured financial security, as it stipulates that they must be paid, even in the event of exclusions. A third point, raised by another childminder, relates to the vulnerability childminders face when infections are brought into their own homes. This fear was a personal reason for enforcing a sickness exclusion policy.

Another important role of the exclusion policies, discussed mainly by nursery managers, was the avoidance of conflict with parents. In terms of settling disagreements, some nursery managers spoke of the policy as a contractual agreement, which parents would be expected to abide by once signed:

The end point has to be, “That’s our policy, and I’m not breaking it. You’ve actually signed up for this policy. Your signature’s on the back of it, agreeing to this.”
[CN11, Nursery manager, Cardiff, 10 years]

The fact that parents are presented with the sickness exclusion policy on registration was also seen to *prevent* disagreements from occurring, as parents would come to expect exclusion decisions:

NM: I think it’s better to have a policy, so you don’t get caught out with something. Parents have it in their enrolment pack when they first join, and we remind them. Sort of give them handouts every now and again, so they’re used to it from day (one). I think it sort of draws that line then of this is what we expect, and this is what we want to stick to.

I: So it’s established at the onset?

NM: Exactly, yeah.

[CN22, Nursery manager, Cardiff, 7 years]

According to one nursery manager, her policy “helps parents to know where they stand,” (CN11, Cardiff, 10 years). This manager also emphasised the importance of

excluding children consistently, preventing conflict with and amongst parents. The policy offered a means to doing this.

One manager (CN25, Cardiff, 10 years) used the idea that an external body, separate from her, is responsible for the exclusion policy, and she too is obligated to abide by those standards. She actually produced the policy from various resources, but discussed how she would tell parents that the policy was “*what the county council recommends*”. Interestingly, like the childminder mentioned earlier (CC15), this nursery manager was also distancing herself from her exclusion policy, although she did not seem to experience the discomfort described by the childminder. The manager’s approach was presented as a practical way of making her job easier.

A less common view was that the policy was written solely for purposes of satisfying obligatory criteria. This view was suggested by the childminder discussed earlier (CC91, Cardiff, 20 years), who did not see any benefits to having a standardised policy. This childminder’s approach to exclusion was fairly *ad hoc*, and largely based on her judgments of individual cases. The idea of making decisions based on the “*individual child*” was frequently mentioned by other DCPs, but their sickness exclusion policies still served a purpose. Nonetheless, context-specific factors were reported to influence exclusion decisions. As one nursery manager pointed out, exclusion policies cannot cover every eventuality. Here, she expresses the difficulties of making decisions regarding everyday infections, which vary in severity:

There are grey areas. It is a difficult one, you know? Some children have a cold from the end of the summer right through ‘til spring. What’s not acceptable and what is? Then if they’ve got things like chickenpox, obviously they don’t come in. It’s simple- but there are grey areas where it’s difficult.

[MN4, Nursery manager, Monmouthshire, 20 years]

Most DCPs suggested or mentioned that their exclusion policy was for guidance only, and that exclusion decisions were ultimately a result of their discretion. This was not always explicitly mentioned, but was conveyed through DCPs’ accounts of

what influences their exclusion decisions. Some of these influences shall be discussed throughout section 7.3. Interestingly, there was a tension in one DCP's account (CN11, Cardiff, 10 years), who discussed the importance of treating cases consistently (mentioned earlier), yet shared the common view that exclusions should be treated on a case by case basis. This can be explained by the dual role of most policies, which: a) set out when exclusion was necessary, and b) stipulated conditions for re-admittance. With this in mind, it is easy to imagine that all children with a given infection are excluded (consistently), but stay away for longer or shorter periods, depending on recovery rates, medication, and advice from medical professionals. Overall, the predominant idea expressed was that DCPs make use of their policies as guidelines, but re-admittance can vary for individual cases. The quote below reflects the majority of DCPs' take on the role of exclusion policies:

(The policies are) More of a guidance, you know, and it'll change for different children. Different children recover a lot quicker as well, so that's just sort of a formal guidance for them.

[CN22, Nursery manager, Cardiff, 7 years]

7.3 Exclusion Beliefs

This section will consider DCPs' perceived benefits of exclusion. I will also mention DCPs' use of terminology when talking about infections, which will help to interpret quotes used throughout the qualitative empirical chapters. An infection-specific overview of DCPs' exclusion thresholds follows this.

7.3.1 Perceived benefits of exclusion

7.3.1.1 Minimising cross-infection

DCPs' main justification for excluding a child was to protect other children in the day care setting- a theme which arose in every interview. A few DCPs (nursery managers) mentioned the importance of protecting their staff. In one case, this

was presented as a potential problem with the business: if staff were not able to work, the nursery setting would struggle to maintain its child to staff ratios:

I don't think [parents] understand how quickly something spreads, and we've got to look after our staff as well, or we won't have staff to look after the children.

[CN25, Nursery manager, Cardiff, 10 years]

All DCPs excluded on the grounds of preventing cross-infection. Even when a child was suffering from an unknown condition, exclusion was carried out due to the possibility of contagion:

If it's something we're not sure of, we just phone the parent, and ask them to take the child to be checked over, and if the doctor says he's fine, he can come back.

We don't know what it is. It could be contagious.

[CN25, Nursery manager, Cardiff, 10 years]

DCPs were aware of children's under-developed immune systems, which they attributed to their limited exposure to other individuals prior to day care life. While talking about excluding on the basis of protecting other children, the nursery manager below also comments on pre-school children's susceptibility for contracting infections, suggesting that exclusion in children's day care environments is all the more important:

I think because I would be unsure what it is, and I think at this age, they're all very susceptible to pick(ing) up viruses and infections, and you really do need to know what it is. Excluding them for one session to find out is not going to harm anybody. It's just a safety measure.

[CN72, Nursery manager, Cardiff, 25 years]

The manager above does not appear to consider the difficulties parents face when their child is excluded, but this may be a result of the nature of the parents that used her services (described to be unemployed by the DCP). In contrast to this manager, the majority of DCPs considered and understood the practical difficulties parents face with exclusion:

It's very difficult, because people have to go to work, they've got to earn their living, some people's employers aren't particularly child friendly. I can see both sides of what goes on really.

[MN4, Nursery manager, Monmouthshire, 20 years]

This consideration was always offset against the potential of protecting other children in the group against contagious illnesses, which always took priority:

Ok, they've been put out by having to stay home and look after the child who's not well, but then they bring them back before they're well, and then somebody else gets it, and somebody else gets it, and somebody else gets it.

[CN25, Nursery manager, Cardiff, 10 years]

One DCP balanced the impracticalities of exclusion (for parents) against the risk of their child contracting additional infections whilst in a vulnerable state. Thus, exclusion was also thought to protect the child in question:

I know their work's important, but firstly they're making their child more vulnerable, because that child isn't well, therefore they're more prone to everything else that's going around.

[CN11, Nursery manager, Cardiff, 10 years]

Childminders often had unique reasons for being wary of infection transmission. As mentioned before, they contended with the risk of their own families becoming ill. Two childminders raised the issue of protecting their own children from contracting infections from 'minded' children. The quote below was taken from a childminder who describes her experiences of excluding a child with a productive cough:

He was just sent home. The mum came and picked him up within about two hours, but then, of course, I couldn't provide a service for two weeks then, because my daughter was very ill, so it backfires on them anyway, you see.

[CC12, Childminder, Cardiff, 3 years]

There could be financial implications for childminders who are not able to work due to personal reasons, as in the example above. This point underlines the different working conditions of childminders and nursery managers, and the

potential for these differences to influence thresholds for exclusion. From childminders' perspectives, having their own children present may have acted as a unique enforcer for exclusion, but the childminder-specific issues of competition, and the need to maintain positive relationships (discussed above), could have an opposite effect on exclusion thresholds:

Yes, so do you feel as if, when they bring them, you have to take them...well, you don't have to, but, if you don't, you could...you know. They really...you have a bad relationship then with the parents.

[CC60, Childminding couple, Cardiff, 22 years]

Overall, the issue of contagion was fairly straightforward for nursery managers- the decision to exclude came easily. Childminders' attitudes were more varied, reflecting the different pressures they needed to contend with.

7.3.1.2 Minimising child's discomfort, and minimising demands on DCPs

One of the nursery managers succinctly summarised how exclusion works, through the phrases "*compulsory exclusion*" and "*non-compulsory exclusion*" (CN72, Cardiff, 25 years). "*Compulsory exclusion*" referred to cases where contagion was an issue, while "*non-compulsory exclusion*" applied to all non-contagious cases, where children were excluded on the basis of how they were feeling. All DCPs excluded on the basis of these criteria, but CN72 was the only DCP who explicitly stated and defined the two categories of exclusion.

DCPs were able to empathise with a child that feels unwell. Asserting that an unwell child 'wants' to be with their parent(s) was common amongst all DCPs:

You know- it's not fair on the child then is it? When a child is ill, most of the time, they want their parents anyway.

[MTC5, Childminder, Merthyr Tydfil, 4 years]

Unwell children also placed extra demands on DCPs. Both childminders and nursery managers felt strongly about this, claiming that caring for sick children was not their responsibility.

Obviously as a childminder, I'm paid to look after them. I'm not a nurse.
[CC91, Childminder, Cardiff, 20 years]

For nurseries in particular, paying greater attention to one child had implications for the strict staff to children ratios. Both nurseries and childminders felt having an unwell children present was detrimental to other children, in terms of the attention they received. As seen below, it was common for DCPs to address the issue of children's comfort and the burden of caring for unwell children at the same time:

If they're ill enough to warrant antibiotics, they should really stay home, because the only other person they want is their mother, and because of the ratio. We haven't got a spare member of staff to be a nurse maid. So, if you've got one out of your three children that are continuously crying and wanting to be picked up, it's to the detriment of the other two.
[CN35, Nursery manager, Cardiff, 3 years]

If a child comes in and is obviously unwell and streaming with a cold, and is upset, and isn't their normal self, and doesn't want to play, then I would just send them home...[...]... obviously that's unpleasant for the child to be here...[...]...and it's not fair on the staff either, because obviously, you know, their job isn't to provide a one to one service.
[MTN26, Nursery manager, Merthyr Tydfil, 14 years]

7.3.2 Infection-related terminology

This section will consider DCPs' use and comprehension of the words 'infection', 'bacterial', and 'viral', which commonly arose during discussions. This will aid in the interpretation of data which follows in the next section.

7.3.2.1 "Infection"

All of the conditions featured in this study were infections due to their dependency on micro-organisms 'infecting' the host. DCPs commonly used the word 'infection' to refer to specific symptoms- most notably, coloured discharge

and phlegm. This is perhaps unsurprising, as the phrase “to be become infected”, is commonly used to refer to the visual symptoms of infection (especially in the context of injuries and wounds).

It sounds disgusting, because it depends on the colour of the phlegm, because the greener more yellowy colour it is, then it tends to be the start of infection.
[CC12, Childminder, Cardiff, 3 years]

In the example above, the childminder was responding to how she would react to productive coughs, but does not see the actual cough as a consequence of infection- the word ‘infection’ is associated with coloured phlegm. The belief that coloured discharge signified ‘infection’ also transferred to discharge from the eyes and nose. The nursery manager below draws a distinction between the common cold and ‘infections’. When asked how she would react to a sneezing child with coloured nasal discharge, she answered:

If it got worse, we’d advise her to see a GP, because usually the green means there’s usually a bit of infection somewhere...
[CN11, Nursery manager, Cardiff, 10 years]

This distinction between ‘colds’ and ‘infections’ was seen in interviews with both childminders and managers.

7.3.2.2 Bacterial versus viral infections

DCPs’ knowledge of bacterial and viral infections was variable. Some nursery managers demonstrated their awareness of bacterial and viral causes of infection. However, there was also evidence of confusion surrounding what is meant by a viral infection:

NM: The most common thing now, when they go to the doctors, they say “It’s a viral infection,” whatever that means...[...]...That’s what the children normally come back with now.

I: Yes, so what happens if it’s a viral infection?

NM: Well, I can’t really....to be honest, a viral infection, what is a viral infection?
[MTN26, Nursery manager, Merthyr Tydfil, 14 years]

This DCP had heard the term “*viral infection*” mentioned by parents who were passing on GPs’ diagnoses, yet had no comprehension of the phrase. Other DCPs seemed to be more familiar with this terminology, yet misconceptions still arose. One nursery manager felt that viral conditions were simply different manifestations of the same virus. In the example below, she draws parallels between colds, skin infections, and ear infections. This idea is plausible for colds and ear infections, which are often associated. However, it seems that this DCP feels that *all* viral conditions are caused by the same virus:

Viral rash? You just pick up a virus. Usually a cold, to be honest, and it just comes via your skin. That’s all it is. Rather than perhaps coming out your nose, or your ears, or it just literally comes out through your skin. Again, certain children are prone to skin irritations and rashes, whereas the other children, perhaps it will come out of their nose.

[CN3, Nursery manager, Cardiff, 16 years]

DCPs sometimes gave the impression that viruses were not as serious as bacterial conditions. Phrases similar to “...*the doctor said it was just a virus,*” occurred numerous times in interviews. This could be due to the language used in references to viruses (*just a virus*). The lack of treatment (i.e. no antibiotics) associated with viral conditions could also lead to a decreased perception of severity.

7.3.2.3 Viral infections and antibiotics

Some DCPs were aware that antibiotics are not effective against viruses:

NM: A couple of skin concerns or allergies, we have given (antibiotics for), like viruses, but I don’t know why they get given antibiotics for viruses.

I: So have they actually had antibiotics given to them for viral...

NM: Yeah, way back last year we had hand, foot and mouth.

[MTN23, Nursery manager, Merthyr Tydfil, 24 years]

This nursery manager is aware that hand foot and mouth is caused by a virus, and therefore questions why the child received antibiotics. The quote demonstrates

this DCP's knowledge and understanding of how viral conditions should be treated. This knowledge was shared by most, but not all, DCPs. The nursery manager below was not aware that antibiotics are not appropriate for viral conditions. The tone of this quotation is an important element to consider. In written form, it seems possible that the DCP is merely reporting her past experiences (the question was what have the children in her care been given antibiotics for). This might not necessarily reflect her personal opinions of whether the treatment is appropriate. However, after listening to the recording, it was clear that the participant viewed prescribing for viral conditions as regular practice:

I: What other things, other than colds, have they had antibiotics for, where they're just required to be off for 24 hours?

NM: Probably a chest infection, or some sort of cold, or viral infection probably.

Probably would need antibiotics straight away, yeah.

[CN3, Nursery manager, Cardiff, 16 years]

None of the other DCPs explicitly mentioned that viral infections required antibiotics. When misconceptions arose, it was usually a result of antibiotic treatment being associated with specific infections (e.g. RTIs), without consideration to aetiological factors.

In contrast to viruses, very few DCPs mentioned bacteria or bacterial infections. The subject of bacterial versus viral causative agents was not actively pursued further in these interviews, as it became apparent that DCPs' awareness of the bacterial or viral aetiology of infections was generally poor. Antibiotic treatment seemed to be associated with infection types, without consideration to aetiologies.

7.3.3 Exclusion beliefs surrounding specific infections/symptoms

This section will consider some of the main categories of infection which were discussed, and the ways DCPs managed these infections. Specific infections were

discussed through two main routes. Pre-prepared vignettes were used for discussing the main infections of interest. At times, other scenarios were created during the interview itself, in order to explore specific situations. Infections were also discussed as and when they arose in conversation.

7.3.3.1 The common cold

Children with common colds were not excluded by DCPs. The main reason for this was DCPs' perceptions of the high prevalence of colds in the general population. This led to DCPs having a lower perception of severity, and a greater perception of parental acceptance (if their child was to catch a cold through day care attendance). Society's acceptance of colds as a mild, often unavoidable infection could have influenced this. For example, the childminder below felt that parents would understand her decision to accept children with colds, because schools did not exclude for this. Thus, their children would be exposed through siblings anyway, rendering her exclusion pointless:

Most of them will get that at some point, and they're still going to school. So even if the babies are like that in the morning, mums all tend to know that they're all going to get it at some stage anyway, because it's going around school or playgroup.

[CC17, Childminder, Cardiff, 15 years]

The statement above also highlights DCPs' awareness of parental expectations- a reminder that they are running a business, and rely on parental satisfaction.

DCPs felt that exclusion for colds would result in abnormally long and frequent periods of time off, which was deemed unreasonable:

This time of year, lots of our children have general colds. There's nothing we can do, otherwise they'll be off the whole winter.

[MTN21, Nursery manager, Merthyr Tydfil, 8 years]

It seemed that the frequency at which an infection occurred was important, in the sense that if DCPs excluded for a common infection regularly, they would lose

business (i.e. the parent would look for an alternative carer). This scenario only emerged once in interviews, raised by a childminder who claimed she accepted children with coughs and colds because she would “lose the children” if she did not (CC17, Cardiff, 15 years).

DCPs would only exclude a child with a cold if there was accompanying temperature, or if their cold was interfering with their ability to participate in day care activities:

I think some of these kids have runny noses all year, so...unless they've got a temperature, and they're obviously not well, and miserable and grouchy, they can come in.

[CN11, Nursery manager, Cardiff, 10 years]

The point relating to the child's behaviour or wellness revealed discrepancies between nursery manager and childminder policies. None of the nurseries had the means to provide special treatment for children, while childminders' smaller group sizes and the domestic care setting *sometimes* allowed them to accommodate children who were “not feeling themselves”:

Either we'll put them on the settee with a blanket, in the other room, and the others aren't here either. I mean, they're only doing what they would do if they were home.

[CC60, Childminding couple, Cardiff, 22 years]

The quote above should be viewed in light of the childminding couple's unique working conditions, where two adults were providing care. This made looking after an ill child separately from the group more feasible. Variation amongst childminders' thresholds for exclusion came to light, as not all childminders were happy to care for children if their behaviour was affected:

If they've got a really bad cold, their mums do ring in and say, and I ask them what are they like in themselves, because if they're miserable and just want to spend the whole day in bed, then they're not suitable to come to me.

[CC12, Childminder, Cardiff, 3 years]

Looking beyond the child's behaviour, most DCPs were happy to have children with colds, unless they perceived the cold to be severe. 'Severe' colds normally constituted temperature- a symptom DCPs excluded for regardless of accompanying symptoms (discussed later).

Finally, one DCP commented that she would take action if a child produces coloured nasal discharge:

If it sort of goes greeney yellow, then we do say "Oh, actually, I think you might need to pop to the doctors," or I'll give them a call, maybe before they pick them up and say "At five o'clock when you pick the little one up, don't suppose you can make an appointment for them at the doctors on your way home, because, you know, they [their mucous] turned green during the day."
[MN2, Nursery manager, Monmouthshire, 3 years]

In this case, the nursery manager does not treat the described symptoms urgently: exclusion is not carried out, but parents are still advised to consult the GP. In context, this quote was part of the manager's explanation of cases where she advises antibiotic treatment to parents (discussed in next chapter).

7.3.3.2 Productive coughs and chest infections

a. Vignette

Differing exclusion policies arose with RTI symptoms that extended beyond the common cold. DCPs interviewed in the early stages of this research were presented with a vignette for chest infection:

A three-year old girl has a chesty cough and wheezes occasionally. She complains that it hurts whenever she coughs, and points to her chest. Her parents tell you she has been coughing up green/yellow mucous the night before.

This vignette was not used in every interview (for reasons to be discussed shortly). Those DCPs who were presented with the vignette often reacted on the basis of suspected asthma:

It could be asthma. You know, if she's wheezing, just to get her chest listened to. If they haven't taken her to the doctors already, especially if she's saying it's hurting.
[CC15, Childminder, Cardiff, 3 years]

What seemed to concern DCPs the most was abnormal behaviour that could not be explained by a child's medical history. In particular, children with asthma would be tolerated to remain in day care with these symptoms. However, if the child was not known to be asthmatic, DCPs would show concern:

If she comes in the morning and the mum hadn't said anything, even if she hadn't brought anything up, and the child had started coughing and was wheezing, I would ring the parent to take the child to the doctors. It depends on what had been said at the beginning of the day. [...]..If the child's parent hasn't mentioned anything, then obviously this is something that needs to be looked at because the parent isn't aware of the situation. So I would ring the parent at work.
[MTN21, Nursery manager, Merthyr Tydfil, 8 years]

The nursery manager above excluded children with wheezy coughs if they were not known asthmatics, as she felt parents should know about these symptoms. Most DCPs felt it was at least necessary to contact the parents to inform, rather than exclude. One of the main reasons for this was the child's complaints of pain (in the vignette). This point was usually treated in the same way as a child feeling 'unwell':

Well we would just, you know, just...does she need to have Calpol, if it is hurting her? Have they been to the doctors? Maybe it would be good idea to go just to have her chest listened to.
[CN5, Nursery manager, Cardiff, 19 years]

Similar to the nursery manager above, most DCPs advised GP appointments, but there was no urgency to consulting. This was echoed by all DCPs, although some claimed that they would monitor the child for signs of deterioration. However, if children were particularly unwell, they would be excluded immediately. The following DCP's threshold for exclusion was re-iterated in most interviews:

I: Ok, right, so.....at what point would you think "No, they need to go"?

NM: If they started getting a bit of a temperature, and if they started behaving differently. So if they weren't eating, coughing more than usual, perhaps liking to have a bit of a sleep, and the girls here know the children very well. They know when somebody's not right.

[CN22, Nursery manager, Cardiff, 7 years]

It should be noted that this question was asked after the DCP had already expressed that exclusion for coughs can sometimes occur. The child's behaviour and their temperature readings were the most commonly reported signs/symptoms that brought about immediate exclusion when discussing coughs and colds.

b. Change of vignette

The vignette for 'chest infection' was not used throughout the entire interview period. This was triggered by one DCP, whose exclusion decision changed depending on whether or not the child was producing coloured phlegm. In this particular scenario, the DCP (CN11, Cardiff, 10 years) began to answer the question before I had finished reading the complete vignette. As a result, I enquired about coloured phlegm (the final point in the vignette) as a follow up question, which immediately increased the DCP's perceived severity of the child's condition. Wheezing and painful coughs did not result in automatic exclusion, though parents were made aware of the situation, and advised to consult a GP. However, the addition of coloured phlegm led to the parents being asked to come and collect the child. This needs to be interpreted in light of the interview scenario and the order of questioning. After expressing her acceptance of the symptoms initially presented, the DCP might have felt the need to answer differently when presented with additional symptoms. I could have placed extra significance on the

symptom through asking about coloured discharge separately. This led me to consider whether or not DCPs' would have a similar reaction to coloured phlegm if the symptom was presented on its own.

The second reason for the change in vignette was my concerns that DCPs would find it hard to process all elements of the scenario. Mentioning that the child complains about the cough hurting might have detracted DCPs from other symptoms (e.g. coloured phlegm). This idea was reinforced by my developing understanding of DCPs' tendencies to exclude children who were unwell. Complaints of pain will naturally be treated in a likewise manner. Where possible, I felt it important to present vignettes and pose questions without mention of children's 'wellness'. As a result of this minor change, most of the questions surrounding RTIs were based around a very basic vignette, consisting of a cough, with production of coloured sputum. Other factors were sometimes considered (e.g. temperature), depending on the DCPs' responses.

c. Coloured phlegm

Most DCPs took action when faced with coloured phlegm. There were only a few exceptions to this, where coloured phlegm alone was not seen as a problem. As one childminder put it, she would 'persevere' with the child, until she felt they were too unwell to stay, or had a fever (CC91, Cardiff, 20 years). Only two other DCPs showed no particular concern for coloured phlegm:

I: So would you be concerned if you saw them coughing up green phlegm?

NM: Not really. It could just be a little bit of mucous that's been lying there.

[MTN21, Nursery manager, Merthyr Tydfil, 8 years]

(If the child was asthmatic) I'd just treat it with the medicine (for asthma), or sometimes, with croup they can be a bit like that [produce coloured phlegm], so I just let them relax.

[CC17, Childminder, Cardiff, 15 years]

Whereas these DCPs did not see coloured phlegm as being particularly significant, the majority of DCPs advised GP appointments for this symptom. Some of these

excluded the child immediately, feeling that coloured phlegm was a sign of a chest infection:

I: Say a little boy came into your care, and he's coughing up green or yellow phlegm...

C: Oh, he's got a bad chest infection then, hasn't he? It's time for mum. There's nothing you can do with that. A cold, every child has a cold nowadays, you can understand that, but when it's like that, well, they've got an infection haven't they? Because it's green, it's an infection on the chest.

[CC5, Childminder, Cardiff, 17 years]

One of the reasons for immediate exclusion was the potential contagiousness of the child. In reference to earlier sections, the use of the word 'infection', as above, was commonly associated with contagiousness. The DCP above was asked what the word 'infection' meant to her:

There's something in there that is causing them trouble. There's an infection in there, and it's got to be cleared. You could be contagious. You don't want any spitting between children, or bringing it up. You can't have that.

[CC5, Childminder, Cardiff, 17 years]

Another DCP who excluded children with coloured phlegm described this symptom as "abnormal", and preferred to exclude children in an attempt to limit the spread of infection:

I: So, why would you specifically want them to go?

NM: I mean, they're probably fine if they're sat on the sofa, probably coughing a bit. They might go off and play, and perhaps if they cough over another child, then that's probably going to go on and spread.

[CN3, Nursery manager, Cardiff, 16 years]

Finally, the idea that coloured phlegm is representative of 'infection' was sometimes a concern due to the potential for the child to 'deteriorate':

I: If a child came into your care, and they were coughing up yellow phlegm, and green phlegm, what would...

NM: Oh, we'd report it to the parents. That would be...no, we need to see the doctor. Straight away...

I: Ok. What would that signify to you? That yellow and green?

NM: Infection...some sort of infection there.

I: Would it worry you?

NM: Yes, yeah

I: Ok, what would you be worried about?

NM: Well obviously the infection, if it's not nipped in the bud, it's deterioration of the child.

[MTN23, Nursery manager, Merthyr Tydfil, 24 years]

This DCP claimed that she would inform the parents of the child's symptoms. From this quotation, it seems that this is an immediate action (seen by the phrase "straight away"). On further questioning, the manager claimed that the urgency of the matter would depend on whether or not the child had a temperature, and how systemically unwell they appeared to be. However, the DCP did mention that at times, she had phoned earlier in the day, even if the child did not require immediate exclusion. This was done to increase the likelihood that the parents would be able to secure a GP appointment.

One of the things that we have to be conscious of as well is that if a child is not well through the day, and that child isn't being picked up from us until about half past five, the surgeries will be closed...

[MTN23, Nursery manager, Merthyr Tydfil, 24 years]

Similar to what was discussed in relation to the first vignette, some DCPs clearly call parents in a bid to inform and advise, but not necessarily to exclude. This is an important point to consider. DCPs can potentially influence parents through their advice, without the effects of compulsory exclusion.

d. Reactions to chest infections

Up until this point, I have focused on symptoms. However, DCPs often interpreted those symptoms as being indicative of chest infections. As a consequence of this diagnosis, DCPs' reactions to coloured phlegm as a symptom may reflect their exclusion beliefs for 'chest infection'. However, the nursery manager below felt that coloured phlegm could be a sign of a chest infection, or "some sort of cold". In other words, the symptom was not associated exclusively with chest infections:

*I: So, back to the coughing up coloured phlegm. What would that signify to you?
NM: Probably a chest infection, or some sort of cold, or viral infection probably.
[CN3, Nursery manager, Cardiff, 16 years]*

DCPs were directly asked about chest infections, in reference to the word appearing in their sickness exclusion policies, or as a result of them using this terminology during the interview. Reactions to confirmed or suspected chest infections were almost unanimous: all but one DCP excluded children. DCPs' reactions to every RTI-related symptom were not explored in detail, although for those RTI-related symptoms mentioned previously, there appeared to be variability in DCPs' reactions and readiness to exclude. Once the label of 'chest infection' had been applied, exclusion decisions were much more confident and uniform across interviews.

Besides coloured phlegm, there were a number of other symptoms which were commonly thought to be indicative of chest infections. Some DCPs distinguished between 'normal coughs and colds' and chest infections by the description of the child's breathing: "*rattling*", "*wheezing*", and "*difficulties breathing*", were some of the phrases used to describe chest infections. Temperature and distressed behaviour were also frequently associated with chest infections. These symptoms were all extrapolations made by the DCPs themselves (I refrained from specifying these symptoms). This was usually based on their previous experiences:

*I think it's more than a cold, so if I think it's a chest infection, and I've had to really say "Look, I think it's more than a cold, he's not happy, he's not settling, he's crying. It's not right. He's got a high temperature."
[CC12, Childminder, Cardiff, 3 years]*

Some DCPs justified excluding for chest infections on the basis of limiting cross-infection- a justification that arose in reference to coloured sputum/phlegm (as discussed above). Only two DCPs thought that cross infection was not a particular issue with chest infections. One of these was the only DCP that did not exclude for chest infections:

Obviously the child's got a chest infection. It wouldn't stop them coming here. You know, it's not contagious, chest infections, are they?

[MTC5, Childminder, Merthyr Tydfil, 4 years]

The main reason given for excluding a child with a chest infection was that the child was too unwell to cope with day care. This seemed to be emphasised to a greater extent than efforts to limit contagion.

[On describing what she would say to a parent of a child with a chest infection] "I've taken his temperature...he needs to go to the doctors." Then they say "Oh, I'll take him to the doctor's in the morning," and I'm like "No, you need to pick him up and take him to the doctors now." I hate doing that part of my job, but I think you need to do that. Because at the end of the day, it's the child that's suffering if they've got a temperature, they don't feel well, and they need medication.

[CC12, Childminder, Cardiff, 3 years]

This DCP's immediate exclusion policy, with advice to consult, was repeatedly seen across DCPs who had policies on chest infection. Children were usually excluded until they felt well enough to return to nursery. Wellness was the primary prerequisite for return, although there was usually a minimum exclusion period which needed to be fulfilled if the child had received antibiotic treatment (discussed in next chapter). This was sometimes specified to parents verbally, or in writing (within policies). In two cases, childminders refused re-admittance before the child had completed their course of antibiotics- a rule which was specified to parents at the point of exclusion. The implications of this will be discussed in the next chapter. The main point here is that medication had the potential to influence exclusion periods.

7.3.3.3 Tonsillitis

DCPs' reactions to tonsillitis were fairly consistent. The vignette for this infection was immediately associated with a diagnosis of tonsillitis, and it was this diagnosis that shaped DCPs' exclusion decisions.

A 4 year old boy refuses to eat lunch because his throat hurts. When you examine his throat, you notice his tonsils are red, inflamed and have patches of white pus on them.

All DCPs reported that they would telephone parents on spotting the symptoms. A small number (one childminder and one nursery manager) claimed they would allow the child to remain in day care if they were able to cope; however, both of these DCPs still telephoned the parents to pre-warn them of their child's condition, and advised them to book a doctor's appointment:

Depending on the severity, I would phone the parents and warn them that I wasn't overly happy, and I'll say to them "I'll see how it goes, but just to warn you, you might need to come home." If there was something like white on the throat, I would probably then say in a polite way "Take them to the doctors." I've done that before...kept them but said "I do think they need to go to the doctors, because it does look like it can be something."

[CC91, Childminder, Cardiff, 20 years]

If he's coping within himself, which I would doubt if his tonsils are that bad, then we would be letting mum know, but I would imagine, as he's going on through the day, that would deteriorate. He'd also then start getting a little bit distressed with the pain. Ringing mum and saying "Look, he really isn't well, he's not coping. He's not able to swallow, so we strongly recommend you get him a doctor's appointment, but we would like you to come and pick him up." Or, if it was at the start of it, we'd say "We're monitoring him", but we would ring to suggest "You get a doctor's appointment before you come and pick him up."

[CN11, Nursery manager, Cardiff, 10 years]

In both cases, the parent is advised to book a GP appointment, although whether or not the child is immediately excluded depends solely on how they are feeling. In the latter quote, the nursery manager suggests that it is unlikely that the child would be well- a view shared by the majority of DCPs. Some of the DCPs commented that they personally understood how distressing tonsillitis could be, having experienced it themselves, or experienced it through their own children.

Aside from the two exceptions above, most other DCPs immediately excluded for suspected tonsillitis, with advice to consult:

I would probably ring the parents and say "Look, we suspect it's tonsillitis". I would request if they could leave work early, and come and pick them up. I would say "We're certain that it's that, but you obviously need to get it checked by a doctor's, and confirm, and go from there."

[CN22, Nursery manager, Cardiff, 7 years]

The main reason for immediate exclusion was the presumed discomfort the child would be in, and less frequently, the fear that tonsillitis was contagious. The DCP below felt that tonsillitis is spread by means of children placing objects in their mouths:

A lot of children put things in their mouths as well, so it's one of those things like the chest infections. They cough on stuff, so I think germs tend to linger around longer, because it's coming from the mouth of the younger one- well, the older ones as well put things in their mouths, so I think it's just to stop that sort of spread then, as well.

[CN22, Nursery manager, Cardiff, 7 years]

Children with tonsillitis were excluded until they felt well enough to return to day care. If the child was treated with antibiotics, at least 24/48 hours would need to pass before returning to day care. Again, this was sometimes specified to parents in advance. Almost all DCPs interviewed about tonsillitis had a strong expectation that the child would receive antibiotics.

7.3.3.4 Whooping cough

All DCPs excluded children with whooping cough without exception, according to the exclusion policies viewed/discussed. This infection seemed to feature regularly in publications about childhood infections, and there was little question over whether or not DCPs exclude for this condition. Very few DCPs had experience of dealing with this infection. As a result, this infection was rarely discussed.

7.3.3.5 Conjunctivitis

Only three DCPs were aware of the official guidelines for conjunctivitis, which advises against exclusion for this infection. Of these three, one still excluded, and two no longer excluded, although one of these two still advised parents to seek treatment. All other DCPs excluded children with suspected conjunctivitis. Conjunctivitis almost always manifested in seemingly 'well' children, who were able to continue with day care activities as normal.

a. *Definitions of conjunctivitis*

DCPs did not state any specific signs necessary for a conjunctivitis diagnosis. Instead, they looked out for an array of symptoms. The three quotes below show a handful of comments which are collectively representative of all DCPs' descriptions of conjunctivitis:

Well, the eye's red, and it's all puss-like.

[CC60, Childminding couple, Cardiff, 22 years]

You know, obviously it starts weeping, and, sort of unnatural on sight.

[MN2, Nursery manager, Monmouthshire, 3 years]

Well, either their eyes are stuck together, their eye lashes stuck together, they can't open their eyes, or maybe their eyes are gunky, so they'll have like yellow, green in the corner of their eyes. Could be that their eyes are running. Sometimes bloodshot.

[MTN26, Nursery manager, Merthyr Tydfil, 14 years]

The main vignette I presented to DCPs involved 'redness of the eye' and a 'watery discharge'. All DCPs immediately associated this with conjunctivitis. Three DCPs (one childminder, two nursery managers) were aware that discharge from eyes could be connected to colds. Even in these situations, DCPs either excluded and advised the parents to check the symptoms with a GP, or conducted their own tests for confirmation of conjunctivitis. The two managers would clean the eye,

and observe for re-emergence of symptoms. If symptoms re-appeared after cleaning, the child would then be excluded immediately:

If they've got gunky eyes, it could be through a cold as well...[...]....but if we've given it a bit of a bathe with cotton wool, wet flannel, and it comes back, then we would be pretty certain we would get the parents to come and pick them up.
[CN22, Nursery manager, Cardiff, 7 years]

This procedure of ruling out colds was only carried out by these two DCPs. For the majority, any of the signs or symptoms described warranted exclusion.

b. Exclusion due to contagiousness

DCPs' views on conjunctivitis were strong, and they often responded to questions confidently. The main enforcer of exclusion was the fear of conjunctivitis spreading. DCPs often emphasised the ease and speed of contagion, usually speaking in a tone that was suggestive of past experience:

If it's conjunctivitis, no. That spreads so rapidly in this environment. I've never seen anything like it. It will go around like wild fire. It doesn't matter how hygienic or cleanly you are, children touch each other at the end of the day, and they're all handling toys.
[CN11, Nursery manager, Cardiff, 10 years]

Despite these strong reactions, wellness and ability to cope in day care were hardly mentioned. In the quote below, one childminder explains that it is the contagious nature of conjunctivitis which brings about exclusion- not the wellness of children:

I mean, the child is fine, apart from their eyes are a bit sore. They're not ill as such, but they are contagious.
[CC60, Childminding couple, Cardiff, 22 years]

c. Visual element

When asked why being infected with conjunctivitis was a problem, DCPs' answers often reflected the general "unpleasantness" of the condition [CN25, Nursery manager, Cardiff, 10 years]. It seemed that they excluded on the basis that given a choice, nobody would want to have the symptoms associated with conjunctivitis:

You've got all this stuff, and it's just not nice is it. You don't want anybody admiring little Johnny and seeing an eye full of puss. It's not very nice.
[CN35, Nursery manager, Cardiff, 3 years]

The strong visual element of conjunctivitis could be especially problematic when considering parents' reactions to encountering other children with 'unpleasant' symptoms when collecting their own children from day care. This was only expressed by one DCP:

If their eyes are really bad, say, with conjunctivitis, how would they feel if they came into the room to pick their child up, and there's another child there whose eyes are absolutely thick with conjunctivitis, and we kept them in nursery? You know, they wouldn't be very happy.
[CN35, Nursery manager, Cardiff, 3 years]

It seems that the visual element of symptoms was an important trigger for exclusion in general, considering the previous discussion on DCPs' lowered thresholds for excluding children with coloured discharge- another 'unpleasant' symptom. This ties in with the idea that DCPs are running a business, and have to maintain a certain image (to visitors, parents, etc). Unpleasant visual symptoms could be seen as a threat to this image.

d. Potential for severity

Finally, some DCPs felt it important to exclude for conjunctivitis due to its potential to become severe. The idea of a child not being able to open their eyes was raised in a small number of interviews:

I've sent somebody home last week with it. Her mother rang me the next day, and said she couldn't even open her eyes with it.

[CN35, Nursery manager, Cardiff, 3 years]

The nursery manager above made this comment whilst justifying her decision to exclude children, despite being aware of the official guidelines.

e. Advice to visit the GP

The majority of DCPs that excluded children with suspected conjunctivitis advised parents to visit the GP. If this was not directly mentioned in the interview, it was implied through DCPs' advice to obtain antibiotics. The main reasons for advising GP visits were confirmation of diagnosis, and treatment (see next chapter).

DCPs placed different weightings on GPs' assessments. It was common for DCPs to emphasise their own lack of medical expertise, and the need to confirm diagnoses. Numerous DCPs stated that they were careful to inform parents that their assessment was not a definitive diagnosis. Most DCPs accepted GPs' recommendations that children were suitable to return to day care. For example, some DCPs spoke of cases where a child had returned without a conjunctivitis diagnosis:

So I rang her and said "Look, could you do us a favour and, before you finish work, could you just take him to the doctors, to get his eye checked out, because he's had it for 2 days." She was really good, she came straight away and took him to the doctor, and the doctor said there was nothing wrong with it, just a bit of dust in his eye.

[CC15, Childminder, Cardiff, 3 year]

Not all DCPs complied with GP advice. This was suggested through their accounts of dealing with cases where parents did and did not have written proof of a GP's assessment. One of the DCPs *initially* claimed that she insisted on a GP note when she suspected conjunctivitis. At first, this suggested that a GP's assessment would be trusted:

The only time we ask for a note is with conjunctivitis, but you get some GPs who diagnose it, and others who are very reluctant- and I said I'm not asking for a letter that they've got to pay £6.00 or £10.00 for. It can be a little pad on his desk, that he just writes on, sticks his doctor's stamp on, and then we let them in.
[CN11, Nursery manager, Cardiff, 10 years]

If a parent had attempted to re-admit a child without proof (in the form of a GP note), they would be refused entry, as the above manager preferred to “*err on the side of caution.*” However, later in the interview, the same manager claimed that even a GP's note would not be sufficient in certain circumstances. The manager was specifically talking about situations where she might have numerous children experiencing conjunctivitis-related symptoms. In these situations, she could not trust a GP's diagnosis if it did not match with her own theory:

Even if they have (a note), I've had to turn around and say “Look, I'm sorry, we'll take the child in, I'll take them in, you've got your note- however, if they come back, if there's any more discharge, and the redness appears, we will be sending them back home,” and nine times out of ten, that tends to happen. They end up going red, as well as gunky.
[CN11, Nursery manager, Cardiff, 10 years]

One of the reasons explaining the manager's mistrust in GPs' advice was her perception that GPs were inconsistent in their diagnostic criteria for conjunctivitis:

Conjunctivitis is such a mine field, and you'll get some doctors that will diagnose one who hasn't got any red rim on their eye. You'll get another one (saying) “No, it's not conjunctivitis unless there's a red rim.” So doctors are inconsistent. I (once had) two identical cases- one will say it's conjunctivitis, and one won't. We don't even call it conjunctivitis now. We call it ‘eye disorders’.
[CN11, Nursery manager, Cardiff, 10 years]

In response to the technicalities of labelling a condition as ‘conjunctivitis’, this manager had applied a general exclusion policy for all ‘eye disorders’. Distrust in GPs' diagnoses was expressed by two other managers. One of these requested parents to get a second opinion if they were told their child did not have conjunctivitis:

If they come back in with it and say it's not that, and they still got it, we would still say "I think you need to get a second opinion," because we've had babies with it, and it spreads like there's no tomorrow, so that's a bit of a bad one.

[CN22, Nursery manager, Cardiff, 7 years]

A number of nursery managers felt that GPs were not able to empathise with them, or understand the difficulties of dealing with contagion in day care settings. In particular, these DCPs commented on their experiences of dealing with parents who had been advised that conjunctivitis did not warrant exclusion. Here, the issue was not the accuracy of the diagnosis; the problem was a conflict of opinion between what is and what is not acceptable in the day care setting.

I: So, have you ever had any parents coming to you saying "Oh, the doctors have said he's ok, take him back," even though it goes against what's in your policy?

NM: Yeah, we have had that, because I think...which one's the one that they say they can come...quite a few doctors have said conjunctivitis is fine, and it's like, it is if you're at home, and you're all not sharing towels, yeah, you can be fine at home with it. You have to explain, in group care, this is something contagious.

[CN22, Nursery manager, Cardiff, 7 years]

I'd love to speak to some doctors, because I'd like to say (in response to) "Oh yes, they can still go to the nursery, it's not hurting," "You're not considering the environment we're in."

[CN11, Nursery manager, Cardiff, 10 years]

When there were differences of opinion regarding exclusion, the DCP's decision was final. They were able to enforce their own rules because they had a policy in place- even if this policy did not comply with official guidance. The phrase "*because that's our policy*" was often used, and gave the impression that the policy carries a certain level of significance in these instances.

f. Exclusion period

According to DCP interviews, children with conjunctivitis were only permitted to return to day care when they were completely clear of symptoms. There was only one exception to this, where children were permitted back into day care as long as

the eye was no longer “*producing discharge*”. This, according to the manager, was “*after the contagious part of the infection*” [MN2, Monmouthshire, 2 years].

Clear symptoms or no discharge were the necessary criteria that needed to be met for re-admittance to day care, but exclusion periods were once again complicated by the addition of antibiotic treatment (discussed in next chapter).

g. DCPs’ acceptance of conjunctivitis

Some DCPs had a more flexible approach to managing conjunctivitis, even if they fundamentally felt the condition required exclusion. In most cases, childminders aspired to exclude for this conditions. However, they were more likely to accept children with conjunctivitis as a result of parental pressure- a phenomenon which never occurred in nursery settings (according to DCP interviews). The childminding couple (CC60, Cardiff, 22 years) found it difficult to turn a child away when confronted by “*desperate*” parents. They had on occasion accepted children with conjunctivitis, but provided care by quarantining the child. Another childminder, seen below, adapted her way of caring for children, to accommodate a child that she viewed as potentially contagious (with conjunctivitis). The main issue this DCP faced was certainty of diagnosis, where parents had claimed that their children did not have conjunctivitis. In these cases, she felt powerless, and unable to refuse care:

I have had them with conjunctivitis. Just make sure that they’re kept separate. If I know for definite they’ve got conjunctivitis, I probably say no, but what often happens is, they come, and during the day they get a bit of a bad eye- all the parents say it’s not conjunctivitis. In those cases, when I’m a bit doubtful, I’ll just make extra sure they don’t share stuff.
[CC91, Childminder, Cardiff, 20 years]

Another childminder that permitted children with conjunctivitis to remain in day care talked of new guidance that had been introduced to her through her childminding group. Whereas previously she would have excluded children with conjunctivitis, she now allowed them to remain in her care:

Yes, we've been told that we can have them with conjunctivitis. Usually, when you have a lot of children, you're scared that they might transfer it, but now I think you can have them when they've got conjunctivitis.

[CC5, Childminder, Cardiff, 17 years]

The only nursery manager that did not exclude for conjunctivitis had amended her policies in accordance to HPA guidelines. Nonetheless, she still advised GP visits, and treatment for the condition “*from the pharmacy*” (MN4, Monmouthshire, 20 years).

7.3.3.6 Ear infections

Ear infections were commonly encountered by DCPs. Behavioural symptoms that DCPs believed to be indicative of ear infections included children tugging at their ears (whilst distressed), or actually complaining of ear pain:

If they're older they can tell you, the little ones might even be doing this business [pulls ear lobe]. The little ones, they'll perhaps be pulling at their ear, so you can observe really.

[MN4, Nursery manager, Monmouthshire, 20 years]

These cases were almost always excluded, mainly for the child's benefit. When signs of distress were the trigger to DCPs suspecting an ear infection, exclusion was clear cut. No DCPs described any conflicts or disagreements with parents when exclusion was made on these grounds. One nursery manager did not enforce exclusion, but “*let the parents decide*” (CN3, Cardiff, 16 years). Parents would always be informed of their child's symptoms, and GP consultations were still advised.

Some DCPs described discharge from the ears as being suggestive of an ear infection:

One child was here, and there was gunk coming out of the ear. Obviously she had an infection. We phoned the parent, the parent came to get her, and then took her away and she had antibiotics...[...]...Usually parents, they're sensible then.

[CN25, Nursery manager, Cardiff, 10 years]

This symptom was not raised as often as behavioural symptoms, but signs of discharge resulted in exclusion, regardless of whether the child was seemingly 'well' or not:

If the ear is weeping, we wouldn't want them to come back to nursery...and sometimes, you know...we might see a child that's got a weeping ear but they've been absolutely fine. You know, they're not showing signs of a temperature or anything. If their ear is weeping, there's a discharge coming out of their ear, we would phone their mums, just to get their ear checked at the doctors, in case it is an ear infection.

[CN5, Nursery manager, Cardiff, 19 years]

In the case above, discharge created concerns of infection transmission. However, the majority of DCPs did not see ear infections as being particularly contagious. This might be due to the fact that they had not experienced discharge from the ears, and were commenting on behavioural symptoms alone:

Ear infections. Yeah, they would come with that. This obviously depends on their well-being- if they're really unhappy and poorly with it. But I wouldn't particularly exclude them for ear infections because of it being particularly contagious or anything.

[CC91, Childminder, Cardiff, 20 years]

...if it's an ear infection, it's the well being of the child. So if they come in, into nursery, all happy, then yes, we can take them in on the sight of that child.

[MN2, Nursery manager, Monmouthshire, 3 years]

All DCPs felt that ear infections would require a GP consultation, and most felt the infection required antibiotics.

7.3.3.7 Gastrointestinal infections

Gastrointestinal infections, usually manifesting as diarrhoea symptoms, were common in day care settings. Most DCPs excluded children for 24 or 48 hours after either a) the last bout of symptoms, or b) the first normal stool (in the case of diarrhoea). There were also differences in the number of episodes that needed to occur before exclusion, usually ranging from two to three episodes in the case

of diarrhoea. Vomiting was discussed less frequently, and tended to be taken on a case by case basis. One DCP mentioned that if the vomiting was particularly violent, the child would be excluded immediately (MTN23, Merthyr Tydfil, 24 years). Other DCPs described excluding children on the second episode.

DCPs were aware of the influence diet and teething could have on children's tendencies to produce looser stools. It was for these reasons that most would not take action on the first bout of illness, giving children the "*benefit of the doubt*" (MN2, Monmouthshire, 3 years). DCPs were also aware that there were individual differences between children and their bowel habits. Those who mentioned this claimed that they would know what's normal for each child. This would be taken into consideration, as for some children, looser stools may not be indicative of illness. Thus, knowing the child's normal bowel habits influenced exclusion decisions. Once they had decided to exclude a child, DCPs' exclusion periods were fixed, and did not vary between cases. Poor compliance with exclusion policies was a concern for some DCPs, who felt that parents did not understand the importance of the exclusion period that follows the cessation of symptoms. DCPs were aware that parents were sometimes dishonest with regards to this:

It's horrible, and parents do not understand. Ok, they've been kind of put out by having to stay home and looking after the child who's not well, but then they bring them back before they're well, and then somebody else gets it, and somebody else gets it. They don't realise at all.

[CN25, Nursery manager, Cardiff, 10 years]

None of the DCPs interviewed advised GP visits when excluding for gastrointestinal infections. Antibiotic treatment was also not mentioned by any DCP when discussing these symptoms.

7.3.3.8 Rashes

Rashes were managed with caution, and usually met with exclusion, and advice to consult a GP for diagnosis. The most common reason for exclusion was fear for the child's safety, and concern over infection transmission. The only exceptions to

this were 'heat rash' and 'nappy rash', though DCPs would exclude unless they were certain the child had either of these.

In contention to HPA guidelines, all DCPs excluded children with slapped cheek syndrome, until they were completely recovered, or until the doctor informed parents that they could return. Those that excluded until the child had recovered did so in the interest of containing the infection, commenting that the rash was highly contagious. No DCP was aware that slapped cheek is no longer infectious at the point of symptom presentation. Some requested parents to take their children to the doctor for advice, as they were uncertain as to how the rash should be managed. It was common for DCPs to claim that they had not experienced this infection, or rarely experienced it. Nonetheless, all DCPs diagnosed the rash correctly when presented with the vignette. An almost identical approach was taken for hand, foot and mouth, although DCPs were more familiar with this infection. Only two nursery managers specified that exclusion was *not* necessary, unless children were unwell (e.g. with a temperature). One of these managers was only aware of this after having asked a health visitor for advice. One childminder did not exclude for hand foot and mouth, as she was under the impression that it "*isn't contagious*" (MTC5, Merthyr Tydfil, 4 years). All other DCPs excluded children with suspected slapped cheek syndrome or hand, foot and mouth, with the advice that parents should consult.

Impetigo was one of the infections that DCPs commonly advised antibiotics for when asked which infections they have done this for in the past. Again, exclusion occurred on the grounds of the infection being highly contagious. This was true for sores that were exposed. Those that were covered by clothing were acceptable.

All DCPs were able to identify chickenpox easily, and would exclude at the earliest opportunity. Only one childminder claimed that she would accept children with chickenpox under certain conditions:

Some of my children had chickenpox, so I phoned one of the parents and said the other children had chickenpox. I said I'd still have the child, because they weren't ill

with it. With chickenpox, before it comes out it's contagious anyway, so all parents agreed it was fine, and to be honest, they all had it one off the other.

[MTC5, Childminder, Merthyr Tydfil, 4 years]

Of the DCPs that excluded for chickenpox, most allowed the child to return once the spots had scabbed over. Even DCPs who did not specify this on their written policies were aware of and practised this rule. This is an example of written policies not always being reflective of actual practice.

7.3.3.9 Fever

Fever was one of the most important symptoms to be discussed in relation to infection management, having a great deal of influence over exclusion decisions for many infections. There was great variation in how DCPs managed feverish children and their exclusion thresholds for high temperatures.

a. Threshold for exclusion

Most DCPs felt that a child's normal temperature was in the region of 37 to 38 degrees Celsius. The point at which some DCPs would become concerned would depend on a combination of the child's behaviour, and the actual temperature reading:

I: What is the limit of the high temperature then?

C: Um, I don't know really. Just if it's above 37 really. I mean if it's just over, and they seem fine then, it's more sort of common sense on how they are, but if it's well over then...you know.

[CC12, Childminder, Cardiff, 3 years]

For childminders in particular, no strict policies were in place for managing raised temperatures. Some childminders claimed that they would exclude if they felt unable to care for children who were particularly distressed. Otherwise, slightly elevated temperatures were tolerated if the child was not in distress, but monitored. Some DCPs monitored a child's temperature over a period of time, at regular intervals, to see if there were any patterns emerging. A number of nursery managers in particular described a regimented procedure for dealing with

temperatures, where readings would be noted in pre-prepared 'temperature charts' every 15-20 minutes. Once a certain number of readings had been taken without the temperature falling, the child would be excluded. DCPs usually had a cut off point, where they would exclude the child immediately if their temperature reached this level, regardless of how long they had been monitoring it. However, this threshold varied across DCPs, usually being at 38 or 39 degrees Celsius. Few of the DCPs excluded children on the first signs of a raised temperature, unless they feared for the child's safety, or felt that the child was particularly distressed. Most DCPs either attempted to lower the temperature, or monitored the temperature over time.

b. Action taken

All DCPs that claimed they would try to lower the temperature did so through removing clothing, providing fresh air, and using wet flannels. Calpol (a children's form of Paracetamol) administration was practised by some DCPs, and not others. In general, most childminders would attempt to lower the temperature through Calpol administration after getting consent from the parents. However, two childminders only provided Calpol as relief whilst waiting for the parent to collect the child:

The only time I'll give them Calpol, and I've never had to do it, is if they're really ill with a high fever and I've had to ring mum to come and collect them.
[CC17, Childminder, Cardiff, 15 years]

In other words, the child would be excluded before the need for Calpol administration.

Nursery policies surrounding Calpol administration were far more varied. Some nursery managers claimed that they could only administer Calpol if it was prescribed by a doctor. As a result, treatment would rarely be supplied to children who experienced an onset of symptoms whilst at day care. For other nurseries, Calpol had to be supplied by parents, either at the start of the day, or once the child's symptoms had started. Nurseries such as these would inform parents that

they were administering Calpol to reduce a temperature, though the child would still be excluded if the temperature failed to drop to normal levels. Finally, in complete contrast to the policies described above, one nursery in Merthyr Tydfil kept supplies of Calpol for each child, brought in by the parents for precautionary reasons. This nursery manager was able to administer medication as and when it was required, having obtained consent on registration (MTN21, Merthyr Tydfil, 8 years). Like all DCPs, however, medication administration was recorded and signed for in specially designed charts.

c. *Reasons for exclusion*

Exclusion for fever was carried out for two main reasons: the risk of febrile convulsions, and the belief that it signified an underlying infection. The safety of the child in question was the main factor that drove DCPs to exclude for temperatures that were deemed dangerously high, or temperatures that were progressively rising. All DCPs were aware of the risk of a child convulsing, some of whom had experienced this in the past.

The second reason for excluding a child with a temperature was the possibility of that child harbouring an infection:

I: Oh right. What's the limit then?

NM: 38 degrees Celsius or 100.4 Fahrenheit. So once it reaches that, they have to go home, and they're not allowed in the following day. The reasons for that is, usually to have a temperature that high, there's usually an underlying cause. The temperature shows that they are fighting off something.

[CN11, Nursery manager, Cardiff, 10 years]

The policy to exclude for 24 hours following a temperature was only held by one DCP who was interviewed. This policy had led to children being excluded with colds and teething, both of which were usually tolerated by DCPs.

7.4 Parents' Attitudes to Exclusion

This final section of this chapter will consider parents' attitudes to exclusion. Parents expressed a mixture of opinions regarding exclusion practices, usually depending on which symptom or infection they were discussing. Importantly, children did not necessarily need to be 'sent home' for the parent to experience the effects of sickness exclusion policies. Some parents would keep their children home, knowing that their child would be excluded if they attended day care (even if they felt their child would be able to cope). This section looks at cases of direct exclusion, as well as cases where the parents have kept their child home as a result of knowing their DCP's policy.

7.4.1 Childminder users versus nursery users

Most of the parental perspectives offered in this section are from nursery users. The two childminder users interviewed had never experienced exclusion initiated by their DCP, but tended to volunteer to keep their children home. These interviews revealed a close relationship between parents and childminders that could be likened to friendship:

She's a lovely woman. I'm so happy I use her. I certainly feel that I can....when I became pregnant with my second child, she was on call as a friend and a childminder to care for my other child. You know, if I needed to go to hospital at three in the morning. So, I've developed that relationship through having children full time with her. I don't necessarily know the other mothers that use her, but I see their children, and it does look like a small family.

[PMC8.1, full time childminder user, Monmouthshire, minor professional]

Both of the parents that used childminders were eager to keep their ill children away from the day care setting as a matter of courtesy, usually voluntarily informing their childminder of their child's symptoms.

My childminder is really good. It tends to be me... you know, she's never said to me "He's excluded." More often than not, I suppose it's because I've mainly phoned her and said "He's ill, I'm going to keep him home today."

[PCC60.2, full time childminder user, Cardiff, minor professional]

In a situation where my child was sick overnight...I would be contacting her to tell her my child isn't coming...[...]... I text her quite a lot. Like, I say "[child has] stopped being sick, but I'll keep him off tomorrow, and he'll be there the next day".

[PMC8.1, full time childminder user, Monmouthshire, minor professional]

There was a definite sense that parents were conscious of their childminders' judgements, and eager to maintain a positive relationship. The childminder's reaction was a definite factor that contributed to these parents' self-imposed exclusion:

[When discussing her relationship with her childminder]: *I suppose each time he is ill I'm thinking, I can't send him if he's like this.*

[PCC60.2, full time childminder user, Cardiff, minor professional]

It is perhaps for these reasons that other parents using childminder services were reluctant to participate in this study. The fact that recruitment was occurring through the childminder, and the fact that there were fairly small numbers of parents registered at each setting, may have impinged on their sense of anonymity and confidentiality- important issues when the relationship with the childminder was so important.

7.4.2 Disagreement with exclusion

7.4.2.1 Wellness

Parents tended to strongly disagree with exclusion for two main infections: hand foot and mouth, and conjunctivitis. These two infections were usually associated with 'wellness'. Although they understood the risk of contagion, parents did not see these infections as particularly threatening if their child had contracted them from day care. The parent below discusses how a group of parents from her nursery had complained about exclusion policies for conjunctivitis:

There was quite a few of them off for conjunctivitis at the same time, and one lady was moaning that she'd been to her doctor, and her doctor said he couldn't understand why they wouldn't let children in. I know it's really infectious, but they're not sick.

[PCN11.6, Parent, part-time nursery user, Cardiff, technician]

Exclusion for conjunctivitis was often thought to be unnecessary, and inconvenient. A handful of parents, who had spoken to their doctor, understood that conjunctivitis was often associated with colds. Consequently, they could not understand why colds were permitted, while conjunctivitis was excludable. A similar idea was expressed by the parent below, whose child had caught an ear infection:

The GP just thinks it's ridiculous. You know, it's not infectious. It's the same as having a cold, and they don't exclude children with colds. It's the same stuff but it's coming out of their ears.

[PCN3.1, Parent, part-time nursery user, Cardiff, major professional]

All parents were happy to keep their child out of day care if they genuinely felt he or she was unwell. Parents often expressed that they would want to care for their own child, rather than leave them in the care of another. If they perceived their child to be unwell, they simply would not send them to nursery. There were numerous examples of this which arose in interviews, where the parent chose to keep their child home as they felt they could not cope in day care. However, parents could not justify taking time off work for children who were well. The parent below had to resort to asking her parents, who lived 150 miles away, to come and look after her child for a week, after he had contracted hand, foot and mouth:

He was off for ages, because [the blisters] wouldn't go, but there was nothing wrong with him! So, in that instance, because I really did feel that there was nothing wrong with him, and he didn't need me at home, my parents came, and they looked after him for about a week, because he was fine!

[PCN11.1, Parent, full-time nursery user, Cardiff, technician]

7.4.2.2 Length of exclusion periods

Parents' concern over exclusion for well children was a theme that ran throughout most examples where they disagreed with exclusion. Parents sometimes disagreed with the length of exclusion for some infections/symptoms, as they felt their child should be re-admitted once they were well again. This idea was frequently expressed by parents who used DCPs that excluded for 24 hours following fever, and 24/48 hours after the commencement of antibiotics (see chapter eight, sub-section 8.3.3.1):

P: There's also been times when I've been called and they've said "Oh, she's got a really high temperature, can you come and get her," and I've got there and she's still got all her clothes on, and her coat on, and I've got there, taken her coat off and her jumper off, and within 5 minutes her temperature's down, because again, small babies, they do overheat, and they're fairly easy to cool down usually.

I: Yes. Did you take her back in?

P: No, I couldn't. She had to have 24 hours.

I: Oh yes, another day..

P: Because of high temperature! So I was quite annoyed by that one. It did seem really silly. They hadn't made any attempt to bring her temperature down.

[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

The example above is one of the more extreme cases, where a child appeared to be well at the point of collection. Other parents described similar policies, where their children's temperature had returned to normal once they had returned home. The parent above was an experienced mother, and thus knew that temperature fluctuations can be common in young children. In this case, the additional 24 hour period of exclusion could not be justified, according to the parent.

Finally, some parents found the 48 hour exclusion policies for diarrhoea difficult to comply with. The parent below found that her child was symptom free when she returned home on the day of exclusion. In some cases, parents developed strategies to get around the exclusion rules:

The only way to get around things is for you to realise that your child might get ill, you don't bring him in for one day, and then you go in the next day, when it's usually back to normal. You make up something, like, "I had a day off."
[PCN11.7, Parent, full-time nursery user, Cardiff, major professional]

Though not as common, two parents admitted to sending their child back to nursery without being clear for 48 hours:

I think he was still ill on the Saturday, and I began to think if he's still ill on the Sunday, he's not going to be able to go in (on Monday), but he was better on the Sunday. But I suppose he didn't have the full 48 hours that they would have said.
[PMTN23.1, Parent, part-time nursery user, Merthyr Tydfil, minor professional]

Although all parents shared the view that staying home with a well child for two days was frustrating, no other participants admitted to re-admitting their child to day care earlier. However, this was often a consequence of enforced periods of exclusion coinciding with days when the child would not have normally attended day care anyway.

7.4.2.3 Low threshold for exclusion

Another common theme that emerged from parent interviews was the belief that DCPs were too quick to exclude. Parents felt that DCPs should persevere to see if the child improves with certain infections (such as colds), or symptoms (such as temperatures). This idea was demonstrated in the quote above (PCN11.3), where the parent talked of her child being fully clothed whilst suffering from a high temperature. This theme also applied to cases where children were excluded if they were 'under the weather'. This tended to occur with colds more than any other infection. The examples below demonstrate cases where parents felt exclusion was carried out too eagerly:

(The nursery manager said) "Could you pick her up, she's not well. She's sitting on her own," and things like that. Never encouraged her. I think it's lack of encouragement, you know?
[PCN72.2, Parent, part-time nursery user, Cardiff, home maker]

P: It was a cold. Just a cold, but she was happy at home. I think as long as she's occupied, she's happy, if she's borderline with a cold or something [she's fine].

I: Right, so do you feel they could have done more to...

P: Yeah, I think they could of, you know. It was the first thing in the morning. Maybe they didn't give it a try.

[PCN5.2, Parent, part-time nursery user, Cardiff, minor professional]

7.4.2.4 Lack of medical justification

Just over one third of parents interviewed expressed concern that their DCP's sickness exclusion policy was not evidence-based. Some parents reached this conclusion after their GP's advice contradicted that of the DCP, while others had sought information independently. For example, the parent below struggled to understand the logic behind excluding for hand foot and mouth, where there was a high likelihood that transmission had occurred before the onset of symptoms:

It seems a bit [like] closing the door after the horse has bolted, a lot of the time, because they're excluded after they're infectious, and after everybody else in the nursery's already picked it up.

[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

Parents' impressions that policies were non-evidence-based reduced the credibility of policies, and provided ammunition for parents to justify non-compliance:

I think most people would be a lot happier if the exclusion policy was set on some medical facts and guidelines. You'd feel a bit more confident with it, but I think you do get to the stage where you think "Well, I know that one's not fact." So you kind of almost rubbish the whole thing.

[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

Interestingly, parents of all ages and all levels of parenting experience had questioned the credibility of policies. There were, however, some that assumed that their DCP's policy was 'official', and based on medical fact:

I imagine they get advice from medical people. I don't know exactly where it comes from, I don't know if it's from, like, the department of health guidelines or what, but I'm sure they don't just make it up.

[PCN11.2, Parent, full-time nursery user, Cardiff, major professional]

When asked whether they would like to see any changes implemented with their DCP's exclusion policy, it was common for parents to state the need for a medical evidence base. The parent below gives the sense that she is entitled to knowing the evidence behind the policies, seeing as though the policies have such a significant influence over her life:

Yeah, I think it would be quite good to explain why the rules are the rules, because they do involve some sort of compromise, sometimes with your life and what's going on.

[PCN11.5, Parent, part-time nursery user, Cardiff, major professional]

7.4.3 Consequences of exclusion

Most of the parents interviewed used day care as a means of enabling them to work or pursue further education. Besides the work and financial-related pressures associated with exclusion, interviews revealed that exclusion influenced the way parents managed their children's health.

Some parents felt that the care they provided for their children was compromised by the stringent nature of exclusion policies. One parent felt that in order to prevent her DCP from "*searching*" for reasons to exclude her child, she needed to give inaccurate accounts of her child's health. In ideal circumstances, she would have been able to communicate any concerns she might have on any given day. However, she felt that doing this would prime her DCP to discover reasons for exclusion (PCN11.7, full time nursery user, Cardiff, major professional). Similarly, another parent felt that she had been forced to become less sensitive to her children's health as a result of the ongoing struggle of avoiding exclusion. Below, she describes how she had become over reliant on her DCP's assessment of whether or not her child was well, despite having reservations over the medical grounding of the DCP's decisions:

You almost get reliant on their diagnosis, which is silly, because they're not very good. But in the respect of "If they don't notice she's sick, then she can't be!" I think when you start out you think "No, if my child is at all sick, I won't take her in," but you do get to this sort of stage of just being... and it's quite bad really, because it's not that you don't care about your child or anything, but you kind of almost feel like you're not caring for them as well as you should, because you're sending them in when you're unsure.

[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

Whereas she would normally follow her own judgment regarding how her children were feeling, this parent felt that she might be less responsive to this after years of contending with her nursery's policies.

Finally, many parents felt that exclusion had impacted their tendencies to needlessly consult the GP, and seek antibiotics. These issues will be considered in chapter eight.

7.4.4 Positive comments about exclusion

There were few positive comments about exclusion, as parents tended to either complain, or accept their previous exclusion experiences as being part of the nursery's rules. Exclusion was not questioned in cases where the child was genuinely unwell. Furthermore, not all parents complained about (apparently) well children being excluded. These parents were able to accept and abide by the DCPs' rules, without questioning them.

Parents were generally accepting of the fact that a policy was essential, and the rules needed to be applicable to all. Some parents showed an appreciation for the fact that there was consistency in the way parents were treated:

Yeah. I think it's fair. I think they're fair, and if another child had any of these, then I'd like to think that they'd treat everybody the same.

[PCN25.2, Parent, part-time nursery user, Cardiff, minor professional]

Parents who claimed to abide by the policy often mentioned that they did this in the hope that other parents would reciprocate when their children were ill:

If someone else didn't, and took their child in, I think I'd be cross by that. So, we tend to stick to it, although it's a bit frustrating at times.

[PMN4.2, Parent, part-time nursery user, Monmouthshire, minor professional]

The quote above was in reference to the 48 hour exclusion period that applied after the last bout of sickness/diarrhoea. This policy in particular is highly reliant on parent honesty, as DCPs would not necessarily know the time of recovery. Overall, most parents acknowledged (in the interview, at least) the importance of keeping their children away from the day care setting, for the protection of others.

I strongly feel if you know your children have got transmissible infections you don't send them. I know what it's like. It's the pressure if they can't go, but you do it for the protection of the whole nursery, and there are some children who are compromised, and these things affect them more. So I just think it's irresponsible if you send your children when you're aware they shouldn't go to school or nursery.

[PMN4.1, Parent, part-time nursery user, Monmouthshire, minor professional]

7.5 Chapter 7 Conclusion

The diversity seen in DCPs' policies is most likely to be a consequence of DCPs being required to conduct their own research for policy formation. DCPs did not consistently follow any particular information source, although most of those interviewed turned to the internet as an information resource. This could explain some of the variation in policies. This is especially true given that DCPs normally carried out general web searches, rather than directly consulting medical websites.

Sickness exclusion policies served important roles in most DCPs' businesses.

Beyond minimising infection transmission, comments about the role of policies were aligned with preventing (and settling) disagreements with parents (mainly, from nursery manager perspectives). Childminder-specific themes included using policies to protect their working entitlements (e.g. getting paid), and using the

documents to distance themselves from exclusion decisions. Most DCPs saw their exclusion policy as guidance, rather than stringent rules, and considered multiple factors when making exclusion decisions. These factors included the child's behaviour, the addition of temperature, and knowing the child's pre-existing health conditions and habits. Differences between childminders' and nursery managers' thresholds and flexibility surrounding exclusion were apparent, and attributed to the differences in their working conditions, and business-related pressures they face.

There were some overriding factors which acted as triggers for exclusion. DCPs excluded children whom they perceived to be contagious, regardless of the nature of symptoms, or behaviour. The only symptoms/infections that were exceptions to this were uncomplicated coughs and colds (i.e. without coloured discharge, temperature, or discomfort).

Regardless of whether or not they were deemed contagious, children who were seen as 'unwell' were excluded in their own interest, and for the purposes of limiting the extra demand they would place on day care staff. DCPs had varied policies with regards to pain relief administration. Some would therefore have a lower threshold for exclusion than others, in cases where a child was seen to be unwell as a result of fever or pain.

Parents understood the need for an exclusion policy, and agreed that infection transmission should be controlled. However, they tended to disagree with this in cases where their children were systematically well, and cases where periods of contagion preceded the onset of symptoms. This was particularly true for conjunctivitis, and rashes such as hand, foot and mouth.

Parents had mixed views of their DCPs' sickness exclusion policies. Most accepted them as being compulsory, either explicitly or implicitly suggesting this. Others questioned the medical legitimacy of policies, and doubted DCPs' capacities to make medical judgments on their children's health. Finally, interviews revealed that the exclusion decisions DCPs make have the potential to have negative

consequences for the way parents manage their children's health.

CHAPTER 8: GP CONSULTATIONS AND ANTIBIOTIC-SEEKING BEHAVIOUR

8.1 Introduction

This chapter will consider DCPs' tendencies to encourage parents to a) consult GPs, and b) seek antibiotic treatment. The chapter has been split into two sections: the first (8.2) concerns DCPs' encouragement of parents to consult GPs; the second (8.3) focuses on DCPs' ways of advising antibiotic treatment. Parents' perspectives will be considered in each section, in order to understand the effects that DCPs' actions are having on the ways they manage their children's acute infections.

8.2 GP Consultations

8.2.1 Overview

Advising GP consultations was a common topic that arose amidst discussions about exclusion, specific infections, and DCP-parent interactions, in both DCP and parent interviews. It was clear that all DCPs regularly encouraged parents to consult the GP. This section will go further than asking whether or not DCPs advise GP consultations. It will also consider DCPs' perceived benefits of advising GP consultations, and the ways in which this advice may be communicated.

In order to understand what impact DCPs' advice has on parents, parents' reasons for consulting the GP have been organised into 'day care-related factors' and 'non-day care-related factors'. The latter were allied to parents' personal motivations, which I felt were likely to direct their consulting habits regardless day

care enrolment. Of course, there is uncertainty surrounding this, as many of the parents' personal consulting habits could have been shaped by their use of day care.

8.2.2 Do DCPs' advise parents to consult the GP?

All DCPs advised parents to visit the GP. References to this type of advice were so frequent (in participants' accounts), that it could be viewed as common practice. This was advised for all types of infection, regardless of whether the child was excluded. DCPs had the responsibility of running a business, which inevitably relied on parent satisfaction. They could not afford to ignore symptoms that might potentially become serious; likewise, they needed to be mindful of infection control for the protection of other children. It seemed that DCPs had been trained to advise GP visits in all cases where a symptom/infection was worth mentioning to parents. The only symptoms DCPs did not advise GP consultations for were colds, teething pain (without temperature), sickness and diarrhoea symptoms, and cases where the child seemed 'under the weather' (with no specific symptoms).

8.2.3 Reasons for advising GP consultations

DCPs' reasons for advising consultations fell into two categories: health-related, and non-health-related.

8.2.3.1 Non-health-related reasons: liability

The main driver behind DCPs advice to consult was the issue of liability. DCPs commonly strived to pass on the responsibility of managing children's health to GPs or other medically trained professionals. Advising GP consultations was thus a means of protection for DCPs:

I would never say "Don't take them to the doctors" I would probably say "do take them," but I'd never say "Oh don't worry," because I wouldn't have that on my head.

[CC60, Childminding couple, Cardiff, 22 years]

The quote above embodies the general attitudes conveyed in DCP interviews. When it came to illness, DCPs wanted to avoid being held accountable for any missed diagnoses or complications from delayed action. The quote below is not directly related to advising GP consultations, but serves as a reminder that DCPs are operating a business- a fact that will have consequences for the decisions they make, and the advice they offer.

C: It's so easy for things to come back on top of you now, with all these court cases and everything else, you just literally have to do everything by the book.

I: Yes

C: It's a bit of a pain, it's all the red tape isn't it, but if you say these things, then you've covered yourself then.

[CC12, Childminder, Cardiff, 2 years]

The interviews as a whole gave a strong message that DCPs are not selective with regards to when they advise GP visits. In general, DCPs worked on the assumption that every infection *could* be severe, and consequently had the potential to make them liable:

Because, really, it's better to be safe than sorry. You shouldn't let a child suffer really- and even if they say, "Oh well it's just a virus", they've had that said to them and it is all clear. But if anything did happen, and I just let it go then that could come back on me for not spotting it or not saying anything at the time.

[CC17, Childminder, Cardiff, 15 years]

DCPs' day to day practices were always based on precaution, no matter how certain they were of a diagnosis, or how mild they perceived the diagnosis to be. Whilst commenting on these issues, DCPs often emphasised their lack of medical expertise:

We're not medical, and we have to be careful...[later]..It's to cover our backs.

[CC60, Childminding couple, Cardiff, 22 years]

8.2.3.2 Health-related reasons

The theme described above was the overriding phenomenon at the root of DCPs encouragement for parents to consult. Individual reasons allied to health promotion were also apparent, where consulting a GP had benefits for the child, and facilitated the DCP's role of protecting other children in the day care setting. Most benefits of consulting fell in line with DCPs' aims to minimise cross-infection in their day care settings.

a. *Diagnosis*

Advising consultations carried the benefit of receiving a concrete diagnosis. This was in the interest of other parents using the day care setting, as they could be pre-warned of any outbreaks:

If it's something like hand foot and mouth or chickenpox... if they get it confirmed, we can put a sign up.

[CN5, Nursery manager, Cardiff, 19 years]

DCPs were careful to avoid offering parents a definite diagnosis for their children's symptoms. Most provided a preliminary assessment of what they believed the child was experiencing, and advised for this to be confirmed by a GP:

I say "Look, I'm not an expert, this is what I think it is, if you want to get a proper confirmation, then you need to see the doctors." So, I always sort of, send them that way. Definitely.

[CN35, Nursery manager, Cardiff, 3 years]

DCPs were generally confident about their ability to diagnose, usually attributing this to experience (either as a DCP or mother). This confidence was not usually expressed in front of parents:

Sometimes, we have to phone and say "We THINK they might have, um...", well, we know they have really, but obviously you can't say that to them, and then we

just say “Can you just take them to the doctors, get them checked out and confirmed, and obviously let us know.”

[CN72, Nursery manager, Cardiff, 25 years]

At times, DCPs were unsure about symptoms. Uncertainty was always met with caution, as DCPs needed to ensure that the child was not in danger or contagious.

The most common conditions this applied to were rashes:

[On discussing rashes] We don’t know what it is. It could be contagious. So, we usually phone the parent immediately and say, “Please come and take your child to the doctor...”

[CN25, Nursery manager, Cardiff, 10 years]

b. Treatment

A second reason underlying DCPs’ advice to consult was the perceived need for medication. This sometimes, but not always, referred to antibiotics. On occasion, DCPs suggested the child visit the GP because they needed help with fighting the infection, but specific treatment would not always be mentioned.

I hate doing that part of my job, but I think, you need to do that....because at the end of the day, it’s the child that’s suffering, if they’ve got a temperature, they don’t feel well, they’re suffering and they need medication.

[CC12, Childminder, Cardiff, 3 years]

Consulting for treatment purposes was particularly common with RTIs (especially tonsillitis, conjunctivitis, chest infections, or symptoms that involved coloured discharge).

c. Proof for re-admittance

Sometimes, parents were required to obtain proof in the form of a GP note to satisfy the nursery’s inclusion requirements (this issue did not arise with childminders). This theme was usually associated with infections perceived to be highly contagious (conjunctivitis, and impetigo). The quote below, taken from a nursery manager, summarises why written proof was important to DCPs:

What would probably be better would be sick notes for children...you see, so if we could have that in the reverse for the parents to say "We have taken them to the doctor, and the doctor says they can come back to the nursery." It's not, you know, something that the group would catch in general.

[MN2, Nursery manager, Monmouthshire, 3 years]

DCPs did not always *request* GP notes for re-admittance. Parents sometimes sought proof on their own accord, in order to return their child back to day care in cases where they felt exclusion was unnecessary. Thus, inappropriate exclusions could also lead to GP consultations.

The health-related and non-health-related reasons for encouraging GP consultations are of course linked, in that promoting the health of children and staff is positive for business, and reduces the likelihood of being accused of malpractice.

8.2.4 Ways of encouraging GP consultations

DCPs' reported practices suggested that there were various forms of encouraging GP consultations. Advice to consult GPs could be categorised into two types: 'helpful advice', and 'time-specific advice'. Some DCPs' accounts could not be categorised as 'advising' consultations, as their communication with parents was more akin to 'providing instructions'.

'Helpful advice', refers to scenarios where DCPs would suggest GP consultations for the child's benefit. Re-admittance was not dependent on this. In these cases, the DCPs were doing nothing more than offering advice:

No, we can't make the parents take them to the GP, but we would recommend quite strongly that they take them, giving them an accurate description of what we've seen.

[CN11, Nursery manager, Cardiff, 10 years]

I would say to the parents beforehand, if I was realising they're getting worse rather than better, "Maybe they need a quick check-up."

[CC17, Childminder, Cardiff, 15 years]

'Time-specific advice' is similar to the previous category, but refers to cases where DCPs specify timing when advising GP consultations. For example, DCPs might suggest taking the child to the GP that evening, or on the same day. This specification of time might have put additional pressure on parents to consult:

...we'd say, you know "We're monitoring him...", but we would ring "...to suggest you get a doctor's appointment, you know, before you come and pick him up."

[CN11, Nursery manager, Cardiff, 10 years]

I might ring them at work and say: "I think he's got conjunctivitis, might be wise to get yourself an appointment for this evening."

[MN4, Nursery manager, Monmouthshire, 20 years]

Finally, 'instructions to consult' referred to cases where DCPs' communication was more forceful, making GP consultations sounds like a requirement:

I'll tell them ...[...]... you need to ring and make the appointment and come and collect the child and go to the doctors.

[MTC12, Childminder, Merthyr Tydfil, 24 years]

There were also examples of 'time-specific' instructions, which I considered to be an even stronger encouragement for consulting:

Um, and then they say "Oh, I'll take him to the doctor's in the morning," and I'm like "No, you need to pick him up and take him to the doctors now."

[CC12, Childminder, Cardiff, 3 years]

Sometimes, instructions to consult would be coupled with requests for feedback. This refers to cases where DCPs asked for the GP's assessment, or required a GP note/antibiotic prescription to re-admit the child:

...we just say "Can you just take them to the doctors, get them checked out and confirmed, and obviously let us know."

[CN5, Nursery manager, Cardiff, 19 years]

Numerous examples of this category will be presented throughout the remainder of this chapter. Feedback could be considered as proof of having consulted, which could take the form of diagnoses, GP notes, or treatment. This type of communication with parents could be considered as the strongest encouragement to consult.

8.2.5 Parents' reasons for consulting general practice: non-day care-related factors

Parts of the following discussion on parents' consulting behaviours have been organised under various constructs from the HBM¹⁰ (see chapter five, sub-section 5.5.2.3). Factors that influenced parents' consulting behaviours were organised into two overriding categories. These were labelled as 'non-day care-related factors', and 'day care-related factors'. Non-day care-related factors, considered in this sub-section, have been presented as constructs of the HBM that relate to parents' personal motivations for referring their child to the GP (i.e. their perceptions of severity, perceived benefits, etc.). 'Day care-related factors', considered in 8.2.6, have been considered as 'modifying factors', as they were seen to influence parents' perceived benefits of consulting, and more rarely, their perceived barriers of consulting.

8.2.5.1 Perceived potential for severity

In general, parents had a low perception of severity in relation to the infections their children had encountered. However, some parents spoke of the potential for certain infections to *become* severe. In these cases, parents had consulted with the intention of preventing deterioration:

Well, yes, a bad chest infection, you do need help for it to clear, otherwise it just lingers and lingers and can lead to pleurisy or whatever.

¹⁰ As a reminder, HBM stands for 'Health Belief Model'

[PCN25.2, Parent, part-time nursery user, Cardiff, minor professional]

Besides chest infections, the only other infection parents perceived to be potentially severe was conjunctivitis, although this was only suggested by one parent that had personally experienced a severe case:

I said “No. I want drops. I don’t want it to get any worse than it is now,” because I have seen it at its worst when E had it. It would be funny for me if my eyes are (stuck) together, so you can imagine what it would be like for a child.

[PCN35.2, Part-time nursery user, Cardiff, technician]

8.2.5.2 Cues to action

A consistent theme across all interviews was the emergence of specific triggers that would prompt a parent to consult. These factors have been labelled as ‘cues to action’.

a. Specific symptoms

Fever was one of the main symptoms that would trigger a parent to consult, due to the fear of febrile convulsions, or the presence of a severe infection.

Importantly, fever was only a trigger for action after first line home management had failed:

[if] the Calpol’s not working, or taking her clothes off and cooling her down is not working, then there’s obviously something major wrong, basically. When I think I’ve done everything I can, then I start getting the doctor.

[PCN35.2, Parent, part-time nursery user, Cardiff, technician]

The second symptom that was regularly mentioned as a trigger for consultation was audible chest noises associated with coughs. “Rattling” sounds were associated with difficulties in breathing, hence triggering parental concern. The parent below explains her reasons for consulting the GP, despite the lack of exclusion and lack of apparent distress in her son:

When he was breathing, you could hear like a rattling. His dad was saying “You’ve got to take him to the doctor, he’s got a chest infection,” so, I took him down then.
[PMN40.1, parent, full-time nursery user, Monmouthshire, other occupation]

The above quote must be interpreted in light of the parent being advised by another person, although this other person was the child’s father (i.e. also a parent). Interestingly, one parent’s account of her child’s cough symptoms indicated that the change in audible symptoms may have signified increased severity, eventually leading to consultation:

Well, she had a croaky, deep chesty cough, but by the Wednesday it was becoming quite hoarse sounding...
[PCN11.5, parent, part-time nursery user, Cardiff, major professional]

The above example may have also included the factor of ‘time’ as a determinant of consulting, where the lack of improvement in symptoms over a given period is a source of concern (see part ‘c’).

b. Unfamiliar symptoms

A handful of parents reported consulting the GP when faced with symptoms they did not recognise. This connected with ‘perceived severity’, in that parents were concerned that the symptoms had the potential to be serious, or even fatal. In these cases, medical attention was sought for reassurance. Unfamiliarity with symptoms came across in parents’ accounts of unexplained rashes. Although meningitis did not feature in the topic guide, it was mentioned by a number of parents who had urgently sought care for rashes they could not identify:

P:[In response to what symptoms she would consult immediately for] Um, rashes. If it was an unexplained rash.

I: What’s the fear with rashes?

P: Well, meningitis, or something like that.

[PCC60.1, full time childminder user, Cardiff, minor professional]

Further support for this can be seen through parents' decisions to refrain from immediate consultations (or using emergency services) once satisfied that their child did not have meningitis:

Yeah, actually that time, we ended up ringing NHS direct, because she had a rash as well, so we were quite concerned, but we had looked on the internet, and it wasn't anything that looked like meningitis.

[PMN2.1, part-time nursery user, Monmouthshire, major professional]

None of the participants in this study had experienced meningitis. The publicity meningitis has received (from the media) could have brought this infection to the forefront of parents' minds, especially when confronted with rashes that were not identifiable. With regards to the meningitis-related quotes, the rash itself was a specific symptom that caused concern. Thus, the above quotes also relate to the previous theme discussed. This demonstrates how many of the quotations selected were interpreted as being relevant to numerous themes.

c. Long symptom duration

Failing to see clinical improvement in a child's symptoms would result in consultation. This theme only emerged in discussions surrounding RTI symptoms—usually cough. Parents' expectations of the time required for recovery varied considerably for cough, ranging from one day to two weeks. If these individual expectations were not met, parents would question whether their child had a 'mild' infection, or something more severe. Interestingly, there were variations in individuals' reports of the length of time they would wait before consulting:

If it's just one day, I put it down to a cold or a virus, and leave it, but if it's dragging on two or three days, I would take her to the doctors to rule out anything else.

[PCN11.2, full-time nursery user, Cardiff, major professional]

He had a persistent cough and cold, and it went on for weeks and weeks. I'd be giving him Benecol in the evening, but it still hadn't shifted.

[PCC60.1, full-time childminder user, Cardiff, minor professional]

I remember it was going on a bit. It was a few days into the infection that I took him to the GP. Sometimes they just clear up after a day don't they, so I don't bother taking him to the GP then.

[PMTN21.1, part-time nursery user, Merthyr Tydfil, minor professional]

d. Change in behaviour

Any deviation from the child's normal behaviour was a common catalyst for consultation- particularly for RTIs. This included signs such as loss of appetite, lethargy, distress, or parents' intuitive 'feeling' that their child was not himself/herself.

I: What would be your minimum symptoms that you would take them to the doctor for?

P: I think for me, it's when they're not themselves. It's when he's not himself...the alarm bells are ringing for me, and we take him straight away.

[PMTN18.1, Parent, part-time nursery user, Merthyr Tydfil, minor professional]

For the majority of interviews, there was a suggestion that responding to Calpol was part of a child's normal behaviour. Thus, the decision to consult would only take effect if first line actions (e.g. administering symptomatic relief medication) had failed:

[In response to what triggers consultation]: If you can see that they're in pain, and there's something that Calpol is not doing the trick for.

[PMN4.2, Parent, part-time nursery user, Monmouthshire, minor professional]

Although only a few parents made explicit mention of this at the time of discussing 'change in behaviour', they had made references to this first line of action in other parts of the interview.

8.2.5.3 Perceived benefits of consulting

a. Reassurance and avoidance of complications

For most parents, the main perceived benefit of consultation was reassurance. Parents usually consulted to 'rule out' more serious conditions. As one parent put

it, *“I’d rather be safe than take a risk”* [PMTN18.1, part-time nursery user, Merthyr Tydfil, minor professional]. Parents were not necessarily entering consultations with specific expectations, but were usually consulting for peace of mind:

With a child I think you need to be cautious, so just take them to ensure there’s nothing else wrong with them.

[PMTN21.2, Parent, full-time nursery user, Merthyr Tydfil, minor professional]

Parents usually consulted for rashes to rule out meningitis (see above), and productive coughs to rule out chest infections and pneumonia.

b. Treatment

Consulting for the purposes of receiving treatment tied in closely with day care-associated motivations for consulting (see chapter eight, sub-sections 8.3.3.3 and 8.3.5.1), but did not feature heavily in parents’ personal motivations. Only five out of 28 parents described consulting to obtain treatment (four related to conjunctivitis, one to tonsillitis). Of these, most felt their child *needed* medication to recover:

I: What were your reasons for visiting the GP [for conjunctivitis]?

P: Oh, because, to me it seemed obvious she had an infection, and we needed something to make it better, so...

[PCN35.2, Parent, part-time nursery user, Cardiff, technician]

Two of the parents had directly asked for treatment. The quote below emphasises the parent’s belief that antibiotics were the only solution to her son recovering from tonsillitis:

I: Do you ever ask for the medication?

P: Yes, I have done, because sometimes they won’t give it, but yeah, I have done, because obviously he needs something to help him.

[PMTN21.1, part-time nursery user, Merthyr Tydfil, minor professional]

This quote needs to be considered in context. This parent had discussed how her

son's recurrent tonsillitis had caused her substantial difficulties over the previous year. Her insistence that she receives antibiotic treatment may have been a result of repeated receipt of antibiotics in previous consultations (mentioned by parent). Antibiotic treatment is most probably associated with recovery from this parent's perspective. This feature was shared by three out of the remaining four parents that sought treatment for conjunctivitis:

I: Did someone suggest you needed drops?

P: I think just past experience with my other children, I think...they needed the drops to clear it up.

[PMTN21.2, Parent, full-time nursery user, Merthyr Tydfil, minor professional]

Many parents gave the impression that they viewed treatment as the 'standard' management for conjunctivitis. A slightly alternative view, held by the parent below, was that treatment was more likely to clear symptoms in a timely manner:

Things like conjunctivitis... you know it's not going to clear up on its own very quickly. Or, it's not very likely to. So it's one of the ones that you think "Ah yes, we'll go to the doctors."

[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

Most parents referred to treatment in a general sense, rather than specifying antibiotics. When one parent was asked whether she asked for antibiotics, she replied:

I went to see what was wrong and what I needed to make it better, and then I was prescribed the antibiotics. I never go to the doctors demanding something. I don't consider antibiotics to be my goal when I go to the doctors.

[PMN2.1, Parent, part-time nursery user, Monmouthshire, major professional]

This parent's lack of specificity regarding expected treatment may have been a result of her inexperience (being a first time parent). This is in contrast to a parent described earlier (PCN35.2, sub-section 8.2.5.1), whose previous experience with conjunctivitis has led to a specific expectation for antibiotics.

Based on these interviews, it appears that parents that had consulted for

treatment either: a) wanted 'something' that would help their child, or b) sought the specific treatment they had come to expect from previous experiences.

8.2.6 Parents' reasons for consulting general practice: day care-related factors

Day care attendance was often discussed as having a noticeable impact on parents' consulting habits. Most parents who noticed this impact spoke of an increase in GP visits, although two parents felt that their day care policies and DCP advice had made them reluctant to consult in certain instances. In this section, I will describe how being excluded from day care can act as an additional prompt to consult for symptoms that parents would not normally visit the GP for. The perceived benefit of consulting, in these cases, was the prospect of an earlier return to day care. Examples of sickness exclusion policies (and thus, day care related factors) that discouraged consultation are also discussed. Day care attendance itself can be seen as a modifier of parents' behaviours, in that it altered their readiness to consult. It usually did this through influencing their perceived benefits of consulting. Although less commonly discussed, day care attendance (in particular, DCPs' advice) could also increase parents' perceptions of threat.

8.2.6.1 DCP advice

Some statements made within interviews showed that DCP advice was a powerful antecedent to consulting behaviour, regardless of how high parents' threshold for consulting was:

When they called and said 'She's got this rash, take her to the GP,' I thought it's probably just more teething, but I did book an appointment and take her straight away. So, I pretty much definitely wouldn't have, unless instructed to.
[PCN5.2, Parent, part-time nursery user, Cardiff, minor professional]

You recover and it's fine, but I think with things like the suspected chest infections, they prompted me to go to the doctor, even though I did think that she'd be ok. So, if they hadn't have said anything I don't think I would have taken her.
[PCN25.2, Parent, part-time nursery user, Cardiff, minor professional]

The use of the word 'instructed' by the first parent ties in well with my interpretation of DCPs' different ways of encouraging consultations (see sub section 8.2.4). DCP advice alone was sometimes sufficient to trigger GP consultations, due to the concern it arose within parents. This is an example where parents' perception of threat could increase due to the DCP's advice or communication. This is especially true for first time parents, some of whom regarded DCPs as experts in children's health matters:

[On talking about a chesty cough]: There was nothing that the GP could do really...but I took their advice, took her to the doctor. I mean, it's good because... I take a lot of what they say on board because they've seen it all before...I do take their lead quite often.
[PCN25.2, Parent, part-time nursery user, Cardiff, minor professional]

8.2.6.2 Proof for re-admittance

Both DCP and parent interviews revealed that GP clearance notes were sometimes a requirement for re-admittance to day care. This was particularly a problem with conjunctivitis. Some parents knew that exclusion was not necessary for conjunctivitis, but felt compelled to consult, as the only means of returning their child to day care was through a clearance note or an antibiotic prescription. A number of parents described examples where their GP had reacted negatively to the parent's decision to consult:

Actually, my doctor got angry, and I remember her writing quite a strong letter, saying that this was not a problem, and children should not be excluded for (conjunctivitis).
[PCN11.4, Parent, part-time nursery user, minor professional]

The parent above did not feel embarrassed or intimidated by her GP's reaction, as she sensed the GP's anger was directed at the nursery. The GP's response was

actually supportive of the parent who had explained that she was consulting for the sole purpose of obtaining proof that her child should not have been excluded. Similarly, in the example below, the parent was not concerned about a viral rash (having experienced it with her previous children), but felt compelled to visit the GP because it was advised (by DCPs), and because it was the only way she could return her child back to day care:

I've taken her to the doctors basically because they wouldn't allow her back, unless the doctor said, she didn't have...[...]...I actually took her to the doctor, who was quite stroppy with me, and I said "Well, I was told to bring her," and he said "Well no, she looks fine to me. There's nothing wrong with this child".
[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

8.2.6.3 Accelerate recovery

Some parents believed that infections such as conjunctivitis would clear up on their own, but antibiotic treatment would speed up the process. Thus, GP consultations were normally undertaken to seek treatment as soon as possible.

If they had conjunctivitis and I knew it was that, I would try and take them straight away, because they can't go [to nursery] if it's not clear, and if they can't go, you can't go to work, so it's a case of trying to treat it straight away really.
[PMN4.1, Parent, part-time nursery user, Monmouthshire, minor professional]

The parent above was aware that GPs were reluctant to prescribe, but she was still able to secure prescriptions through providing inaccurate medical histories:

I think, for instance, if they've had a day and it's not getting any better, I probably say they've had it for two days.
[PMN4.1, Parent, part-time nursery user, Monmouthshire, minor professional]

A few other parents shared this idea that antibiotics speed up recovery, and therefore had a personal motivation to consult when their child had been excluded. Here, it seems that inappropriate exclusion policies can begin a series of events that culminate in a GP visit and an antibiotic prescription.

8.2.6.4 Justification for not going to work

The issues described above suggest that parents sometimes consult for the practical reasons of expediting return to day care. One parent's account suggests that there may be deeper psychological factors associated with the decision to refer excluded children to the GP:

Then you feel like...I don't know! I feel like, because your child's been excluded, and then you have 48 hours, you feel you have to do SOMETHING about it to justify those 48 hours, if you see what I mean.

[PCN11.7, Parent, full-time nursery user, Cardiff, major professional]

Feelings of guilt were apparent in two of the parents interviewed, who felt uncomfortable about taking time off from work unless it was justified. To the parent above, consulting the GP validated her time off from work. As the parent below states, time off from work was not only a financial concern, but could carry social consequences in the form of strained relationships with colleagues:

Even without thinking of how many days you're not going to get paid for, I've always tried to come in as much as I can, just for the sake of the people I work with...[..].. I don't want people to feel "Oh, she's off again, we'll have to cover her work!"

[PCN11.3, Parent, full-time nursery user, Cardiff, technician]

Interestingly, both of these parents' line of work involved team work in a laboratory. Absence from work could thus be a burden on colleagues, as their skilled roles were not easily covered by relief staff. In these cases, the perceived benefit of consulting, brought about by day care exclusion, was related to parents' perceptions of how others might see them, and their personal justification for not attending work.

8.2.6.5 Control

Parents expressed their tendencies to try and pre-empt DCPs' exclusion decisions by consulting the GP at the earliest opportunity, if they believed their child might have developed/be developing an infection. The parent below describes her

experiences with conjunctivitis. Her impression was that her child needed at least 48 hours' worth of antibiotic treatment for re-admittance to nursery:

The children, when they're at nursery, I would take them to the doctors probably sooner than I would normally, because of trying to balance work and everything else. To try and get a head start on it almost.

[PCN3.1, Parent, part-time nursery user, Cardiff, major professional]

The key issue here is that day care attendance can lower a parent's threshold for consulting the GP. Rather than waiting for symptoms to resolve (or even fully develop), some parents consult at the first signs of infection. This, to some extent, allows them to exercise some form of control over when their children are kept away from nursery, and when they can be re-admitted.

8.2.6.6 Day care-associated barriers to consulting

Pre-empting DCPs' exclusion decisions led one parent to withhold from consulting her GP for a respiratory condition which actually warranted medical attention. The policies associated with receiving antibiotic treatment (48 hour exclusion) caused her to delay visiting the doctor until she knew she would have two days off from work:

It's slightly bad saying this, but we have put off taking her to the doctor [before]. She was quite croaky. We didn't take her until the Thursday when we knew we would be off, because with antibiotics they've got to be off for the 48 hours...[...]... but my instinct was telling me I should take her to the doctor. I didn't though, because I knew that would mean a day at home. So that's where the rules are really affecting the children.

[PCN11.5, Parent, part-time nursery user, Cardiff, major professional]

In the case above, the anticipation of receiving treatment discouraged consultation. This was not a common theme, and only arose in two interviews of parents using the same nursery.

Two parents felt discouraged from consulting in the future, after having what they described as embarrassing experiences with their GP after their DCP had

instructed them to consult for cold-related symptoms (one of which was suspected conjunctivitis). One of these parents was conscious of the GP labelling her as an “*over-concerned mother*,” and proceeded to avoid taking her child to day care with cold-related symptoms, as she knew her DCP would advise GP consultations again (PCN72.1, part-time nursery user, Cardiff, home-maker). The other parent felt that her DCP’s over-cautious approach had embarrassed her in the past, and caused her to hold back from future consulting:

It medicalises things, and then I feel like a fool, because the doctor says they can’t do anything, and at the end, you tend to hold back from going to see your doctor. [PCN11.7, Parent, full-time nursery user, Cardiff, major professional]

In contrast to the parents described earlier, these two parents felt that consulting for trivial symptoms reflected on them, rather than their DCP. The parents described earlier were able to detach themselves from the decision to consult, informing the GP that they were acting as a result of day care policies. In the example where a parent felt discouraged to consult in the future, there was clearly a psychological barrier to consulting, which seemed to be brought about through day care attendance.

8.3 Antibiotic-Seeking Behaviour

8.3.1 Introduction

This section presents the results of the final objective of the study: to explore whether or not DCPs encourage parents to seek antibiotic treatment.

The results are based on a selection of purposefully chosen DCPs who claimed they did or did not advise antibiotic treatment in their questionnaire responses. The interviews provided further insights into when DCPs advise antibiotics (i.e. in response to which symptoms or scenarios), how they deliver this ‘advice’, and how this advice is received by parents.

Two of the standard questions posed to DCPs were: a) *“Do you ever advise parents that antibiotic treatment might be needed?”* and b) *“Which infections have you offered this advice for?”* The responses from the first question allowed me to organise DCPs into groups that did and did not advise treatment. Although I had asked the initial question in the questionnaire, DCPs’ response needed to be confirmed and explored further in the interviews. Responses to the second question often took the format of ‘lists’ of infections being recited by DCPs. Nonetheless, most of the data presented in this chapter was taken from other areas of the interview, where I had not initiated the topic of antibiotic treatment.

This section will begin with an overview of the infections DCPs most commonly felt warranted antibiotic treatment. Following this, I will describe the various ways in which DCPs led parents to believe that antibiotics are beneficial or necessary. DCPs’ written policies, verbal communication, and *projected* requirements for antibiotics all influenced parents’ perceptions of whether or not antibiotic treatment was required. DCPs’ projected requirements will be discussed from the perspective of parents alone. This theme considers parents’ impressions of what was required of them, based on possible cues they had picked up from DCPs. Finally, I will examine DCPs’ attitudes to antibiotic therapy, including their views on the frequency of antibiotic prescribing, and their perceived benefits of antibiotic treatment. Understanding these issues will benefit the design of future interventions.

8.3.2 Infections most commonly associated with antibiotic treatment

A brief overview of the main infections that were associated with antibiotic treatment now follows.

8.3.2.1 Chest infections and coughs

Coughs and cold were generally not associated with antibiotics treatment, unless there was presence of coloured nasal discharge (in some cases) or coloured phlegm (in most cases). In addition to this, one nursery manager believed that 'severe' colds would benefit from antibiotics. It seemed that the presence of temperature was a particular indicator for antibiotics being appropriate:

NM: [On elaborating on colds sometimes needing antibiotics] I think one observation then would be the temperature, the runny eyes, the cold, um, the blocked nose, type thing.

I: Is it the combination of things?

NM: The combination of where the child is going down hill. Generally not well. There's lots of things going on.

I: Ok.

NM: I suppose you could get a healthy....healthy child running around with a runny nose.

I: Hmm...but they would be ok?

NM: Yeah...they would be fine.

I: So what...could you pinpoint one, one thing which is kind of um...turns it from a 'they're ok', to 'no, they need antibiotics'. I mean...

NM: Temperature...

I: Temperature?

NM: Temperature, and generally not well.

[MTN23, Nursery Manager, Merthyr Tydfil, 24 years]

There were a number of DCPs that reported advising parents that antibiotics would probably be required for coloured phlegm production, because they felt these symptoms were indicative of an infection:

I: What about antibiotics specifically. Would you advise that they might need antibiotics?

NM: Yes. We do. Very often it's specific symptoms. Like greeny phlegm from coughs, normally points to, you know, infection, and we do advise antibiotics for that, from doctors.

[MN2, Nursery manager, Monmouthshire, 3 years]

As discussed in the previous chapter, coloured phlegm was one of the symptoms pointing to a chest infection diagnosis, which required treatment (according to DCPs):

When they've got phlegm, especially green, well, then they've got a chest infection. That really needs to be seen to. They'll want medication for that, and once they're on the medication, then that's ok, because it's curing the infection.
[CC7, Childminder, Cardiff, 17 years]

Chest infections were associated with antibiotic treatment in all but four DCP interviews, and was always on DCPs' lists of infections they reported to have advised antibiotics for in the past. DCPs who did not generally advise antibiotic treatment still had an expectation that children would be prescribed antibiotics for chest infections, usually due to their previous experiences:

[Talking about a chest infection vignette] Presumably she's going to go to the doctors. She's going to get some antibiotics. Probably a couple of days on the antibiotics, generally, um, you know, get those into her and she should be starting to improve.
[MN4, Nursery manager, Monmouthshire, 20 years]

Receiving antibiotics for chest infections was seen to be routine, and never questioned. The only exception to this was one DCP who had medical experience as a nurse. She acknowledged the fact that chest infections could be viral.

None of the parent interviews revealed any experiences with exclusion for chest infections, because their children had either never suffered from this, or had developed symptoms outside of day care hours/days. As a result, most of the data relating to this infection was based on DCPs' reports. A few parents did, however, report that their DCP had drawn attention to their child's cough.

8.3.2.2 Conjunctivitis

Conjunctivitis was the most frequently mentioned infection in relation to antibiotic treatment. Similar to chest infections, it was usually mentioned in the 'list' of infections DCPs reported advising antibiotics for. Conjunctivitis was the root cause of many problems parents faced with regards to exclusion, and antibiotic treatment usually played a significant role in either exacerbating or resolving these issues. Parents without antibiotics had issues with re-admitting

children to day care. Those with antibiotics found that exclusion requirements were relaxed (further details later).

8.3.2.3 Ear infections

Ear infections were very often associated with antibiotic treatment, but this did not result in any conflict or disagreement between parents and DCPs. DCPs' advice was not as influential to parents' antibiotic-seeking behaviours, as doctors seemed to automatically prescribe for ear infections. None of the parents reported the GP withholding treatment, or gave any suggestion that there was any uncertainty surrounding the decision to prescribe. This might have been due to the obvious discomfort that often accompanied ear infections; unlike conjunctivitis and chest infections, children were more likely to show signs of distress. The fact that ear infections were generally contained meant that DCPs were rarely concerned about cross-infection. Any advice for antibiotic treatment was offered in the spirit of helpfulness.

8.3.2.4 Tonsillitis

Finally, tonsillitis was associated with antibiotics by every DCP interviewed, with the exception of one nursery manager. Interestingly, this manager routinely advised antibiotic treatment for other infections, but fluids and painkillers were her main recommendation for tonsillitis (MN4, Monmouthshire, 20 years). All other DCPs expected antibiotic treatment for this infection.

Parents' experiences of tonsillitis were limited; all four mothers that discussed this infection had chosen to keep their child away from nursery as a result of the child feeling unwell. GP consultations and antibiotic prescriptions were therefore discussed independently of their experiences with day care.

8.3.3 Antibiotic treatment and written policies

This topic concerns cases where antibiotic treatment had been mentioned within sickness exclusion policy documents.

8.3.3.1 24/48 hour exclusion for antibiotic treatment

Five nursery managers and one childminder had mentioned antibiotic treatment in conjunction with specific infections in their sickness exclusion policies.

Exclusion periods were written under the premise that antibiotics would be taken (e.g. “child can return after 48 hours of antibiotic treatment”). At a first glance, these policies suggest that re-admittance to nursery was permitted after the child has taken antibiotics for the given amount of time. In interviews, DCPs reported that they only required children to be symptom free on return to nursery. This became clear early in the interview period, when one of the managers clarified that the written policy should be interpreted as stating periods of exclusion *if* the child had received antibiotic treatment. None of the other DCPs with these types of policies stated this directly, but all agreed that their policies were not intended to imply that antibiotic treatment was obligatory.

The main purpose of excluding a child during the first 24 hours of antibiotic treatment was to minimise the risk of adverse reactions occurring within day care:

That’s because we’ve been advised by the doctors that sometimes you can have an allergic reaction, and that would happen within 24 hours. Obviously if they had an allergic reaction, we wouldn’t want them at nursery.

[CN22, Nursery manager, Cardiff, 7 years]

The 24 hours of exclusion associated with antibiotic treatment would even be applicable if the child was being treated for injuries, emphasising that exclusion is a consequence of the drug itself, not the underlying reason for treatment. DCPs exercised this ‘antibiotic exclusion policy’ regardless of whether the child had taken the specific type of antibiotic on a previous occasion. It was easier for DCPs

to enforce a general policy, than to keep track of individual children's histories of antibiotic consumption. Another reason for enforcing this rule was DCPs' mistrust of parents. The manager below felt that she was not able to trust parents' reports of children having had the drug in the past:

Oh parents will say "Oh yes, he's had it before", and you think, "Have they really had it before? This antibiotic?"

[CN25, Nursery manager, Cardiff, 10 years]

Finally, a handful of DCPs felt that excluding children for the first two days of antibiotic treatment covered the time required for recovery¹¹:

Once they're well, they can come back and if...usually 24 hours the antibiotics start kicking in anyway. So, usually after that, after 48 hours they're usually fine within themselves.

[CN11, Nursery manager, Cardiff, 10 years]

One DCP had a mixture of 24 and 48 hour exclusion periods post antibiotic treatment, depending on what the infection was. Ear, eye and chest infections required 48 hours as they were perceived as being more debilitating:

NM: Antibiotics that we say...is the eye infection, the ear infection, and the chest infection which is the 48 hours, and in general, antibiotics for any other sort of illnesses, the minimum is 24.

I: Ok. Just out of curiosity, why are those three that you mentioned 48, and the other ones 24?

NM: It's just to let them get over the actual illness, because if you don't give them the time period of being off, they would be back, so we like them to sort of be fully recovered really, before they're back.

I: So what's the significance of ear infections, conjunctivitis, chest infections?

NM: Just because they're a bit more serious really. If they've got a bit of a cold or something¹², it's just 24 hours."

[CN22, Nursery manager, Cardiff, 7 years]

¹¹ When used by DCPs, 'recovery' encompassed symptom resolution and a return to 'wellness'. This is demonstrated in the quotes by CN25 and CN11 (the preceding quote, and the quote that follows).

¹² Note: This DCP was later questioned about this statement. Antibiotics were not actually advised for colds.

Other DCPs who had written antibiotic-related exclusion periods tended to keep these consistent across all infections antibiotics were mentioned for. In the example above, the 24 hour period was required to ensure there were no reactions to the drug- the next 24 hours were purely for 'recovery' purposes. Rather than stating that the child can come back when well, an extra day of exclusion has been added. As shall be seen later, this arbitrary extra day created problems for parents whose children were already well.

Five nursery managers had stipulated a 24/48 hour antibiotic-related exclusion period in writing, but over half of DCPs interviewed talked about this rule. For various reasons, the 24 or 48 hour point marked the difference between sickness and wellness for the infections mentioned above. I found it interesting that this phenomenon was consistently present in nurseries, but rationalised in different ways. As above, some managers defined this as the period required for recovery. A quarter of managers also added that a child would no longer be contagious after 48 hours of antibiotic treatment. Despite this rule being common to over half of DCPs, there was no common source DCPs had obtained this information from. The following DCP implies that the rule has been acquired from elsewhere. The fact that she presumes there is an evidence base for the rule suggests that she trusts this information. This may be related to the fact that she managed a franchise of nurseries, which all followed the same policy (which would have been passed on to her as a company document).

Probably because the 48 hours...probably because during their research, they found that the ear infection and the eye infection can lead to other things as well.
[CN3, nursery manager, Cardiff, 16 years]

Childminders tended not to have any exclusion periods attached to antibiotic treatment in their written policies or interview accounts. There were two exceptions to this, both of whom excluded for the entire course of treatment due to their 'no medication' policy.

8.3.3.2 Parents' interpretations of written policies

Some of the parents had experience of their child being excluded for the infections that specified antibiotic treatment (in written policies). However, none could recall consulting the policy for re-admittance information. Nonetheless, a handful of parents were asked to offer their interpretations of the written policies. All assumed that the mention of antibiotics implied that treatment was a pre-requisite for re-admittance. When asked whether this written statement could have influenced their antibiotic-seeking behaviour, parents expressed a mixture of views:

I: Do you think that would impact you, if you read that at the time?

P: Certainly. I mean, if I took her to the doctors, and they diagnosed an ear infection, I'd be saying "Well, where's the antibiotics then please!"

[PCN5.2, part-time nursery user, Cardiff, minor professional]

In contrast to this, the parent below did not feel that she would be influenced by the written policy. It should be noted, however, that this first time parent's child had only been excluded on one occasion (for a non-antibiotic-related infection):

No, I don't think this suggests...or gives ME an indication of how I should treat my child, because I see this as them covering themselves. I would take medical advice from my doctor.

[PCN25.2, part-time nursery user, Cardiff, minor professional]

Clearly, this parent does not see the policy as being relevant to her, and primarily sought re-admittance advice from her GP. She seems to view her child's health management as being completely under her control. This attitude may have been altered if she had experienced the exclusion-related issues other parents had faced.

Finally, one of the parents interviewed was a GP herself. Her perspective is likely to be different to most parents. Nonetheless, she had strong views about her DCP's written policy:

I do understand, they need to have some sort of clear policy don't they, and it's, yes...so, I think it's a reasonable policy, but it does mean that it forces parents to go to their GP and say "I need antibiotics!"

[PCN5.1, Parent, part-time nursery user, Cardiff, major professional]

The quote above needs to be interpreted in light of this parent's past experiences in being the prescriber, rather than (or as well as) the antibiotic seeker.

8.3.3.3 Consequences of written antibiotic exclusion policies

a. GP consultations

Some of the parents interviewed knew that their nursery excluded children for up to 48 hours *if* they started antibiotic treatment. Two parents claimed that this discouraged them from consulting:

You tend to wait back a little bit, because you don't want them to be on antibiotics, because it means they can't go to nursery for the rest of the week. So you do tend to actually go more that side of avoiding antibiotics.

[PCN11.3, Parent, part-time nursery user, Cardiff, technician]

As discussed earlier, parents that avoided their instinct to consult could be subjecting their child to unnecessary risk if a severe infection is present (see PCN11.5, sub-section 8.2.7). There were other parents who felt their nursery's policies made it more likely that they would consult the GP sooner than normal. One of these parents had tried to get a 'head start' on a course of antibiotics while she was at home with her children:

P: Yeah, so...sounds really bad, but sometimes, if I can see that his eyes are getting crusty, if it looks a bit pink, I might try and take him to the doctors to make sure that...you know, to try and rule it out, and so then if it is conjunctivitis....

I: You have a note?

P: I have a note, or I've got the antibiotics, and I can give him the 2 days worth.

[PCN3.1, Parent, part-time nursery user, Cardiff, major professional]

It is important to note the part-time basis of parents' work statuses. It seems that the 48 hour exclusion rule can either encourage or discourage GP

consultation/antibiotic-seeking on the basis of when symptoms occur. One of the parents mentioned earlier (PCN11.5) delayed consulting, to ensure the 48 hours of antibiotic treatment fell on her days off. The parent above was eager to receive treatment as soon as possible, so it could be administered during her days off. In both cases, the parents have tried to control when their child takes antibiotics, to ensure that this falls at a convenient time.

b. Compliance

Finally, the exclusion periods for antibiotic treatment carried the danger of encouraging poor treatment compliance. Some DCPs claimed that parents had altered the timings of dosages, or avoided starting a child's course of antibiotics until a convenient time when they would be off from work (similar to that discussed above, though they would delay beginning treatment after it had been prescribed). This was demonstrated by the nursery manager below, while discussing a child with a throat infection:

NM: We did have one little boy the other day who went to the doctors and had antibiotics prescribed to him...but because mum had a very important meeting the following day, she didn't give them to him until the next day...[...]...That's out of our control. It's up to the parents what they want to do.

I: Was he ill with it, or...

NM: He was ok actually. Very very quiet because he couldn't speak, but he was ok. He didn't have a temperature, which was again, why I said it's fine.

[CN3, Nursery manager, Cardiff, 16 years]

Some DCPs had known parents to interfere with the dosage of antibiotics. In one example, a nursery manager was led to believe that parents had disposed of some of the medication, to give the impression that the child had taken an extra day's worth of treatment:

NM: Yeah, some of them do try it on. We've had another one who's siphoned off some of the medicine, so it looks like she's had it for a couple of days.

I: How do you know she did that?

NM: They're quite sneaky. The date on it gives it well away, because obviously the doctor's date gives it well away that it was only yesterday, and there's no way that they can use up all that medicine.

[CN3, Nursery manager, Cardiff, 16 years]

One of the parents interviewed admitted to interfering with the dosage intervals at which her child received antibiotics, due to concerns that her son would be rejected on the first few days of treatment:

I didn't ask them to give them to him. He took them before he went in, and then as soon as he came home, then before bed...[...]...I thought if I gave them to the nursery, they wouldn't leave him in, so....

[PMTN23.1, Parent, part-time nursery user, Merthyr Tydfil, minor professional]

I found it interesting that none of the parents talked about avoiding antibiotic treatment altogether. Instead, they tended to report trying to delay starting a course, or altered the dosing regime.

8.3.3.4 General 'no medication' policies

Two childminders stipulated that they would not administer any medication. The only exception to this was pain relief, and medication for ongoing conditions. These types of policies could also interfere with compliance. One of the childminders who refused to administer medication shared one of her experiences, where parents had altered their child's daily dosage of antibiotics:

... they were giving him the antibiotics before he was coming, and then when he was going home, when it should have been 3 times a day really, and that's why it was never actually clearing up, because it needed to be given three times a day.

[CC12, Childminder, Cardiff, 3 years]

There is a possibility that these two childminders' tendencies to pre-empt antibiotic treatment (written in both of their policies) leads parents to believe that this is the recommended course of action. One of these childminders had explicitly stated (in her written policy) that some infections *required* antibiotic treatment. The influence of these policies could not be explored with childminder users, as none of the parents using these childminders' services participated in interviews.

8.3.4 Antibiotic treatment is verbally advised

The phrase 'advising antibiotic treatment' has been used throughout this thesis as a general term, applicable to all instances where DCPs suggest that antibiotics might be appropriate. There were differences in DCPs' reports of how this was put across. No parent was ever told that treatment was compulsory, but my interpretation of DCPs' accounts was that some exert a greater influence on parents' treatment-seeking behaviours than others. I have divided DCPs who advised treatment into two groups: those that literally offered advice in the helpful sense of the word ('casual' advice), and those that implied that antibiotic treatment was somehow necessary, or recommended ('strong advice'). This is not to say that each DCP fitted neatly into one of two themes; they have been labelled on the basis of the examples discussed in interviews; realistically, DCPs were likely to differ in the type of advice offered, depending on circumstance.

8.3.4.1 'Casual' advice

Most DCPs that reported advising antibiotics felt that the final decision should be made by the parent and/or doctor alone. These DCPs reported advising antibiotics as a possibility, in a casual manner. For example, when asked if children would be permitted back with tonsillitis without antibiotic treatment, one nursery manager responded:

They'd still be allowed back, yes, yes. That's not a problem. Some parent's might not want to give them, so we've got to give them, sort of, respect for what they want to do.

[CN22, Nursery manager, Cardiff, 7 years]

The example below demonstrates the fact that antibiotics are not suggested for purposes of re-admittance, in that the scenario involves a seemingly 'well' child who is able to cope in day care. For many DCPs, advising antibiotics was a means of offering help. This DCP speaks of how she gives parents the 'option' of a GP consultation and potential antibiotic treatment, preserving the parent's control over the child's health:

I: Do you ever advise that they might need antibiotics?

NM: Yeah, quite a few times. We do have...obviously, we look after the children here, but if we do suspect that they're a bit poorly, or if we think they've got something else, like an ear infection, what we usually do is phone the parents straight away and say ... "He's complaining about his ear." That sort of thing, and then it's up to the parents whether they want to come and get them and take them to the doctors. We always give them that option that "They're absolutely fine, but just to let you know that they're pulling at their ear, which means they might need antibiotics for an ear infection." We always give them that option by phoning them.

[CN3, Nursery manager, Cardiff, 16 years]

DCPs that reported offering advice in this manner did so for the same symptoms/infections mentioned throughout these results chapters (e.g. conjunctivitis, ear infections, and certain RTI symptoms). Advice would often be based on previous experiences of children receiving antibiotics for given infections, thereby shaping DCPs' beliefs of when treatment might be appropriate:

Obviously, we can only advise, we can't diagnose. We can say "These are the symptoms. This is what we think." It might not be. So, yeah, we can only obviously advise on our experience of what we've seen in the past (and) that's when we advise antibiotics.

[CN3, Nursery manager, Cardiff, 16 years]

The manager above felt strongly that she was not qualified to make diagnoses; presumably, this would have implications for how confidently she could advise antibiotic treatment. Even the most medically qualified nursery manager (an ex-nurse) was particularly careful to mention antibiotics as a 'possibility':

I: Have you ever made a suggestion to parents that they might need antibiotics?

NM: Well, probably, yeah, probably.

I: Which ones here [infections], do you think you have then?

NM: Well, tonsillitis, because I mean, I know how awful it can be, and chest infection. I just say "I'm a nurse and not a doctor. If I were you, I'd take them to the doctor, and then you're covered," because if the doctor said they wouldn't want to do it [prescribe antibiotics], and then they say "Well X [the DCP] said..." So I never get into that scenario. I suggest that they might.

[CN35, Nursery manager, Cardiff, 3 years]

8.3.4.2 Strong advice

Some DCPs' reports of advising antibiotics were suggestive that antibiotic therapy is the expected path for parents to pursue. An example of this can be seen below. This quote, when compared to the tone of DCPs' advice earlier, does not give the impression that antibiotic treatment is merely a possibility. Instead, the DCP portrays this as a likelihood:

We would say "Look, you really need to look into that, you probably will need antibiotics and stuff."

[CN22, Nursery manager, Cardiff, 7 years]

Similarly, a nursery manager from Merthyr Tydfil used the term "*could do with antibiotics*", when suggesting antibiotic treatment for coloured phlegm production, giving a fairly strong message to the parents that antibiotics would be beneficial.

So one of the things I often say to parents, I ring, and I say "Look, I think you might need to see the doctors, as he could do with some antibiotics. Do you want to pick him up early, or ring to make an appointment for this evening?"

[MTN23, Nursery manager, Merthyr Tydfil, 24 years]

These examples do not necessarily suggest that antibiotics are a requirement; rather, it still seems that DCPs are advising in the child's interest. The phrase "*could do with*"¹³ (above) suggests that the DCP is considering what would be beneficial for the child. However, the prospect of receiving antibiotics is stronger in these extracts than those presented in previous sections. This could be due to DCPs' confidence that children would receive antibiotic treatment. For example, the manager below had come to expect antibiotic eye drops for conjunctivitis. This had influenced her 'instructions' to parents whose children were excluded for this infection:

¹³ 'Could do with' is intended to be interpreted as 'could benefit from', rather than a conditional statement.

Parents are called and they're picked up immediately then...and then the parents then, sort of, get given some instructions, you know...take them to the doctor; get some antibiotic eye drops for them.

[MN2, Nursery manager, Monmouthshire, 3 years]

Parents using this nursery would be advised to get antibiotic treatment, without giving the infection an opportunity to clear up with time. What was particularly interesting with this interview was the DCP's reaction to parents that returned to day care without antibiotic treatment:

They can't afford/can't take time off, and so the child doesn't go to the doctor, or they'll come back in and they'll say "Oh yes, we've taken him to the doctor," and it's like, "Yeah ok, where are the eye drops for conjunctivitis?" You know, it's sort of like, [they say] "Oh he's been to the doctors." [I ask] "Where's the eye drops?", [they say] "Oh, well, you know, they said it wasn't that bad and he didn't really need any," [and I say] "He's still got conjunctivitis. As soon as you take him away and get help for, you know, the little one [he can come back]."

[MN2, Nursery manager, Monmouthshire, 3 years]

The manager above used antibiotic eye drops as evidence that the child had consulted. Even if treatment itself was not the issue here, suspicion that the parent had not consulted was a problem. This DCP's expectation for antibiotic drops could lead to unfounded mistrust of parents that return their children to day care without treatment, and could potentially encourage antibiotic-seeking in parents (although the parent interviewed from this setting did not have any relevant experiences to report).

8.3.5 DCPs' projected antibiotic requirements

The final topic considered accounts for a substantial number of parents who felt that they were required to seek antibiotic treatment to appease their nursery manager¹⁴. DCPs were usually able to state whether or not they would ever advise antibiotic treatment to parents, because they were commenting on their usual practices. Parents, however, would have been recalling single events or experiences, some of which occurred over a year ago. Some were not able to state

¹⁴ Childminder users were not relevant to this theme.

whether their DCP had explicitly demanded antibiotics (verbally, or in writing), yet felt strongly that it was a requirement. These ideas were usually brought to the surface during discussions about specific infections parents had dealt with, and their experiences of how their DCP had responded to this.

Some parents reported that their DCPs had projected the idea that antibiotic treatment was required, or would expedite return to day care, in response to certain infections. A few examples from DCP interviews have also been mentioned, although it should be noted that the parents and DCPs presented here did not always 'match' (i.e. were not from the same day care setting).

8.3.5.1 Antibiotics are needed for return to nursery

Numerous parents from a number of nurseries described experiences of conjunctivitis, where they had an option to return their child to day care sooner if they had received antibiotics. However, some parents were sceptical about whether or not antibiotic treatment was appropriate for conjunctivitis, after having been advised that the symptoms were an extension of a cold:

We've often taken them to nursery and been told at the end of the day "They've got gunk in their eyes, they should go to the doctors." We often taken them to the doctors, and the doctor says.... "I think it's a cold, it's not conjunctivitis, but it's a fine line between that," and once there's gunk in the eye, the nursery really don't want them to be there. So you end up having the treatment even though it's- or you end up keeping them at home and not getting the treatment.

[PCN11.5, Parent, part-time nursery user, Cardiff, major professional]

This scenario was repeated in other interviews where parents had experience of conjunctivitis. In a more extreme case, the parent had strong views against administering antibiotics for her child's recurrent eye infections:

If she wasn't in nursery, I wouldn't be putting the eye drops in, because I think they get better from washing them out with water.

[PCN11.6, Parent, part-time nursery user, Cardiff, technician]

Parents with experience of conjunctivitis often reported that their GP had advised

that antibiotics were probably not beneficial; however, prescribing still occurred in most cases. A number of parents reported being able to return their children to nursery sooner if they had antibiotic treatment- even if the symptoms still persisted. Without treatment, however, the eyes would need to be perfectly clear:

P: Quite often what will happen is they'll call us and say his eyes are red, or take him to the doctor either that night or the following morning. Then he has to be off for the next day, whilst he's on the antibiotics....before he can go back.

I: What if he doesn't have antibiotics?

P: Yeah that's always very difficult, because often the GP says "I don't think we should have antibiotics," and then he has to be completely clear for 24 hours, which obviously can take a few days.

I: Right, yes, ok- so is it actually written on their policy that it's 24 hours after antibiotics?

P: I think so.

I: So can they go back if their eye looks....

P: Still red, but they're on antibiotics. Yeah.

I: But they can't go back if they're not on antibiotics, until it clears up for 24 hours?

P: Yeah, yeah.

[PCN5.1, Parent, part-time nursery user, Cardiff, major professional]

The parent in the extract above was one of the two parents that were GPs themselves. Nonetheless, she is describing her experiences with the nursery, rather than expressing opinion. The fact that this type of policy was discussed by numerous parents from different nurseries makes it less likely that she is offering a biased view, or a misinterpretation of her nursery's policies.

Some parents tried to challenge their DCPs' requirements (as perceived by them), by returning their child without antibiotic treatment, having been refused a prescription from the doctor. Different DCPs reacted to this in different ways. Some accepted a doctor's note, and re-admitted the child to day care:

I: I mean, are they allowed back if they don't have antibiotics, for conjunctivitis?

P: It's a difficult one really, because, at the particular one with him, I got him checked out...[....].The doctor said he'd gotten a cold. His eyes were really a function of his nose being blocked really. It was the same sort of thing. So, in his opinion, he didn't have conjunctivitis that needed treating.

I: Right, in the GP's opinion?

P: Yeah, but because the nursery think he's got conjunctivitis, they won't take him back. So, the only way I could actually take him back without the antibiotics when he had slightly gooey eyes would be to get a note from the doctor.

[PCN3.1 Parent, part-time nursery user, Cardiff, major professional]

The parent above later pointed out the financial issues with using GP notes as a solution, as there is sometimes a costly charge for this service.

Not all DCPs would accept children back in to nursery on the basis of GP notes:

P: I phoned up the nursery to say that I got this doctor's note, and I ended up speaking to the manager, who said well, she thinks she has got conjunctivitis.

I: The manager thinks?

P: The manager does...and that if she saw another doctor, they probably would have said she had conjunctivitis. So even though I'd gone to the doctors, and got my doctor's note, um, they wouldn't have her back in.

[PCN11.6, Parent, part-time nursery user, Cardiff, technician]

Another parent from the same nursery corroborated this, also adding that she had not even attempted to challenge the nursery regarding this issue. She presumed that the nursery would ask her to get another GP consultation:

I: Oh right, you haven't even tried?

P: Do you know what I mean? No, I don't think we've even been there.

I: Ok, you assumed that they wouldn't take them?

P: Yeah, yeah. I know that...the impression is that if anything has appeared in their eyes, they've always informed us quite rapidly. So there's a sense that they won't take them back 'till they're sort of spot on really. [Later] I suppose at least, having had the antibiotics, we had to stay off for a few days, but then we can take the medicine in, and the child can resume, whereas if we had no treatment, we wouldn't be able to take them in, but we'd be stuck.

I: Because they'd still have the gunk?

P: Yeah. That's right, they would say you need to get this checked out again.

[PCN11.5, Parent, part-time nursery user, Cardiff, major professional]

One of the most detailed accounts of conjunctivitis experiences was provided by a parent that had seen numerous GPs, explained her nursery's requirements, and regularly received treatment, despite understanding that treatment was not appropriate:

P: Another doctor said to me that the best thing- they've done research- and the best thing for children with conjunctivitis, is to wash it out with saline, and not put the antibiotics in, and he gave the antibiotics just because the nursery won't allow her in if she's not having antibiotics for it.

I: Oh really? So they won't let them in unless they're being treated for it?

P: Not if they've got conjunctivitis, no. That's the impression I get.

[Later] I: Have you ever gone and asked for the 'eye stuff'?

P: Um, no- yeah. Well, actually, the last time we had antibiotics, the doctor told me to just wash her eyes out....and then I explained about the nursery and he said...because he had a child which was in a nursery, and he said "Oh yes, oh yes, oh I know how it is," so he gave me eye drops, just because he knew that they wouldn't have her.

[PCN11.6, Parent, part-time nursery user, Cardiff, technician]

From these interviews, it became clear that GPs' prescribing practices are influenced by DCPs' advice/policies, in spite of their clinical judgment. There is also a possibility that the GPs themselves are reinforcing (or even creating) parents' perceptions of what day care settings require. This could be problematic if GPs have an inaccurate view of day care requirements.

None of the DCPs interviewed mentioned the fact that antibiotic treatment can expedite return to day care. When asked about this, the most common answer was that children could return once their symptoms had passed. Nonetheless, parents had actually experienced sending their children back *with symptoms* whilst on antibiotics. Only one DCP spoke of her general re-admittance policy, where she allowed children with medication back into day care:

NM: On Monday, one of our children was really chesty, and I thought he had a chest infection, although I'm no doctor so I can't diagnose it. I rung mum to take him to the doctors. The doctor gave him antibiotics and said he was fine to come back. So we've got to allow the child back then.

I: Do parents ever try to bring their children back sooner because they're on antibiotics?

NM: Yes.

I: Yes?

NM: Yeah, "He's fine." I've had children who who've been really ill. They're not well enough to come, but their parents have brought them. As long as they're being treated, we can't turn them away.

[MTN21, Nursery manager, Merthyr Tydfil, 8 years]

On further questioning, it was revealed that this DCP re-admitted children to day care if parents had sought confirmation that this was acceptable (from their GP). Once again, the prescribed medication was sufficient evidence that the parent had consulted. One of the queries I felt I should have pursued further was whether or not this DCP would accept children back without treatment, and accept parents' claim that they had consulted. Unfortunately, the parents from this day care setting were not able to comment on this issue. They both automatically received antibiotic treatment for conjunctivitis, and had never questioned this. Both parents believed that children could be re-admitted to day care once the eyes were clear, although exclusion had not affected them, as their children would not have been attending nursery during the recovery time (due to the weekend, or part-time attendance at day care). Nonetheless, one of these parents reported that their child had been excluded, and that she had been advised to visit the GP.

8.3.6 DCPs that do not advise antibiotics

Approximately half of the DCPs interviewed claimed they would not advise antibiotic treatment to parents, although this did not necessarily mean that their written policies did not suggest that treatment was needed. One of the parents interviewed discussed her turbulent experiences with conjunctivitis, and her (perceived) obligation to get antibiotic treatment as the only route to re-admitting her child to day care (PCN11.6, sub-section 8.3.5.1). Despite this, the DCP from this setting did not explicitly say she advised antibiotic treatment. This serves as a reminder that DCPs' reports of their own practices are one facet of a multi-dimensional issue, where parental perception and communication between the two stakeholder groups are important considerations. Issues surrounding the discrepancies between DCP and parent reports will be discussed in the final chapter. It has been highlighted here to emphasise that DCPs' reported practices did not always match with parents' perceptions of what is practiced.

The underlying reasons for DCPs' reluctance to advise antibiotic treatment were explored in interviews. For some, not advising treatment was not necessarily a

conscious choice- the DCP simply tended not to talk about this with parents. For others, their reluctance to offer this was a conscious decision, the reasons for which fell into two categories: 1) the belief that they were not 'qualified' and/or 'permitted' to suggest treatment, and 2) concern over issues of over-prescribing.

Firstly, DCPs often expressed that only medically qualified professionals had the right to advise antibiotic treatment. The DCP below added that she felt she was not 'allowed' to advise antibiotics.

I: In general, would you ever suggest antibiotics for anything?

C: I don't think I'm allowed to sort of say that. It's up to the doctor.

[CC15, Childminder, Cardiff, 3 years]

For many DCPs, including the one above, what occurred beyond the point of exclusion was the parents' concern. The need for GP visits was the single piece of advice all DCPs offered (without exception), therefore relieving themselves of the responsibility to offer advice on treatment or general infection management:

I: Would you never suggest they need antibiotics?

C: I might. Well, in a casual way, but then, no, I'd probably just say "Go to the doctors."

[CC91, Childminder, Cardiff, 20 years]

The quote below, from a childminder, also highlights the fact that she does not feel qualified to advise antibiotic treatment. She also pays consideration to the frequency of antibiotic prescribing:

I'm not a doctor. I would never say "Your child needs antibiotics." I think, if anything, doctors give them out too easily these days. They have them for nothing!

[MTC5, Childminder, Merthyr Tydfil, 4 years]

The view that there is excessive antibiotic prescribing was not rare amongst DCPs, but this was the only DCP who spoke of this in relation to not advising treatment. DCPs' views surrounding the culture of antibiotic prescribing will be considered in the next section.

8.3.7 Views surrounding antibiotic treatment

This topic explores DCPs' views on the frequency of antibiotic prescribing, and what the merits and drawbacks of antibiotic treatment might be. Whether or not this topic was pursued in interviews depended on whether the participant was able to engage with the subject. Some clearly did not feel comfortable when asked to give their opinions- especially when the subject was medical in nature.

Those who did consider the wider issues surrounding antibiotic prescribing had some awareness of the importance of limiting antibiotic use. These topics were raised towards the end of each interview, so previous discussions about antibiotics were not influenced in any way.

8.3.7.1 Over prescribing

Some DCPs seemed to be aware that antibiotic over-use had negative consequences, usually for the user rather than society. Data on DCPs' perceived consequences of excessive antibiotic use have been presented and discussed in appendix 8.1. Briefly, antibiotic over-use was thought to make individuals less responsive to future treatment, and also have consequences for their ability to fight off infections naturally (due to a 'dampening' of the immune system). The societal impact of antibiotic overuse was not acknowledged by any DCPs.

A handful of DCPs expressed an awareness that over-prescribing occurs, based on the frequency of day care children that receive antibiotics. This was attributed to GPs' prescribing habits in most cases, where GPs' thresholds for prescribing were thought to be too low:

Most people would get antibiotics really. In fact, they probably get them a bit too freely these days, but that's another tale.

[MN4, Nursery manager, Monmouthshire, 20 years]

The only DCP to talk about unnecessary prescribing *with reference to specific symptoms* was a nursery manager, who felt there was too much prescribing for

coughs. There were 12 children on antibiotic courses within her nursery on the day of interview:

NM: The doctors (are) just giving them out at the moment. They have a little cough and they're just giving them out, yes.

I: Do you think we have a problem with prescribing antibiotics to children?

NM: It depends on the doctor. The doctor, the surgery. For example, when my little boy is ill, trying to get antibiotics from my doctor, when I think he needs them, is hard work. Other parents, when the child has a little cough....they're on amoxicillin, to take three or four times a day. [Later] I think the doctors prescribe them way too much. More than they're needed.

[MTN21, Nursery manager, Merthyr Tydfil, 8 years]

The manager above felt that whether or not antibiotics are prescribed inappropriately is dependent on individual doctors' prescribing habits; this awareness of the variation between GPs' prescribing habits was touched upon earlier, in a nursery manager's account of the inconsistent ways in which conjunctivitis is treated (CN11, sub-section 7.3.3.5).

There was only one nursery manager who spoke about inappropriate prescribing as a 'current issue' that had received news coverage. She was aware of efforts to curtail antibiotic prescribing, but felt that doctors were failing in this. In particular, she felt that GPs that offered contingency plans¹⁵ were contributing to over-prescribing by transferring the decision making process to medically unqualified parents:

There are doctors that are still constantly prescribing. [Later] They're making the parents decide whether or not their child needs an antibiotic, but I mean, for a GP to give a parent antibiotics as a precaution, bearing in mind this big huge campaign...

[CN11, Nursery manager, Cardiff, 10 years]

Not all DCPs focused on GPs' prescribing habits alone. Two nursery managers also felt that parents played a role in creating a culture of excessive and inappropriate antibiotic use.

¹⁵ Contingency plans involve the GP writing a prescription, but advising the patient/parent to only get the medication dispensed if symptoms have not improved after a given time.

I think again, it's down to the pressures of being a working parent. It's quicker just to take them to the doctor, and get them antibiotics. [Later] I think it's pressure of society these days, expecting people to work five days a week, and being frowned on if you take a day off because your child's not well.

[CN25, Nursery manager, Cardiff, 10 years]

Parents' consulting behaviours, according to this DCP, have contributed to excessive prescribing, but her tone is not accusatory. She seems to understand the pressure parents face as a consequence of the time and culture we live in. This DCP reported that she did not advise antibiotic treatment to parents.

8.3.8 Why are antibiotics required?

Having established that DCPs generally understood that antibiotics should be preserved exclusively for cases where they are required, I will briefly focus on why they thought antibiotics were needed.

8.3.8.1 The obvious route of management

Very often, beliefs that antibiotics were appropriate for infections were based on previous experiences which had come to shape expectations:

I: Where you said that you might advise parents that they might need antibiotics. Where did you get your knowledge for that from? Have you just looked it up, or is it just...

C: I think it's just experience. Over 15 years, you just tend to know...

[CC17, Childminder, Cardiff, 15 years]

Many DCPs presented the prospect of antibiotic treatment as being an obvious outcome to consulting. This is likely to have been due to their recurrent experiences of administering antibiotics for children that attended their day care settings.

8.3.8.2 Preventing deterioration

Some DCPs reported that antibiotic treatment prevents deterioration. By dealing with the infection quickly and directly, the child would be less likely to develop additional symptoms:

Well obviously the infection, and if it's not nipped in the bud, it's deterioration of the child.

[MTN23, Nursery manager, Merthyr Tydfil, 24 years]

The quote above also gives a sense that the manager believes that antibiotics are the only way to 'nip the infection in the bud'. Antibiotics were sometimes thought to be essential for the resolution of symptoms. On talking about conjunctivitis, one manager stated:

We usually sort of advise that they should get [treatment], because obviously sometimes it won't go away on its own.

[CN22, Nursery Manager, Cardiff, 7 years]

Another nursery manager was aware that the body was capable of dealing with infections without treatment. However, she felt that certain infections (such as ear infections) should be dealt with immediately, because the ears, eyes, nose and throat were "all connected", making secondary infections more likely [MN8, Monmouthshire, 6 years].

8.3.8.3 Speed up recovery

A number of DCPs directly mentioned that antibiotic treatment reduces the child's recovery time. For the DCP below, making the child more comfortable sooner was the impetus for getting antibiotic treatment:

I: What is the main reason for advising they take antibiotics?

NM: Yes, yes, you know- if it's an infection that needs antibiotics, then it would just, I suppose, speed it up a little bit and make you feel a bit more comfortable really, isn't it?

[CN5, Nursery manager, Cardiff, 19 years]

Some DCPs went into detail with regards to how they felt antibiotics help to speed up recovery. The manager below saw antibiotics as facilitators, which are not necessary for recovery, but certainly help the process along:

Normally it's the fighting of the infection that they'll probably need help with. So, I mean, the body would probably naturally run it's course, get rid of the infection, but the antibiotics give it a good kick in the right direction.... with the infection, with something like impetigo, the child's resilience would take many more weeks to recover from that impetigo. With the antibiotics, five days.
[MN2, Nursery manager, Monmouthshire, 3 years].

8.3.8.4 Limit infection transmission

The idea that certain infections require antibiotic treatment was echoed by the manager below. However, unlike other DCPs, she spoke specifically about why bacterial infections in particular needed treatment. To her, one of the distinguishing features of viral infections was their ability to resolve on their own, unlike bacterial infections:

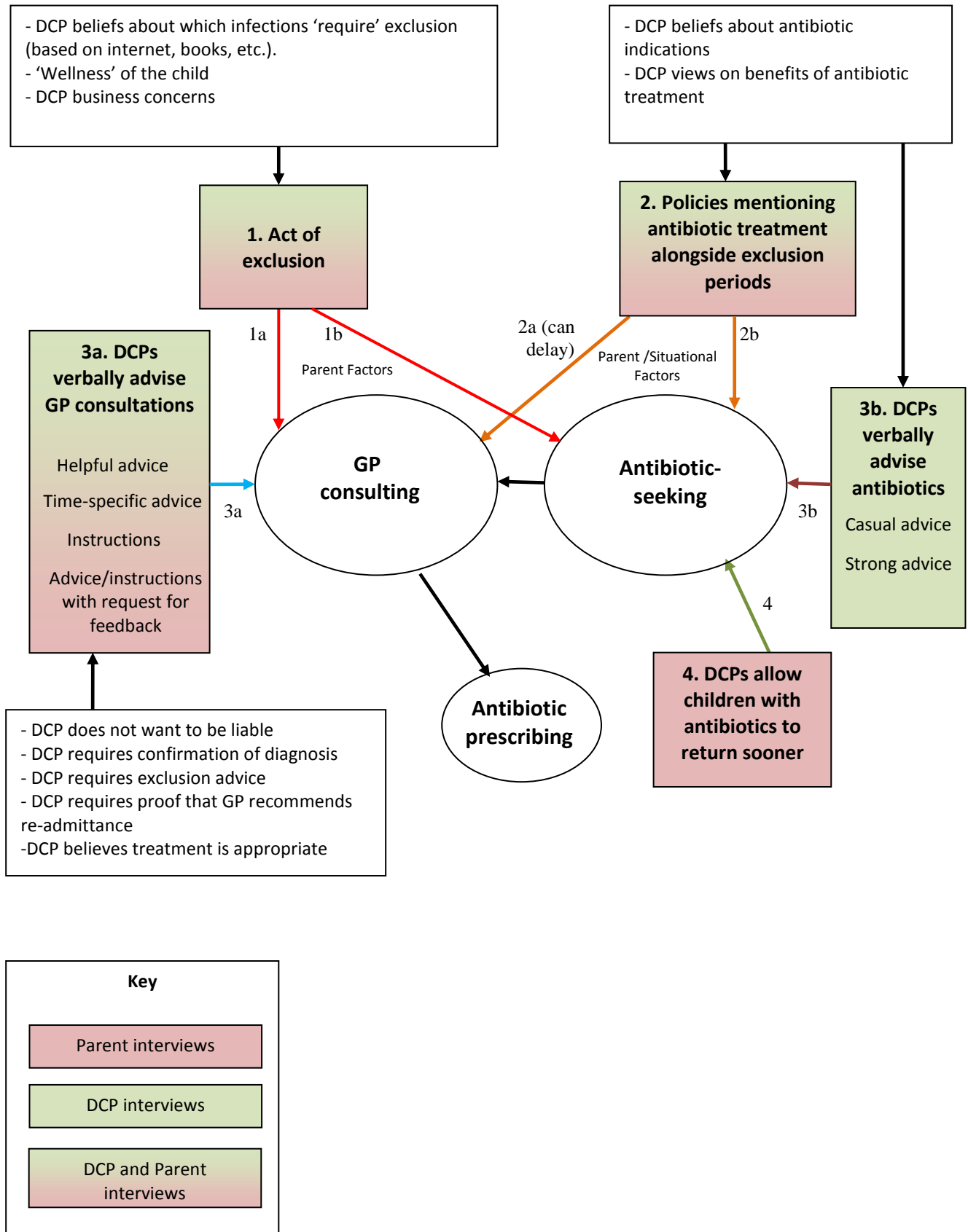
For example, like a cough, or a cold, or a temperature, and it usually just goes away itself, which is probably why the body just fights it by itself. Whereas, the bacterial infection...the body can't fight it. Which means they can only pass it on, or they've passed it on to somebody else, which means that's why they need the antibiotics.
[CN3, Nursery manager, Cardiff, 16 years]

The manager above draws attention to the idea that antibiotic treatment can help reduce the rate of infection transmission. The quote also supports the theme discussed above, where antibiotics are seen to be essential for recovery. If left untreated, bacterial infections will persist, and get passed onto others.

8.4 Chapter 8 Conclusion

The results of the qualitative interviews suggest that there are numerous day care-related pathways leading to GP consulting and antibiotic prescribing in day care attendees. Some of the findings help to reinforce some of the pathways suggested through the survey results, whilst parents' and DCPs' accounts have also shed light on new pathways. Interviews gave scope for exploring what factors may contribute to the pathways, and for the first time, considered parents' perspectives on what influences their consulting and antibiotic-seeking behaviours (which can lead on to eventual receipt of antibiotics, as supported by the literature and this study's findings). Figure 8.1 summarises these pathways and the contributory factors that may feed into these.

Figure 8. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on parent and DCP interviews



Much of the discussion that follows is concerned with factors that trigger 'antibiotic-seeking behaviour', which has been considered as a catalyst to consulting and eventual antibiotic prescribing.

The first pathways ('1a' and '1b') show that exclusion itself has potential to bring about GP consultations and antibiotic-seeking behaviours. This relationship between exclusion and the behaviours of interest were indirect, as parent factors played an important role here. For example, feeling a need to justify taking time off from work could drive a parent to consult. Another example could be parents' motivation to seek proof (from the GP) that exclusion is not warranted. Furthermore, a parent's personal beliefs that antibiotics speed up recovery could lead to antibiotic-seeking behaviours in an attempt to expedite return to day care, which could then be followed by consulting, and receipt of antibiotics. Exclusion itself is considered to be the trigger to each pathway, underlining the importance of evidence-based exclusion. Interviews with DCPs suggested that exclusion is often a result of non-evidence based policies, or business factors related to the 'image' of the day care centre. Parent interviews provided details of how this inappropriate exclusion can lead to GP consultations and antibiotic prescriptions.

Both DCP and parent interviews supported the idea that antibiotic treatment is sometimes mentioned in written policies, but only parents suggested that this had potential to influence their GP consulting/antibiotic-seeking behaviours (pathways 2a and 2b). Parents' interpretations of written policies led to them believing that antibiotics, followed by an exclusion period, were a requirement if a child was excluded or diagnosed with the infection in question. These beliefs had potential to either encourage or delay antibiotic-seeking and GP consulting, depending on the timing of exclusion, and whether or not the parent was likely to have other commitments (e.g. work) on these days. Sometimes, parents would consult at the first signs of symptoms in order to obtain antibiotics and complete the 48 hour exclusion period (associated with antibiotic treatment) at a time convenient for them. Conversely, the assumption that antibiotics could be prescribed (as suggested by the policy statements) could encourage parents to delay consulting until they knew they had time off from work (pathway 2a).

Interviews revealed that DCPs' advice to consult GPs was verbally communicated in an almost routine manner. DCPs' examples of this verbal communication ranged from 'helpful' advice to instructions to consult with a requirement for feedback. Both DCP and parent interviews supported the idea that DCPs' verbal advice encourages consulting behaviour (pathway 3a), with both groups providing specific examples that supported the different 'categories' of communication. Of parents who felt their day care attendance had influenced their consulting behaviour, most found that they visited the GP for symptoms they would not normally consult for.

Both DCP and parent interviews provided insights into why DCPs encourage GP consultations. DCPs suggested that this action shifted responsibility of the child's health away from the DCP, removing liability if the child was to develop health issues. Parent and DCP interviews supported the idea that DCPs encourage GP consultations in order to receive confirmed diagnoses to warn other parents. This could sometimes extend to DCPs requiring proof that the child could be re-admitted. GP consultations were also advised in order to obtain treatment. Some parents reported complying with this in order to return their child to day care sooner. In some of these cases, parents were not consulting as a result of personal concern for their child's health. Instead, the GP consultation served practical purposes. Day care attendance can therefore be a modifying factor for consulting behaviour, as it can influence parents' perceived benefits of consulting.

DCP interviews supported the idea that they verbally advise antibiotic treatment, which has potential to lead to antibiotic-seeking behaviour in parents (followed by GP consultation and antibiotic prescribing) (pathway 3b). Two different forms of advice-giving were identified: casual advice and strong advice. None of the DCPs stated that antibiotics were ever compulsory, but some parents had this impression. DCPs were aware of the importance of limiting antibiotic use to cases where it was truly needed. Problems emerged, however, with defining what appropriate cases were. Infections such as conjunctivitis, ear infections and tonsillitis were associated with antibiotic treatment. In terms of RTIs, antibiotics were thought to be beneficial when certain symptoms were present (e.g. green

discharge, temperature), or when the infection was deemed to be more severe (reaching a 'chest infection' status, rather than a simple cough, for example). Not all DCPs were familiar with the fact that antibiotics were not used for viruses. The causative agents of infections were rarely discussed in relation to antibiotic treatment, as DCPs tended to associate treatment with certain types of infections/symptoms. In particular, DCPs felt that antibiotics were sometimes required to prevent deterioration and speed up recovery. In some cases, they were viewed as the only route to recovery.

Parents were less likely to remember specific verbal advice that antibiotics were required, but still felt that their DCPs' actions had been suggestive of this (pathway 4). Some parents felt that antibiotics expedited return to day care (despite being aware that antibiotics are unlikely to be clinically beneficial). DCPs' reports that they do not advise antibiotic treatment (within interviews or survey responses) did not always match with parents' perceptions of DCP expectations. This could be due to DCPs' behaviours, where they re-admit children with symptoms sooner than if they had not received treatment. A second factor which could bring about this impression is the suggestion of antibiotic treatment within written policies, where exclusion periods are given as a period after receiving antibiotic treatment. A number of DCPs who claimed they did not advise antibiotic treatment had these written policies in place.

To summarise, this chapter has provided evidence to support previous authors' suggestions that DCPs exert influence over parents' consulting behaviours and antibiotic-seeking behaviours, which in turn can have a positive influence on inappropriate antibiotic prescribing. This is especially problematic, as DCPs' knowledge fell in line with common lay misconceptions of when antibiotics are indicated. This suggests that DCPs' non-evidence-based practices and beliefs are contributing to unnecessary consultation time and inappropriate antibiotic prescribing.

CHAPTER 9: DISCUSSION

9.1 Introduction

This study has used a mixed methods approach to describe the nature of day care sickness exclusion policies, and explore the potential impact that DCPs have on parents' consulting and antibiotic-seeking behaviours. This is the first study that focuses on how common infections are managed in UK-based day care settings, and the first ever qualitative exploration of the impact of DCPs' exclusion policies and practices on the way parents manage their children's health. This final chapter will be organised into two sections: the first (9.2) will consider the limitations of the study; the second (9.3) will summarise the main findings, and place the research into a wider context.

9.2 Limitations of the Study

9.2.1 The questionnaire

9.2.1.1 Opportunities for generalisation

The results of the questionnaire were based on the largest sample of DCPs to ever participate in research surrounding their sickness exclusion policies. If generalisations were made to the wider Welsh population, the small sample size would have had implications for the precision of estimates, especially for questions that led to similar proportions of participants selecting various multiple choice options. For practical reasons, I was not able to achieve the sample size required for making precise estimates (i.e. with a 5% margin of error). Moving away from statistics, there were other methodological problems with generalising to the wider Welsh population.

Firstly, the steps taken to make the sample 'representative' of the wider population may not have been rigorous enough. MD indices for broad geographical regions were used, rather than more specific information about demographics of the staff and clientele of specific day care settings. The study could have benefitted from sampling at the level of day care setting, taking into consideration the type of funding it receives, and the services it provides. Now that the research has been conducted, it has become apparent that local councils *may* have influence over local DCP policies (though this wasn't a substantial influence, according to the DCPs interviewed). In light of this, sampling from each of the unitary authorities in Wales would have been desirable in building a sample worthy of generalisation.

Secondly, the findings arising from the qualitative methods suggest that there are fundamental differences in the type of care offered by childminders and nursery managers, which has implications for the nature of sickness exclusion policies used. At the outset of the study, differences between these groups were described as being physical and logistical in nature (e.g. different sizes, different setting). It was assumed that the two types of day care setting could be grouped together as they were both regulated by CSSIW, and both subjected to the same requirements. This demonstrates the merit of using the results of qualitative explorations to shape more focused studies (which can be qualitative or quantitative in nature). If this study was to be repeated, nurseries and childminders would have been treated as distinct populations. This will have an impact on sample size calculations. An estimated 900 questionnaires would need to have been disseminated if the populations were separated, in order to yield results with a 5% margin of error (at the 95% significance level). This scale would have called for greater time and budget allocation to the questionnaire phase.

9.2.1.2 Questionnaire design

There were a number of issues with the design of some of the questionnaire items. These issues have limited the depth of information that could otherwise

have been acquired from the questionnaire. These design issues did not emerge during the piloting phase, due to the nature of responses received at the time.

One issue was the possibility that the table of infections was not extensive enough. DCPs could have mentioned infections in their policies that were not included in the questionnaire. The list of infections mentioned in the table was not exhaustive of all childhood infections, but included the types of infections I deemed to be of relevance to the wider study (after having conducted the literature review). Interpretations of some policies being more 'extensive' than others, on the basis of these data, may not be appropriate. In reality, a DCP's policy may have been extensive, but may have mentioned different infections.

Another design issue became apparent with questions that enquired about the resource types and names of sources used for compiling sickness exclusion policies. There were often problems with connecting the written 'names' of sources, with the resource 'types'- particularly when DCPs had ticked more than one multiple choice option, or chose the 'other' option. A better method would have been to include a space for written details next to each resource type, so the two pieces of information could have been combined, and having two spaces next to 'other' (one to describe what the resource was, and another to describe the names or other sources). Furthermore, the questionnaire would have benefitted from emphasising the distinction between a 'resource' and a 'source' by providing examples, and asking about these separately. Similar issues were seen for the question about 'symptom guidelines'. The two components of this question (i.e. where obtained from, and who produced by) are two separate points, and should have been two separate questions.

The main purpose of these two sets of questions was to get a general idea of where DCPs obtain their information from. These were peripheral issues to the study, and as a consequence, may have been less prioritised in the design stages of the questionnaire. Questions directly relevant to the study were prioritised when it came to allocating 'questionnaire space'. This could have explained why these poorly designed questions were not identified at the outset of the study,

but opens up a broader issue. If questions were not directly related to the purpose of the study, should they have been included? Focusing on exclusion policies alone, without the 'sideline' issues, may have been a more appropriate approach to take, and may even have increased response rates. However, as this questionnaire also served the purpose of producing a sampling frame, it needed to accommodate information that would be of use in choosing participants for the next phase of the study. In serving two purposes, the depth of the questionnaire might have been compromised. The questions identified above, however, were not pertinent to the selection of interview participants, and could have been pursued in the qualitative phases more successfully.

9.2.1.3 Reliability issues: DCPs' reporting

There were issues with the how accurately DCPs reported information. This is a standard criticism of self-administered questionnaires, but extends to any research method that is reliant on peoples' responses. In this case, there was a danger of human error or fatigue influencing reporting. Where DCPs had sent in their policies, I was able to compare their reported answers (i.e. in the table of infections on the questionnaire) with actual information (the policy itself). A handful of actual policies were not accurately reflected in the questionnaire. Infections were missed, and information that did exist in policies was not reported in the questionnaires. In these cases, the data reported was still used in the interest of keeping the methods consistent and avoiding bias.

9.2.1.4 Validity and meaning

Unreliable DCP reporting could have been a consequence of design issues, leading to questions of whether the questionnaire was a valid tool for measuring the content and details of sickness exclusion policies. Requesting DCPs to select which infections were mentioned in policies, and which of these had exclusion periods described, made it difficult to distinguish missing answers from negative answers. An alternative would have been to request DCPs to select 'Yes' or 'No' for each infection (and for each category on the table), although this would have increased

the time and effort required for completing the questionnaire. Analysing actual sickness exclusion policies was a more suitable means of gathering valid information about their content and details. The request for DCPs to include a copy of their policy was written at the end of the questionnaire, and could have overlooked, or perceived as having low importance. This is especially likely given that DCPs will have already reported the content of their policies within the questionnaire. If the study were to be repeated, greater emphasis would be placed on DCPs sending in their policies. This could be coupled with removing the infections table from the questionnaire completely.

Issues of validity arose when it came to *interpreting* collated questionnaire data- whether this was derived from actual policies or questionnaire responses. DCPs' policies served different purposes, having implications for how the presence or absence of an infection (or information pertaining to that infection) should be interpreted. For example, some policies only listed excludable infections, while others would specify whether exclusion was or was not necessary for a range of common infections. It is therefore difficult to judge multiple policies under the same criteria. Concepts such as 'the most commonly mentioned infections' could therefore be limited in what they can tell us about day care policies.

Further to the above, it cannot be assumed that the questionnaire data (or the actual sickness exclusion policies received) accurately reflect exclusion *practices*. This is one important justification for adopting mixed methods. The qualitative interviews allowed me to explore exclusion practices, thus helping to overcome this limitation of the questionnaire.

9.2.1.5 Over-simplification of data

Survey methods that use multiple choice options have a tendency to be reductionist and limiting in their portrayal of respondents' answers. This is why a qualitative approach was crucial for further exploration of certain topics. Surveys can also oversimplify a range of complex responses under a single category. For instance, considering the question "Do you ever advise parents that their child

may need antibiotics?”, one DCP might advise that antibiotics could be a possibility, while another DCP might inform the parent that the child can only return after having taken antibiotics. Both of these examples would choose the ‘yes’ option. In terms of the questionnaire results, both of these DCPs will have been allocated an equal value or label. Even if more complex multiple choice options were available, such as a Likert scale-like set of options, it is still impossible to get a deep understanding of what respondents truly mean, and why they have chosen particular multiple choice options. Nonetheless, the issue of antibiotic advice was primarily approached in interviews. As the questionnaire responses were used to select participants, the advice-based questions could have benefited from the inclusion of more detailed categories. This may have enhanced the quality of the purposeful selection of interview participants.

9.2.1.6 Interpretation issues

The data from fixed-choice questionnaires are always dependent on the respondents’ interpretations of questions, and the researcher’s presuppositions of what each multiple choice category represents. For example, in this study, one DCP’s idea of ‘advising GP consultations’ might be different to another’s, and both could deviate from the researcher’s interpretation. Similarly, DCPs may have interpreted the phrase ‘period of exclusion’ differently. The phrase was intended to be interpreted as a period of time, but on receiving actual policies, I came to realise that a period of exclusion could still be given without mentioning a time-frame (e.g. “until symptoms have disappeared”). If the questionnaire were to be re-designed, I would ensure that phrases such as these were more clearly defined, to minimise the effects of individual interpretation. These issues have had consequences for the validity of the results.

These criticisms can be extended to the survey approach to research. Can survey methods be successfully used to study sociological phenomena? Even if a survey is asking about non-opinion-based concepts (e.g. “which infections do you have on your policy?”), the findings that emerge are a consequence of a marriage between the participants’ and researcher’s construction of meaning. Respondents will

answer a question based on how they interpret it, and the researcher will do the same. This idea has led some commentators to assert that researchers employing social survey methods do not ‘uncover’ facts, but play a role towards constructing them (Buckingham & Saunders, 2004).

9.2.1.7 Summary

In light of the above weaknesses, the questionnaire could not capture the richness of DCPs’ experiences and behaviours, but this is a standard criticism of survey approaches (Kelley et al., 2003). However, survey methodology does have its own niche, and this questionnaire served its purpose as a tool for providing a general overview of what DCPs’ policies entail. The questionnaire highlighted some important findings about a topic that had received no prior research attention (in the UK). It is now known that DCP policies are highly variable, based on different sources, and not necessarily evidence-based. The questionnaire also made it possible to embark on more in-depth research, in that it helped to shape interview topic guides, and enabled a degree of meaningful selection of participants for the qualitative work.

9.2.2 Interviews

9.2.2.1 Overview

The issues of reliability and validity have been discussed in relation to the quantitative elements of this study. Thinking about qualitative research in these terms poses a problem, as the assertions that qualitative research is based on renders the concept of validity meaningless. Traditional measures of reliability and validity are concerned with how accurately data reflect an external ‘truth’- a contradictory idea to the qualitative assumption that individuals hold their own unique realities. According to Lincoln and Guba (1985), the parameters by which quantitative research is judged against require redefinition in the assessment of qualitative research. As a result, the authors have suggested more suitable criteria, which fall in line with the theoretical foundations of the qualitative

approach. Instead of judging a study's internal validity, external validity, reliability and objectivity, Lincoln and Guba have proposed appraising qualitative research on the basis of credibility, transferability, dependability and confirmability.

9.2.2.2 Credibility

Qualitative investigators approach research with the aim to understand and represent people's perspectives as accurately as possible. Credibility, in this context, can be thought of as an appraisal of how accurately the researcher has portrayed the thoughts of the participant. Researchers relying on interview methods can never be fully certain that their findings convey the perspectives of participants (King & Horrocks, 2010). This is accepted as an underlying limitation of interview methods, where there is potential for participants to be dishonest, or filter what they disclose to the researcher. Interview methods' reliance on researchers' interpretations and inherent biases also need to be borne in mind.

Whilst these limitations of interview methods will be transferred to every research scenario, they are likely to exert different effects depending on the research topic and nature of discussions. In this case, the interviews called on participants to report previous experiences, describe routine behaviour, and report their beliefs/attitudes. Whilst there was potential for participants to be selective in (or adapt) the beliefs they expressed, it is unlikely that parents and DCPs were dishonest about their previous experiences of managing infections. However, details might have been altered due to recall issues, or adjusted in light of demand characteristics (i.e. the participant might have gleaned the purpose of research, and adjusted their responses accordingly). Qualitative researchers must always pay attention to the discrepancies between public and private narratives offered by participants. The desire to produce socially desirable answers is a particular issue in this study, given the sensitive nature of the topic. Parents might have been conscious of appearing negligent, but were also mindful to not appear to be 'worriers', or 'overly concerned parents'- a label which carried negative connotations, possibly due to the implications of wasting time and health care

resources. Parents' interview responses need to be interpreted in light of these issues.

DCPs' responses may have been influenced by their desire to present their day care business in the best possible light. This may be particularly true for DCPs that face competition. It appeared that all DCPs abided by policies, and were careful to present socially correct answers. This especially came across in DCPs' insistence that they never demand treatment, and always refer parents to GPs. It is understandable that some DCPs might have felt that they were being inspected, as reflected in many DCPs' emphasis on their health and safety procedures (see Reflections on Interview Experiences, appendix 5.1). Thus, DCPs might have felt that their competencies and compliance with standards were being tested. These factors could have influenced DCPs' reports.

Even though only the participants themselves will know how accurately the study findings reflect their perspectives, I tried to adopt some tactics for improving the credibility of findings. 'Member-checking' is one way in which researchers can check their understanding of what is expressed in interviews. I attempted to confirm that I had understood participant's comments by repeating back my interpretations. The danger of this is that participants might not be prepared to correct the researcher, or might allow the researcher to re-shape the essence of what they were trying to express. However, it has been argued that the theories developed from interviews should be shared with the participants from whom they emerge. It has been suggested that failing to do this can lead to the danger of the researcher fitting the interview data into preconceived frameworks (Baxter & Eyles, 1997). This was an issue that I was mindful of during data collection and analysis. During interviews, I was conscious of avoiding leading questions, although examples of this still came through on listening back to interview recordings. I have tried to ensure that the findings presented in the empirical chapters represent what participants have expressed as closely as possible. In his paper addressing credibility issues in qualitative research, Patton (1999) draws attention to a process of minimising biased interpretations of data, whereby the researcher re-evaluates their findings by searching for alternative ways of

explaining the data, and seeking deviant cases that go against emerging theories. By considering these negative cases, researchers can refine their emerging theories until they explain the majority of cases in the dataset. Going through this process, I am confident that I have expressed the range of views encountered in my research, for both DCP and parent interviews.

Finally, no qualitative analysis is completely devoid of the researcher's influence. The organisation of data into distinct categories of phenomena (i.e. the 'themes') was influenced by my judgment. The act of categorising different DCPs' discourses into groups of similarly expressed ideas can be seen as a reductionist treatment of the data. I have tried to minimise the effects of this by avoiding the temptation to combine similar themes into the same category. This has led to having a large number of themes, with only minor differences in detail. This has ensured that the reported findings are truly grounded in the data, and the intricate details of what participants expressed have been preserved.

The final technique of improving a study's credibility is to use triangulation. Denzin (1978) suggests that there are four main forms of triangulation: the use of multiple sources, methods, investigators and theories. Combining different methods can compensate for their individual limitations, and exploit their benefits (Shenton, 2004). In this study, multiple sources were useful in reinforcing some of the study findings. For example, viewing actual exclusion policies, discussing exclusion policies with DCPs, and considering the varied sources of policies (through questionnaire results), collectively lead to a confident conclusion that day care exclusion policies are not evidence-based, and vary considerably.

This study also benefitted from the perspectives of more than one group of participants contributing to the main findings. By considering both parents and DCP accounts, I have achieved source triangulation, where certain findings have been repeated in interviews from both sample groups. For example, both DCPs and parents emphasised that GP consultations are encouraged by DCPs. Comparisons of the two groups also revealed areas of contention, such as the

finding that parents perceived that DCPs encouraged antibiotic-seeking behaviour by changing thresholds for re-admittance.

9.2.2.3 Transferability

a. Generalisations in qualitative research

Transferability refers to the extent to which results can be applied to other contexts. This can be thought of as being similar to the concept of generalisability within quantitative research. Generalising from qualitative research is difficult, as findings are usually bound to specific people, times and settings. Elements of the study may be transferable to other groups/settings, but it is usually the reader's responsibility to decide the extent to which the findings are applicable to them, or their group (Baxter & Eyles, 1997). With this in mind, I have tried to provide sufficient contextual detail surrounding the accounts expressed, by transcribing interviews in full and keeping detailed notes. It is particularly important to provide details of the sample. Originally, I had planned to adopt a reasoned approach to sampling, where individuals/institutions were chosen to achieve maximum variation on the basis of the factors I felt would make this research as transferable as possible. This was successfully achieved with the selection of DCPs, as the final sample included a range of day care settings that varied by size, area, type of funding, style of care (childminders vs. day care centres), and additional features of their sickness exclusion policies (gleaned from questionnaire data).

b. Limitations of sample

The sampling and recruitment of parents was one of the main limitations of the study, as the sample was heavily biased towards middle-aged, professional women who had completed further or higher education. Opportunistic sampling was not my first choice of method, due to concerns that it might be biased towards attracting certain types of parents: those who have had particularly negative experiences of day care and wished to complain; those who are naturally interested in research; those attracted by the cash incentive, or those who had

the time to participate. There is a chance that these factors would influence any parent's likelihood of agreeing to participate, even if they were chosen randomly. I aimed to interview a range of parents, including those that did not have particularly strong views and accepted their DCPs' policies without ever having questioned them. There was, therefore, concern that these types of parents would be less likely to act on an advertisement for research participation. However, if these types of parents were 'selected' for research, there was a greater chance that they would participate, simply because they have been singled out (even if this was at random).

This opportunistic sampling strategy succeeded in raising the overall response rate (relative to the original random sampling methods, described in chapter three, sub-section 5.4.2.1). A concern that the sample would be biased towards parents with negative experiences was unfounded: parents' attitudes towards their DCPs were usually positive or neutral. However, there was a lack of parents from deprived backgrounds, and few parents recruited through childminders. I predicted that parents from working class and deprived backgrounds would come forward for interview from the day care settings funded by authorities or charities, but response rates were low in comparison to other day care settings.

The process of recruiting parents from childminder establishments differed to recruitment from nurseries. Childminders and parents are likely to experience a closer relationship, with more regular interaction in comparison to parents and nursery managers. As a result, the childminders were likely to be a lot more involved with the process of recruitment, presumably having to explain the study to parents that, in some cases, they regarded as friends. This different relationship could influence parents' public and personal accounts of their experiences with their childminders, particularly if they are more conscious of the childminder's more obvious involvement in the study and recruitment process. Parents using nurseries may have felt a greater degree of anonymity. Regardless of being informed of confidentiality issues, it is plausible that parents using childminders would feel less inclined to express disapproval of their childminder. This might have acted as a deterrent for participation. Of those parents who did use

childminders, both gave a positive account of their DCPs' practices. None had ever experienced their child being 'excluded', having always kept their sick child home to avoid burdening their childminder, or putting them in an uncomfortable position. This positive childminder-parent relationship was expressed by childminders and parents, although not all childminders interviewed described such a harmonious relationship. None of the parents using these childminders' services came forward to be interviewed.

Opportunistic sampling during a study with a strict time frame can limit potential to achieve data saturation, as the researcher does not have complete control over the numbers and types of participants that will come forward for interview. I feel that data saturation was achieved in most respects, as the main topics discussed in the reported findings were beginning to be repeated towards the mid to end stages of both parent and DCP interviews. However, this claim to have achieved saturation does not extend to parents that used childminders' services, as I was not able to interview parents from all three study sites, and only two interviews were conducted in total. Although similar concepts were repeated in both interviews, there is a good chance that different ideas would have come through if I had more time to continue targeting childminder users. I also had concerns of data saturation when it came to the idea of business factors influencing DCPs' exclusion practices- something which was raised towards the latter stages of interviewing. The research would have benefitted from pursuing this topic in further interviews.

Finally, there were difficulties in obtaining information-rich cases for interview. Some of the parents interviewed were eligible for the study, but had only experienced exclusion on one or two occasions.

If this study were to be repeated, it would be useful to sample parents on the basis of exclusion. By working with a smaller number of DCPs, a longitudinal study whereby all of the nursery's exclusions are recorded, and monitored, could give access to potentially interesting cases. The results of this study could be used to focus in on specific infections of interest (e.g. conjunctivitis). Focusing on a small

number of day care settings over a prolonged period may also give a more accurate insight into actual practice. By selecting specific cases of interest as they occur, the researcher could be aware of more contextual information, and details are less likely to be altered due to recall issues. Capturing parents' reactions at the time of exclusion may also lead to more detailed accounts of the pressure they face: something that was often difficult to glean when parents were talking about experiences from over a year ago.

It could be argued that the tendency for parents to be educated and in professional employment was a consequence of these features being typical of the demographic that full day care generally targets. The issues raised by this study have important implications for working parents. This is not to say that unemployed parents or non-professionals do not depend on this care; mothers using the free or low-cost day care had important responsibilities (e.g. studying, part time morning work). Importantly, the issues raised by the small number of non-professional parents interviewed were similar to those raised by professionals, albeit those with less demanding working lives could have had greater opportunities to care for excluded children. Nonetheless, the fact that similar issues were being raised, regardless of the type of day care and clientele, implies that the findings are likely to be transferable to other day care settings.

9.2.2.4 Dependability

The idea of dependability links to the positivist equivalent of reliability. Assessing a study's reliability involves asking whether the same results would be obtained if the study were to be repeated with a different researcher, and at a different time. Some have argued that measures such as "reliability over time" have no place in qualitative research, as the phenomena under investigation (in this case, people's views, knowledge and attitudes) can change over time (Marshall & Rossman, 1999). However, steps were taken to achieve inter-rater reliability in the coding of some initial transcripts, and the emerging thematic template (FW, a senior qualitative researcher, helped with this). Furthermore, it has been suggested that producing detailed accounts of the steps taken in the research can increase the

study's dependability. The detailed description of the methods employed in this research should be sufficient for the study to be repeated in the future, albeit without the expectations of achieving similar results.

9.2.2.5 Confirmability

The concept of confirmability is concerned with the extent to which the researcher's reported findings are grounded in the data, rather than the researcher's pre-conceived ideas and biases (Hamberg et al., 1994). Achieving confirmability touches upon a number of issues already discussed (e.g. having the coding and thematic framework checked by a separate researcher). An additional means of achieving confirmability is to be reflexive about the research process. Recording my thoughts and impressions after each interview has been useful for approaching data analysis in a neutral, unbiased manner. For example, some DCPs were located in more socially deprived area than others. There was a chance that this could influence analysis, or my interpretations of what the participant was saying. By acknowledging this danger, I hoped to minimise the risk of it occurring, though it is not possible to completely eradicate the influence of interviewer impressions. I found that listening to interview recordings whilst reading the transcripts was a valuable exercise when it came to interpreting participants' intended meanings, thereby minimising the risk of coding de-contextualised transcripts inappropriately.

9.3 Summary of Findings

9.3.1. Non-evidence-based exclusion

9.3.1.1 Overview

To my knowledge, this study is the first (worldwide) to conduct a qualitative exploration of DCPs' sickness exclusion decisions. Interviews have been the focus of the study, although I have also examined actual day care policies, obtained via

survey methods, to get an overview of the exclusion requirements that exist for common day care infections. Combining the two methodological approaches has led to a number of findings regarding sickness exclusion practices in Welsh day care settings.

9.3.1.2 Exclusion policy documents are not evidence-based

The results of the questionnaire showed that DCPs' sickness exclusion policies vary hugely in content and are based on different sources of information. Conjunctivitis, for example, had 20 different policies observed from the sample returned with questionnaires, with only 1 out of 27 (3.7%) of childminder policies and 2 out of 31 (6.5%) nursery policies complying with HPA guidelines. For other infections, rates of compliance were higher, but there were *always at least* 25% of nurseries or childminders with policies that disagreed with HPA guidelines. For some infections, the proportion was over 90%. The types of disagreements between HPA guidance and observed policies included differences in specified requirements that needed to be fulfilled for re-admittance, and different stated periods of exclusion. These differences were often subtle, but had the potential to translate into substantial differences in exclusion periods (in the magnitude of days). The most extreme discrepancies occurred in cases where exclusion was carried out for infections that the HPA does *not* recommend exclusion for. The most common examples of these were conjunctivitis, and rash-associated infections such as slapped cheek syndrome, and hand, foot and mouth. Day care policies that did not comply with HPA guidelines tended to over-exclude, although there were a few examples of under-exclusion.

The conclusion that unnecessary exclusions occur, despite official guidance, mirrors the findings reported by American, Canadian and Israeli research groups (Copeland et al., 2006; Friedman et al., 2003; Hashikawa et al., 2010; Kahan et al., 2005; Landis et al., 1988; Skull et al., 2000). Previous international studies have investigated exclusion policies/practices through multiple choice surveys. These have asked DCPs to choose from numerous exclusion decisions in response to various symptoms/conditions which do or do not require exclusion (Friedman et

al., 2003; Friedman et al., 2004; Landis et al., 1988). None of these studies have considered the context of reported behaviour, and most fail to consider that DCPs' exclusion decisions for a given symptom/condition could change depending on other factors (such as time of day, relationship with parent, medication status of child, combination of symptoms, etc.). There is one exception to this, where one of the studies considered the impact of temperature on exclusion decisions (Landis et al., 1988). Despite this, even Landis and colleagues' study, like the others, does not give an opportunity for DCPs to explain their exclusion policies/decisions, or describe the additional factors that need to be considered before making these decisions. Survey methods, used alone, may not be appropriate for studying phenomena that have received no previous research attention, as researchers might not be asking the right questions in the right way, and response categories may not reflect reality. The findings of these studies are therefore bound by the researchers' presumptions.

Unlike previous research, I have based the findings of this study on data obtained through multiple methods: observing *actual* exclusion policy documents, and interviewing DCPs about their policies. Participants from previous international studies might have been forced to shape their reported exclusion decisions/practices around the provided multiple choice options. The survey in this study asked DCPs to include a copy of their policy, in addition to asking questions about the policy. This allowed for information taken from real policies to inform categories (i.e. different re-admittance requirements) and shape findings. In addition to this, DCPs' exclusion policies were discussed in interviews, validating or challenging my interpretations of policy documents.

9.3.1.3 Do non-evidence-based policies reflect non-evidence-based practices?

Having established that written policies are not always evidence-based, I went on to question what the implications of this might be. Prior to conducting the interviews, it was not clear if written policies were actually followed by DCPs. The extent to which sickness exclusion policies reflect *reported* practice was a novel

line of enquiry, not having been considered in previous studies. Related to this, no previous study has explored the role that exclusion policies serve (if any).

Beyond the role of discouraging infection transmission, this study revealed that policies are used in different ways by different DCPs. Childminders in particular tended to focus on policies' potential to offer protection through safeguarding their payment (when children are ill), and enabling the childminder to protect others in his/her home (family, and other minded children). Nursery managers were more likely to see policies as contractual agreements that had the potential to prevent and settle disagreements with parents. Most DCPs were familiar with their policies, and rarely needed to consult them for personal reference. Parents usually spoke of their exclusion experiences with reference to exchanges with the DCP, and/or their perceptions of their DCP's requirements- not their interpretations of written policies. This led to the question, do DCPs exclude on the basis of their personal beliefs, or their policies?

DCPs expressed their knowledge and beliefs of which infections required exclusion (and how long for) in interviews. Reported practice concurred with written policies in every interview conducted, although DCPs elaborated on further considerations that would shape exclusion decisions (and periods). Some of these considerations were context and child-specific. Policies were therefore general frameworks that described typical exclusion decisions, but the decision to exclude would be made by the DCP on a case by case basis. It is strictly not correct to say that DCPs' decisions were guided by the policies, as these documents were constructed by DCPs, and more than likely reflected their beliefs. These beliefs, in turn, are likely to have been shaped by the sources of information DCPs had consulted to form their policies. The policies were therefore seen as a simplified summary of exclusion practices that occur in day care settings.

I was also able to draw on parents' accounts of previous infection experiences to consider the degree of convergence with DCPs' reported practice and written guidelines. Based on this, it is reasonable to conclude that DCPs' written policies were a suitable indicator of actual exclusion practices. Transferring the qualitative

findings to other settings would imply that the non-evidence-based policies that were discussed in the questionnaire results reflect non-evidence-based practices. Based on this, one source of unnecessary exclusion is DCPs' misconceptions of which infections require exclusion, and what the appropriate periods of exclusion are (as reflected in their policies).

9.3.1.4 Other sources of unnecessary exclusion

DCPs' unnecessary exclusion practices can be attributed to three issues: 1) their limited awareness of which infections do/do not require exclusion, 2) their misconceptions and perceived threat of mild, non-specific symptoms, and 3) their non-evidence-based medication policies. The first factor has been discussed above; a summary of the second two factors follows.

a. Misconceptions of symptoms

A second source of unnecessary exclusion was DCPs' lay diagnosing. Policies tended not to describe the symptoms associated with the infections they provide guidance on. Childminders and nursery managers have to judge symptoms themselves, and decide whether it is appropriate to apply their policy. Beliefs surrounding the indicative symptoms of excludable infections varied according to the individual. Consequently, unnecessary exclusion could emerge from incorrect diagnosis, rather than an incorrect belief that the infection in question requires exclusion.

Focusing on symptoms rather than end-result diagnoses was more relevant to understanding DCPs' exclusion decisions. Some DCPs acknowledged that policies do not cover the 'grey areas' - a phrase used in reference to non-specific symptoms that did not point to a specific infection. These symptoms, usually of a respiratory tract or skin rash nature, require DCPs to act on judgment alone as they assess whether or not a potentially contagious infection is present, or whether the child can safely remain in day care. Much of this decision making involved observing the child's behaviour, and being vigilant for specific symptoms

which DCPs felt indicated the presence of infection. Raised temperature and the presence of coloured discharge were the most commonly mentioned symptoms used as decision-making aids. These signs usually lowered thresholds for exclusion, or resulted in outright exclusion. Reasons for this were usually allied around fears for the child's safety (if temperature could not be lowered), or fears that the child was "*fighting something off*", and would therefore be "*contagious*".

The misconceptions that DCPs have regarding coloured discharge have been echoed in American surveys (Copeland et al., 2005; Friedman et al., 2003; Pappas et al., 2000), where the proportion of DCPs requiring exclusion for coloured discharge has been consistently higher when compared to clear discharge. There is a possibility that DCPs anticipate that they are required to alter their responses to a more extreme form of action given that questions about coloured discharge often follow on from clear discharge. This issue extended to some of the interviews conducted in this study; however, the topic was also volunteered by DCPs who had not received prompting, and vignettes involving coloured discharge were sometimes presented without any reference to clear discharge. DCPs' main concern with coloured discharge was the potential for contagion, as this symptom was associated with the word 'infection', which in turn triggered thoughts of contagion. Some also felt that coloured discharge signified more severe RTI symptoms, that required medical attention (and/or rest at home, in cases where DCPs assumed the child would feel 'unwell').

The fact that DCPs' exclusion thresholds are lowered with the presence of temperature has also been discussed in previous research (Landis et al., 1988). There has been some published research on parents' concerns about fever, showing that although some do acknowledge the benefits of mild fever, concerns about brain damage, febrile convulsions and death from mild to moderate fever exist, irrespective of educational or socio-economic status (Walsh & Edwards, 2006). The main concern faced by DCPs and parents in this study was the fear of febrile convulsions. Interestingly, there was a high perception of threat for this eventuality, although very few participants had experienced this occurring. El-Radhi (2008) calls for greater efforts to improve lay misconceptions of fever,

arguing that it is usually a self-limiting, and rarely serious condition that is actually beneficial for the child. DCPs in this study also felt that children with temperature were harbouring infections, which could potentially be passed on. However, there is limited evidence to support this notion: temperature reading does not correlate with infectiousness (Furman, 1991).

Parents often commented on DCPs' lack of perseverance in dealing with the non-specific symptoms mentioned above. Some parents expressed that the symptoms their child had been excluded for could have been resolved or managed effectively within day care. This was pertinent in cases where children were sent home for not being as energetic as usual, due to minor ailments such as colds. Parents were happy to collect their children if they were in pain or distress, but disagreed with exclusions that had been made on the basis of a child being "*under the weather*" or "*not himself/herself*". Fever was also an issue for parents, as they often felt their DCPs had not tried all the necessary avenues to lower their child's temperature. Parents shared DCPs' fears of febrile convulsion, but only became concerned if their child's temperature would not drop after self-management techniques (stripping, using antipyretics) had failed. Feelings of frustration were especially evident in cases where the child had felt better on arrival at home, yet was required to stay away from day care for an additional day. Parents understood and agreed with the need to keep potentially contagious children away from day care, but acknowledged that fluctuations in temperature and changes in behaviour were common for teething children, and did not necessarily signify the presence of an excludable infection.

b. Non-evidence-based medication policies

The third source of unnecessary exclusion stemmed from medication policies. There was great variation in DCPs' policies on administering symptom relievers. Some administered Paracetamol/Ibuprofen when they felt it was required (having obtained parental consent on registering the child). Others phoned parents to ask for consent every time they felt pain relievers were needed, and some refused to care for children that required medication, only administering doses whilst

waiting for parents to collect their children. There was also variation in policies surrounding antibiotic administration. Most DCPs were willing to administer antibiotics after 48 hours of exclusion had passed following the first dose, although some refused to care for children until the antibiotic course was complete.

Long exclusion periods following medication administration were enforced to allow the child to recover, and to ensure that the child does not have a reaction to the antibiotics whilst in day care. Parents often had difficulties accepting the 48 hour exclusion rule- especially in cases where their children were well enough to attend day care. DCPs' reluctance to administer medication, and their resistance to accepting children back until they had used 48 hours' worth of antibiotics, was seen as unnecessary exclusion time by parents. A discussion of the scientific evidence behind this is beyond the remit of this study, although it can be said that there are no published official guidelines that recommend 48 hours of exclusion following antibiotic treatment. In some examples where antibiotic treatment is mentioned in HPA guidelines (e.g. scarlet fever), children are re-admitted 24 hours following the first dose.

9.3.1.5 Parent views of DCPs and policies

For parents, DCPs' exclusion requirements were only of significance when their child was systemically well, or had recently recovered from an illness. If they perceived their child to be unwell or distressed, they chose to self-exclude. Many exclusions discussed in interviews required a period of absence from the occurrence of a certain event (i.e. taking first dose of antibiotics, final episode of diarrhoea), during which the child was often 'well'. When these events take place outside the day care setting, DCPs must rely on parent honesty. Most parents reported abiding by the required exclusion policies, with some adding that they hoped other parents would do the same if the situation was reversed. These findings must be considered in light of the temptation to give socially acceptable answers. However, some parents admitted to being dishonest about their child's symptoms or medication, in order to return their children back to day care

sooner. This would only be done if the parent felt confident that their child was well. Childminders, and parents using their services, reported that policies rarely needed to be enforced, if ever. Both of the parents interviewed had always instigated exclusion themselves.

Most parents failed to express an opinion regarding the credibility of DCPs' practices and policies. Some felt they could trust their DCP's guidance, and viewed them as childcare experts that had "*seen it all before*". A third of parents felt that sickness exclusion policies lacked credibility. These parents questioned their DCP's ability to make medical judgments, were more likely to disagree with exclusion (in the interview setting), and felt embarrassed about consulting the GP for what they perceived to be trivial symptoms.

9.3.2 Do DCPs encourage GP consultations?

Most of the questionnaire respondents featured in this study stated that they advised parents on when they should consult a doctor (n=199; 92%). Interviews allowed for a deeper exploration of how this advice is offered, and why. One of the overriding themes to emerge from interviews was the 'routine' nature of DCPs verbally advising GP consultations. DCPs' descriptions of previous interactions with parents, and their accounts of their standard practice, revealed that GP visits were mentioned whenever a health-related issue arose. Exclusion was almost always accompanied with advice to consult. This regular and consistent advice acted as a form of protection for DCPs. DCPs were conscious of their lack of medical expertise, and the possibility of parents holding them to account for their child's health. Encouraging parents to consult removed DCPs' responsibility over children's health.

GP consultations were also used as a means of obtaining a confirmed diagnosis, enabling DCPs to enforce the correct exclusion period, and/or be vigilant in preventing the spread of infection (e.g. warning other parents). GPs' medical expertise was therefore sought through parents, who were expected to relay this

information back to day care. Some DCPs and parents described requirements of 'proof' stating that re-admittance was appropriate, or that a child didn't have a particular infection (provided by the GP).

In analysing DCPs' accounts of communicating with parents, I identified different forms of encouraging GP consultations, which I interpreted as exerting different levels of pressure on parents. This ranged from helpful advice, to instructions with a requirement for feedback. The latter could hardly be considered as 'advice', as parents had very little choice in the matter of consulting. Of course, these distinct categories of encouraging GP consultations are a construction based on DCPs' reports and my interpretations, and thus may not reflect how DCPs truly communicate with parents. Interviewing parents helped to strengthen some of these ideas, though.

Parent interviews supported DCPs' claims of advising GP consultations. Most reported receiving this advice at the point of exclusion. It was difficult to ascertain whether parents would have consulted for the various symptoms discussed if DCPs had not encouraged GP consultations. I attempted to separate parents' accounts of their reasons for consultations into 'day care-related' and 'non-day care-related' factors. 'Non-day care-related factors' were allied to parents' personal motivations for consulting that would have (presumably) been present regardless of day care attendance. 'Day care-related factors' referred to day-care associated motivations for consulting, where the parent would not have consulted if their child was not attending day care. There is a limitation to asking participants to report on what they 'would have' done, as their perceptions of illnesses at the time of interview could be very different to their perceptions during the illness experience. Furthermore, categorising reasons to consult into 'day care-related' and 'non-day care-related' factors was an oversimplification, as the experience of having a child in day care could have influenced parents' knowledge and attitudes to infection management. Therefore, it might be more appropriate to add that this categorisation is based on *parents' interpretations* of why they had consulted in the past.

Parent's personal motivations for consulting general practice included seeking reassurance that their child did not have a serious health condition, and preventing deterioration in their child (where they felt there was potential for increased severity). High perceived severity of illness, and fear for the child's health, have repeatedly been proposed as powerful determinants of consultation in other studies (Campion & Gabriel, 1984; Gross & Howard, 2001; Little et al., 2001).

Particular triggers for consulting in this study, labelled as 'cue to action', were the absence of symptom improvement, and parents' perceptions of their child displaying changes from their normal behaviour. Underlying this, was the fear that their child was in danger due to the presence of severe illness. Interestingly, the key illnesses mentioned by parents (meningitis, febrile convulsions, pneumonia) are similar to those that have been reported in a previous study, which utilised focus groups to explore parents' main concerns when their children experience RTI symptoms (Francis et al., 2008) .

The lack of improvement of symptoms was discussed in terms of illness duration, or failed self-management techniques (such as administering medication to lower fever, or using painkillers). It was common for parents to set deadlines for seeing signs of improvement, and consult if their child's condition had not started to improve by this time. Previous research using audio-recorded RTI consultations (with parents) have indicated that GPs usually fail to provide clear, evidence-based information regarding the clinical course of symptoms (Butler et al., 2004). The authors, and others (Hay et al., 2003), have suggested that educating parents about realistic illness time-spans could increase self-empowerment, and reduce consultation rates for mild infections. It was also interesting to note that parents in this study tended to describe the decision to consult as a last resort, after other management routes had failed. Other studies have also suggested that parents resort to consulting healthcare professionals after having tried to self-manage their child's illness, and are conscious of wasting doctors' time (Butler et al., 1998b; Champion & Gabriel, 1985; Ertmann et al., 2005; Francis et al., 2008).

Some parents reported behaviour change as being the trigger for consultation for mild infections after home management had failed (usually painkillers and rest). Previous qualitative studies of parents' illness behaviour found that parents defined 'illness' as the point at which their child starts to display changed behaviour (Neill, 2000). Perceived changes in eating and sleeping patterns have also been reported as the point at which parents decide to consult a physician. This has been reported through interviewing parents about consulting behaviour for acute childhood cough (Wyke et al., 1990), and through examining parents' diaries of consulting behaviour for a range of mild illnesses (Ertmann et al., 2011).

It was interesting to find that themes emerging from interviews were similar to the ideas discussed within other international studies. A Canadian prospective cohort study used 272 questionnaire responses from parents of children aged 12 years and under, to calculate predictors for RTI consultation (Saunders et al., 2003). Independent predictors were categorised into child factors, parental factors, and parents' interpretation factors. Child age below 4 years was an independent predictor for consultation, as was parents' post-secondary education status. Both of these factors are similar to the participant group considered in my study. Similar to my qualitative findings, 'parent interpretation' predictors of consultation included: perceived long illness duration; perceived deterioration; anticipation of a specific illness being present, and belief that treatment was required. The statistical calculations predicted for an array of family and lifestyle factors, but did not consider day care enrolment. Some of the 'parent interpretation' predictors, particularly the anticipation of specific illness or treatment, could have been influenced by day care enrolment.

This study has recognised day care attendance as a modifying factor for consulting behaviour, having implications for how previous research, such as the above study, should be interpreted. Previous authors have described other non-clinical factors that can influence readiness to consult for medical care. Many of these can also be considered as modifying factors (i.e. the HBM construct), as they are likely to influence perception of threat, or the perceived benefits of consulting. Previous experience of childhood illnesses is associated with reduced consultation rates

(André et al., 2007; Wyke et al., 1990), although it has also been proposed that previous experience can also lead to less hesitation before consulting, if the patient (or parent) expects to receive a certain treatment (Ertmann et al., 2011; Ertmann et al., 2005). Parental traits have also been proposed as determinants of consultation habits. Parents' consulting habits for their children have been suggested to mirror their personal consulting habits, implying that consulting behaviours are influenced by individual traits (Little et al., 2001; Petersson & Hakansson, 1996). Various other studies have used psychometric measures to quantify parents' health anxieties, proneness for concern, and mental health status, in a bid to explain differences in thresholds for seeking health care for their children (André et al., 2007; Champion & Gabriel, 1985; Goldman & Owen, 1994; Scalzo et al., 2005). Socio-demographic and lifestyle factors have also been reported to influence consulting behaviour, with higher deprivation being associated with more frequent consulting (Champion & Gabriel, 1984; Little et al., 2001; Wyke et al., 1990).

The various factors that may be involved in parents' tendencies to consult are complex, and probably inter-related. A detailed exploration of parents' personal health beliefs and consulting behaviours is beyond the remit of this thesis, and has already received much attention. This study has contributed to this field, as it has found day care attendance to be an important factor that can shape consulting behaviour. There were clear non-health related perceived benefits to consulting, brought about through day care attendance. Some parents reported consulting for certain infections in order to appease their DCP. In these cases, parents had specific agendas and goals in mind, whether this was acquiring a note to prove their child was eligible to return to day care, or pursuing treatment as a means of returning their child to day care sooner. These accounts supported my personal interpretations of DCPs' reported advice-giving. A number of parents reported that they had consulted in order to follow their DCP's instructions, for symptoms they were not otherwise concerned about. Here, the perceived benefit of consulting could be allied to encouraging positive relationships with their DCPs (i.e. brought about by parents showing that they value DCP advice). This idea has also been suggested in a recent Danish qualitative study examining parents'

thresholds for consultation, where one of the participants felt the need to consult so as not to 'upset' the people that were involved in caring for her child (Ertmann et al., 2005).

One of the particularly interesting themes to emerge from interviews was the idea that parents consult as a means of justifying their time off from work. Parsons (1951) described the sick role as having certain rights and obligations, where the person's ill status supersedes other responsibilities (e.g. work.). Being labelled as 'ill' is more than physical, and involves playing out a social role (i.e. a 'sick role'). This study is not dealing with competent adults' management of their own health, but their management of their children's health. Taking time off from work can put a strain on work responsibilities, and can be associated with guilt, as shown in this study when parents described staying home with children they perceived to be well. In one case, visiting the GP enforced the 'sick role' of the child, thereby helping the parent to resolve feelings of unease about taking time off from work. This is another example where unnecessary exclusions can lead to unnecessary consultations, even if this was not requested by the DCP.

Interviews also revealed that day care attendance influences *the timing* of when parents consult. Most parents reported that they would usually wait to see if symptoms would resolve without the need to consult a GP. Some of these parents felt that they would consult on the first signs of the infection if they knew their child would be attending day care over the coming day(s). In contrast to this, some parents felt they had ignored their 'gut instinct' to consult when they had suspected antibiotics would be prescribed, in the hope of avoiding an automatic 48-hour exclusion period. This can lead to feelings of parental guilt and regret, and could have dangerous consequences for the child's health. In these cases, day care attendance modified usual consulting behaviours because parents were concerned that the outcome of the consultations would bring about exclusion. Generally, however, parents felt that they consulted GPs more frequently, and for less severe symptoms than they normally would if they did not have to negotiate day care requirements.

9.3.3 Do DCPs encourage antibiotic-seeking behaviour?

9.3.3.1 Overview of findings, and relevance to literature

Just under 40% of questionnaire respondents reported that they did advise parents that their child might need antibiotics. This provided interesting preliminary data, and is the first estimate of antibiotic-advising by UK-based DCPs. However, this single questionnaire item was a crude measure of what might actually be occurring.

Multiple forms of verbal antibiotic advice-giving were revealed in interviews, with some being more forceful than others. Those that did not advise treatment felt they were not qualified to do so, and that offering medical advice was not their responsibility. One of the overriding themes that repeatedly arose was DCPs' emphasis that they would never refuse to readmit a child on the basis of not having an antibiotic prescription. This corresponded to all DCPs. Even those who advised treatment felt it was not their place to make demands, as they were not medically qualified to make absolute judgments.

Based on DCPs' reports of advice-giving, two categories were identified. 'Casual advice' referred to cases where antibiotic treatment was presented to parents as a possibility- not a pre-requisite for re-admittance to day care. This advice was intended to be helpful. The second category, 'strong advice' referred to examples where DCPs' reports of advice-giving presented antibiotic treatment as the expected line of management. Although these DCPs never described telling parents to seek antibiotics, the idea of receiving an antibiotic prescription from the GP was communicated as a certainty. This could have implications for parental expectations for treatment, or their perceptions of what is required for re-admittance to day care.

In agreement with DCPs' reported practices, none of the parents interviewed recalled being explicitly told to seek antibiotics. Most remembered being instructed to take their child to the GP at the point of exclusion, and some

remembered being advised to get some form of treatment. None of the parents had experienced their DCP giving verbal advice about antibiotics. Thus, the sample of parents interviewed did not corroborate DCPs' reported 'advice-giving'.

Though not common, some of the actual written policies I viewed stated a *requirement* for antibiotic treatment for certain infections. It was however common for DCPs' written policies to *mention* antibiotic treatment in conjunction with certain infections, including conjunctivitis, ear infections, tonsillitis, and 'chest infections' [or bronchitis] (e.g. "*excluded for 48 hours after antibiotic treatment*"). Most DCPs holding these written policies maintained that treatment was never a requirement, and that written policies were intended to guide parents, or inform them of specific exclusion periods that would come into effect *if* the child was taking antibiotics. However, parents interpreted these policies as written requirements for antibiotics when examining the documents in interviews. None of the parents felt that written policies had encouraged them to seek antibiotics in the past, usually because they had consulted the DCP directly when receiving exclusion advice. However, their interpretations of policies suggest that there is potential for other parents to misinterpret the policies' intended meanings.

The only published pre-existing research into this topic, identified by my searches, has been carried out in international surveys, as described in the literature review. In a Canadian telephone survey, 18% (6/34) of DCPs in Ontario reported having requested antibiotic treatment for the last child they excluded with an upper RTI (Skull et al., 2000), although this result was based on a small sample size (for a survey). Another survey conducted in Massachusetts suggested that it is rare for DCPs to offer antibiotic advice, as only 14 of the 136 exclusions recorded in DCPs' diaries included antibiotic recommendations to parents (Friedman et al., 2004). However, this data was mainly based on exclusion for gastrointestinal infections, with very low incidences of the infections commonly associated with lay antibiotic beliefs (e.g. ear/eye infections, RTIs). Furthermore, the six-week period of recording (late February-May) might not have reflected the 'peak infection' seasons. In this study, I approached the issue by asking DCPs about their usual

practices and past experiences (in the questionnaire and interview), rather than looking at a snapshot of their practices. To Friedman and colleagues' credit, looking at DCPs' recorded daily practises has been the only piece of previous research that offers contextual detail (in relation to DCPs' antibiotic-advising). It would be interesting to repeat their study over a longer time-span (e.g. six to 12 months).

A more recent American survey, completed by Minnesota-based DCPs, took a similar approach to this study by asking DCPs about their usual practices. At least 80-90% reported at least sometimes excluding children "*Until they had received antibiotic treatment*" for bronchitis, diarrhoea (three or more loose stools a day), and conjunctivitis (M'likanatha et al., 2010). On the surface, it appears that this indicates that in some day care settings, parents have no other option but to seek antibiotics before returning their child to day care. However, the authors constructed this extreme 'practice' as a multiple choice option (i.e. exclusion until a child had received antibiotic treatment). Whilst it may reflect reality, the respondents had no opportunity to express other forms of communicating antibiotic treatment to parents (e.g. advising, suggesting, requesting, etc), which may have given a more detailed and realistic portrayal of their behaviour.

There does not appear to be any consistent conclusions that emerge from previous North American studies. This might reflect international or inter-state differences in policy, or may be due to the inconsistent approaches to measurement (e.g. 'required' treatment vs. 'recommended' treatment; forced choice response surveys vs. self completed diaries, general reported practice vs. snapshot of practice). Results of most previous studies are also bound by authors' ways of framing questions, the phrases used, and the limited multiple-choice options offered. These issues are exasperated through the lack of published, in-depth explorations of this area.

The qualitative approach to studying DCPs' accounts of antibiotic advice-giving resulted in some key findings: 1) DCPs do not explicitly state that they require antibiotic treatment before re-admitting children to day care, regardless of

infection type; 2) some, but not all DCPs advise antibiotic treatment, and 3) antibiotic advice-giving can be delivered in a helpful manner, where antibiotics are presented as a possible outcome of consultation, or in a manner suggestive that antibiotic treatment is the standard and expected route of management.

9.3.3.2 Influence on parents' expectations

If DCPs' reported 'advice-giving' is an accurate reflection of reality, there is a danger that parents will assimilate DCPs' beliefs of antibiotic use into their own knowledge- especially in cases where DCPs communicate a strong expectation for the GP to prescribe antibiotics. This is especially true for inexperienced parents who look to their DCPs for guidance. Sociologists have described how the first type of healthcare people encounter is in the "popular sector", which has been described as a "matrix" consisting of family, social networks, and community beliefs /practices (Kleinman, 1980). DCPs can be thought of as part of a parent's social network; thus, it is feasible that their medical advice will be sought, and carry some weighting (given their experience in dealing with child health). What was interesting was the variation in value parents in this study placed on their DCP's advice. However, not all parents valued or trusted their DCP's advice. These were parents who: a) had received conflicting advice from their GP, b) had medical knowledge themselves, and c) were experienced mothers (with more than one child).

Despite variations in the value placed on DCPs' advice, it was clear that DCPs are in an influential position. It is therefore important for them to have accurate and evidence-based knowledge. Interviews exposed DCPs' poor understanding of when antibiotics are appropriate, with their beliefs falling in line with common lay misconceptions. Most DCPs felt that antibiotics were useful for conjunctivitis, and expected GPs to prescribe. This was expressed in the written policies, and often came across in DCPs' descriptions of how they manage and respond to conjunctivitis-related symptoms. This infection was associated with the strongest antibiotic views and beliefs. Other infections, such as ear infections and tonsillitis, were also thought to require antibiotic treatment, although this view was not as

widespread as views on conjunctivitis. Views on antibiotic treatment for coughs varied, depending on the type and severity of symptoms. Sounds thought to be resonating from 'the chest', temperature, and coloured productive phlegm were all associated with a need for antibiotics- particularly the latter symptom. As previously discussed, DCPs saw temperature as a sign that the child was "*fighting off an infection*", and thus used this as a sign that antibiotics would be beneficial. Many of the beliefs of antibiotic indications were based on the premise that antibiotics are associated with the term "infection."

North American studies looking into DCPs' beliefs also found that coloured phlegm and sputum were incorrectly associated with antibiotic treatment (Pappas et al., 2000; Skull et al., 2000). Studies have also shown that conjunctivitis, referred to as "pink eye" in papers, is thought to require antibiotics, although the authors had not regarded this as an incorrect belief at the time of publication (Friedman et al., 2004).

9.3.3.3 Lack of consistency between DCP and parent interviews

There was often a lack of consistency between DCP and parent interviews. Both groups gave similar reports of DCPs encouraging GP consultations, but there was often disagreement when it came to the issue of giving/receiving antibiotic advice.

Although half of DCPs reported verbally advising antibiotics, no parents were able to recall experiencing this. There are multiple explanations for this. Frequently, parents were not able to draw upon any relevant experiences, as their child had not experienced exclusion for the infections DCPs claimed they would advise antibiotics for. If all parents from each interviewed day care setting gave accounts of their experiences, DCPs' reports might have been confirmed. Parents' recall issues might also have influenced responses, as some parents talked about experiences which occurred up to five years ago.

A number of parents did feel that antibiotics were an 'unspoken' requirement for re-admitting their child to day care. What was significant about these parents was

their awareness that antibiotics were unlikely to have a beneficial effect, having received this advice from their GP. Nonetheless, these parents still sought treatment. One of the problems encountered here was parents' inability to pinpoint why they had built up this impression of their DCP's requirements. However, most parents that held these views rationalised antibiotic-seeking with their previous experiences of being able to re-admit their children to day care sooner if they had an antibiotic prescription. Most of these cases referred to conjunctivitis: a number of parents felt that without treatment, children would only be permitted back with perfectly clear eyes, although with treatment, a fixed 48-hour period of exclusion would apply, after which the child could return with symptoms that had not totally cleared up. It was difficult to explore DCPs' perspectives on this, because most insisted that no child would be permitted back with persisting symptoms; the only exception to this was cases where parents presented proof (in the form of a doctor's note) that the child could return.

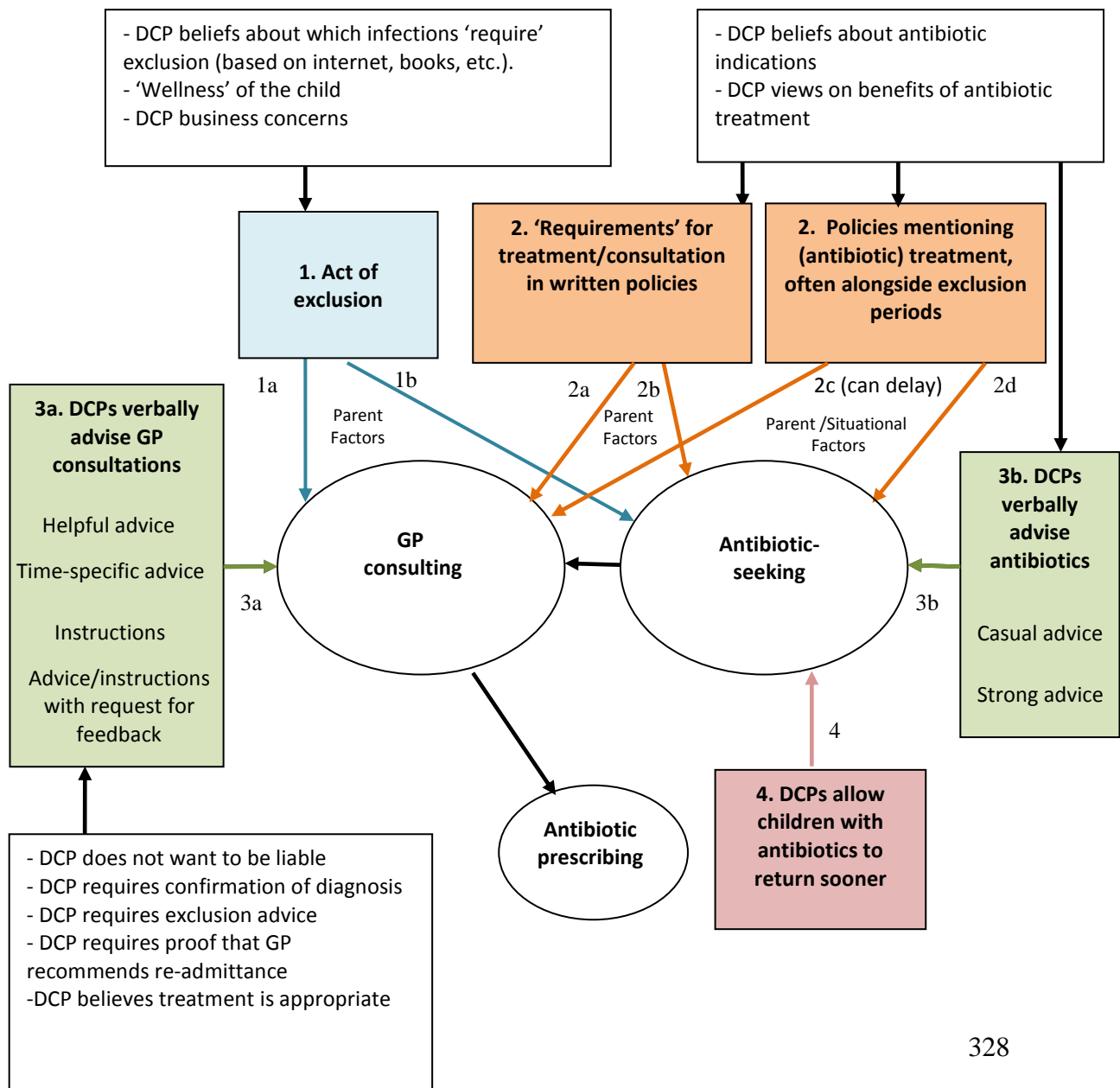
Previous survey-based research by Friedman and colleagues (2003) suggested that parents' knowledge of antibiotic treatment was the only significant determinant of their reported care-seeking and antibiotic-seeking behaviours. Other factors such as DCPs' exclusion policies and/or requirements for physician clearance were not believed to have a significant effect. The authors used these survey-findings to suggest the need to focus on parents' knowledge of antibiotic indications. However, the study had one major limitation, in that the authors failed to measure DCPs' advice-giving for antibiotic administration, and therefore neglected to explore this as a possible determinant of parents' behaviour. These factors were explored in the current study, albeit using qualitative rather than quantitative methods. In contrast to Friedman and colleagues' suggestion, I found that the parents who believed antibiotics were necessary, or expedited return to day care, were all aware that antibiotics were unlikely to improve their child's symptoms. Parents tended not to have a positive opinion of antibiotics, but sought and administered treatment as a result of work pressures and their reliance on day care. Parents felt that their GP understood their position, and had prescribed despite knowing that it was not the advised route of management.

Friedman and colleagues (2003) have also suggested that parents' beliefs that antibiotics expedite return to day care might be based on misconceptions of DCPs' re-admittance requirements. This phenomenon could explain some of the discrepancies seen between DCP and parent reports.

9.3.3.4 Potential pathways leading to GP consulting and antibiotic prescribing

This research has shown that DCPs encourage parents to consult GPs and obtain antibiotic treatment through multiple mechanisms. This can create pathways that directly and indirectly lead to antibiotic prescribing. Diagram 9.1 summarises these pathways, based on survey and interview findings.

Figure 9. 1 Pathways leading to GP consulting and antibiotic prescribing in day care attendees, based on study findings



The first pathways (1a and 1b) show how exclusion itself can drive parents to consult GPs or seek antibiotic treatment, both of which can lead to antibiotic prescriptions. Interviews revealed a plethora of examples linking exclusion with consulting, from seeking proof that exclusion is unnecessary, to seeking justification for time off work. If a parent believes antibiotics can expedite return to day care, exclusion can also be a trigger for antibiotic-seeking. Here, DCPs' exclusion practices indirectly encourage the behaviours of interest.

The second group of pathways (2a, 2b, 2c and 2d) are initiated by the content of written sickness exclusion policies. These could directly or indirectly encourage GP consulting/antibiotic-seeking depending on what is actually stated. For instance, simply mentioning antibiotic treatment (or even treatment in the generic sense) could lead to antibiotic-seeking behaviour and consulting (pathway 2d). Parents' interpretations of these types of written policies can influence this, as well as situational factors they might consider (e.g. whether exclusion could be longer without treatment). Pathway 2c represents instances where the mention of antibiotic treatment alongside an associated exclusion period can actually delay a parent from consulting, due to situational factors (i.e. inconvenience of exclusion period falling on working days). Clear written *requirements* to see the GP, or seek 'treatment'/antibiotics, are likely to be stronger encouraging factors for antibiotic-seeking/consulting behaviours (2a and 2b), though this is still subject to parents' interpretations and views (e.g. in terms of what constitutes 'treatment').

The third pathways (3a and 3b) leading to GP consulting and antibiotic prescribing are initiated by DCPs' verbal advice/'instructions' to parents, which can take many forms, and potentially exert varying degrees of pressure on parents to consult/seek antibiotics. Finally, DCPs can also encourage GP consulting/antibiotic-seeking through their re-admittance actions, where they make exceptions to exclusion or expedite return to day care on the basis of antibiotic treatment rather than symptom resolution. This has been represented in the fourth pathway.

9.3.3.5 Implications of findings

a. Public health implications

There are clear public health implications for the findings of this research. The first two chapters of this thesis set out the importance of judicious antibiotic prescribing, in light of the issue of antibiotic resistance. Children who attend out of home day care were identified as being particularly high consumers of antibiotics. Although they may be more susceptible to contracting common childhood infections when compared to others in their age group, the types of infections they are more prone to experiencing were described as being of a gastrointestinal, skin or respiratory tract nature. The interviews conducted usually involved discussions about these types of infections, in addition to conjunctivitis and ear infections. Most of these infections are self-limiting, and/or usually of viral aetiology, and do not benefit from antibiotic treatment. The recommendations for a delayed or no treatment strategy have a solid evidence base for most of the infections relevant to this study, as seen through NICE guidelines and the multiple Cochrane systematic reviews discussed in the literature review.

Interviews shed light on GPs' willingness to prescribe after having taken the time to explain why treatment is not appropriate. Parents who described these scenarios felt that their GPs had understood their position, and the apparent demands of their DCPs. This theme only stemmed from a few interviews, and was based on parents' reports- not GPs. Nonetheless, the findings suggest that the issue of inappropriate prescribing depends on a three way relationship between DCPs, parents, and GPs. Although two of these stakeholders have been explored in this research, the findings suggest that GPs may also need to be considered in any follow up studies or interventions. There has been a myriad of studies that consider why inappropriate prescribing occurs. Some of these reasons include clinician uncertainty, time pressures, and the perception of patient expectation, combined with the desire to satisfy, and maintain a positive patient-doctor relationship (Butler et al., 1998b; Ciofi degli Atti et al., 2006; Howie, 1983; Kumar et al., 2003; Macfarlane et al., 1997; Petursson, 2005). However, it has been widely reported that doctors over-estimate patients' expectations for antibiotics

(Barden et al., 1998; Mangione-Smith et al., 1999; Mangione-Smith et al., 2001; Stivers et al., 2003). One suggested solution to improving patient-GP understanding was through adoption of a shared decision-making approach in consultations, to help to elucidate patients' actual needs, and reduce unnecessary prescribing (Butler et al., 1998b; Davey et al., 2002). Exploring GP consultations in depth was not a focus of this study, but there has been research conducted specifically into GPs' accounts of prescribing for conjunctivitis (Rose et al., 2006). GPs participating in interviews were explicit about the social factors that govern their prescribing decisions, stating that discussions of re-admittance to day care or school were paramount to prescribing decisions within consultations with parents. GPs were aware of the diverse policies for conjunctivitis held by educational and early years establishments. Some, but not all, felt that these policies placed pressure on parents. GPs' accounts reflect those expressed by some of the parents in this study. Despite considering the issue from a different perspective, the findings of this study merge well with Rose and colleagues' work. Both studies re-iterate the need to tackle inappropriate prescribing by concentrating on social and cultural factors, rather than clinical evidence alone. Efforts to encourage prudent antibiotic prescribing needs to adopt a 'whole-system' approach, as described by Charani and colleagues (Charani et al., 2010). This implies that GPs' prescribing decisions need to be considered in light of the wider context they are working within. This context extends beyond the consultation. The day care sector is closely linked to community paediatric prescribing, as DCPs' actions and advice can have a direct impact on clinicians' prescribing decisions.

b. Economic implications

Day care related exclusion for illness can lead to financial costs to the healthcare system, based on the extra utilisation of services (primary and secondary) and medication. This could be especially problematic for the NHS, given the difficulties of balancing extra demands against a restricted budget growth for the coming years (Appleby et al., 2009). There have been no cost estimates of day care exclusion in the UK- only health-care and individual cost estimates for specific childhood infections (Hollinghurst et al., 2008). A multivariate regression analysis

conducted on a nationally representative sample of American pre-school children found that nursery attendees were more likely to attend primary care, use secondary care, and receive prescription medication. Using a model based on insurance costs, the predicted average health expenditure for children not attending nurseries was 642 US dollars (95% CI: 508–813), versus 985 US dollars (95% CI: 714-1336) for those enrolled in day care centres (Silverstein et al., 2003). There was only borderline statistical significance between the two groups, but the sample was not disaggregated by age. This is an important limitation, given that the increase in infection burden of day care attendees is largely restricted to those aged 2 years and under, as discussed in the literature review. Furthermore, it could be argued that statistical significance might not be important here. The increased tendency for day care attendees to catch infections could explain additional healthcare costs. However, in light of this study's findings, it is important to question how much of this extra cost is attributable to unnecessary exclusions, and thus represent waste in funds and resources.

DCPs' practices could also have financial consequences for parents, due to the costs associated with hiring replacement care, missing work, paying for medication, and, in some countries, attending consultations (Carabin et al., 1999a; Landis & Chang, 1991; Nurmi et al., 1991). Looking at the issue of exclusion from multiple perspectives, Nurmi and colleagues estimated that day care exclusion led to 22.5 million US dollars of loss a year in Finland, estimating that 90% of this was associated with infections. Though not considered in this analysis, economic losses can extend to the wider society when parental absenteeism from work reduces productivity (Carabin et al., 1999b; Landis & Chang, 1991). The sample of parents using formal day care in this study tended to be professionals, with careers that would not accommodate 'replacement' employees to cover the workload.

In addition to financial costs, unnecessary exclusion and inappropriate advice-giving can carry opportunistic costs to the NHS. GP consultation time is a precious and stretched resource, especially in the funding restrictions faced by health services.

The notion that day care exclusion is sometimes unnecessary reiterates the importance of encouraging DCPs to be aware of the evidence base of exclusion, and the advice offered to parents. The economic evaluations mentioned look at the impact of exclusion, but DCPs' advice-giving could also contribute to the economic implications described above.

c. *Reinforcement of incorrect beliefs*

Finally, previous research has shown that inappropriate antibiotic prescriptions encourage future consulting habits (Little et al., 1997; Mainous et al., 1998). This study looks at this issue from the day care perspective, adding that DCPs' incorrect expectations for antibiotics could also be reinforced when parents return their children to day care with antibiotic prescriptions. This can lead to sustained incorrect advice-giving. Interviews with DCPs suggested that antibiotic-related knowledge had been built up from their previous experiences. The issue of DCPs' incorrect policies and practices, combined with GPs' decisions to respond to day care-associated pressures, form a self-perpetuating problem.

9.4 Recommendations

In light of the issues raised by this study, there are a number of solutions which could be considered. The issues of inappropriate prescribing, unnecessary consultations, and unnecessary exclusion are all linked. Any one of these phenomena has the potential to trigger the others. Parental work pressures will also feed into this, as would clinicians' desires to save on consultation time, and maintain patient satisfaction. Some of the suggestions that follow tackle the issue of parents' pressure to return to work, while others are tailored towards improving DCPs' practices and policies.

9.4.1 Day care for sick children

Previous American studies have considered the use of day care settings that operate especially for the care of mildly ill children that have been excluded from regular day care (Chang et al., 1988; Furman, 1991). This could ease the strain felt by working parents, whose children are only mildly unwell, but capable of remaining in out-of-home care. Unlike regular day care settings, these centres would be able to devote more attention to sick children, enabling parents to continue with work (or other) commitments.

One criticism of this concept is the increased susceptibility and opportunity to contract subsequent infections. In a prospective study conducted between 1985-1986, Macdonald and colleagues (1990) compared rates of subsequent infection in children who attended 'sick day care centres' to those who attended 'sick childminder homes'. No significant differences were found between the two groups, although the researchers failed to use standard home care as a comparison. Furthermore, these American sick day care centres have been described to have their own inclusion and exclusion criteria; those deemed to be too unwell, or carrying a communicable illness, would not be permitted entry. These inclusion/exclusion criteria call for prior examination with a health professional, and thus may do little to reduce unnecessary consultations. Simply referring children who have been inappropriately excluded from one day care setting to another also fails to tackle the issue of inappropriate exclusions; if anything, inappropriate exclusion could be validated by the sick day care centres' inclusion criteria. The idea of having unfamiliar carers to look after children, who would also be placed in an unfamiliar environment, was also deemed undesirable to parents participating in focus groups (Polyzoi & Babb, 2004).

9.4.2 Standardised policies

As shown in the first pathways in diagram 9.1 (1a and 1b), exclusion alone can encourage GP consultations and antibiotic-seeking behaviours, both of which

could culminate in antibiotic prescribing. Exclusion also has practical and financial consequences for parents. One solution to correcting DCPs' non-evidence-based exclusions is to ensure that all DCPs have access to, or are aware of, the HPA guidelines. Questionnaire results in this study indicated that the vast majority of DCPs would prefer to have standardised policies written by health professionals. Interviews revealed that there might have been variations in interpretation here, as some DCPs viewed this as a proposal for compulsory 'instructions', while others saw it as a suggestion for guidance. The former interpretation was the basis of DCPs answering "No", as they felt exclusion decisions needed to be made by themselves on a case by case basis. However, all DCPs welcomed the idea of having 'medical guidance' to help them make their decisions.

Most DCPs interviewed did not use the HPA guidelines as their policies or as an information source for compiling their policies. Measuring DCPs' awareness of the existence of HPA guidelines could have been beneficial. If DCPs are aware of their existence, interviews could have explored why the guidelines are not used. This study did show, however, that HPA guidance is generally not influencing practice or policy (in the Welsh DCPs featured in the study, at least). International studies have reported similar findings. American official exclusion guidelines for illness in day care have been shown to rarely inform DCPs' written policies (Friedman et al., 2004). Decisions to endorse these guidelines rest with the state, which may produce its own guidelines (Gaines et al., 2005). This can be likened to the Welsh system, where county councils have the option to refer DCPs to HPA guidelines. Similar to Wales, the only formal requirement is for American DCPs to have a policy in place. However, research has shown that endorsing official guidelines at the state level had little influence over DCPs' practice and policies. Inappropriate exclusion appeared to be high in a state that *does* endorse national guidelines (Hashikawa et al., 2010). There have been no quantitative comparisons that have considered exclusion practices before and after introduction of guidelines (i.e. a repeated measures design). Nonetheless, the findings of this study, and previous American studies, suggest that the mere publication of evidence-based guidelines may be insufficient for bringing about change. UK-based public health authorities or childcare inspection organisations (such as CSSIW) may need to place efforts

into implementing HPA guidelines as policies. A less extreme course of action, whereby DCPs are made aware of new guidelines, might also be effective. For example, introducing general health and safety guidelines as an intervention in American day care settings has been shown to result in significant changes in practice, which was adjusted in line with recommendations (Dayie et al., 2001). Simply publicising the HPA guidelines might be an appropriate initial step forward.

DCPs in this study described how the decision to exclude is based on personal judgment, whereby numerous factors are taken into consideration. DCPs have to initially interpret symptoms when making exclusion decisions. Incorrect lay beliefs intervened at this point of the decision making process. This raises questions over how useful HPA guidelines will be for correcting unnecessary exclusion, as they do not offer guidance in the assessment and interpretation of symptoms. A previous qualitative study exploring DCPs' needs in managing enteric infections also found that DCPs considered multiple factors whilst making decisions about managing diarrhoea. The authors of the study suggested developing guidelines that built in these factors into a decision-making framework (Taylor et al., 2008). This concept could be applied to numerous common childhood infections, particularly RTIs. This type of support may be applicable for addressing DCPs' inappropriate responses to mild symptoms.

9.4.3 Changing beliefs: education and training

9.4.3.1 DCPs

There is a possibility that there will be resistance to changing established practice—particularly from DCPs who have been enforcing the same policies for years. Interviews provided examples of DCPs that were aware of new guidance (i.e. for conjunctivitis), but felt their personal knowledge and experience was sufficient justification for ignoring new advice. The problem could lie with the fact that DCPs' actions are rooted in their beliefs. DCPs held a host of lay misconceptions about infections and antibiotic treatment. This is important, as DCPs' perceived threat of specific infections or symptoms are key factors that shape exclusion

decisions. Is distributing new guidance, in the form of a list of instructions, sufficient for bringing about change? One theme that emerged in this study was DCPs' awareness of health advice being inconsistent, changing over time, and between health professionals. This was apparent in comments about GPs' lack of consistency in diagnosing and treating common infections. This lack of consistency can lead to mistrust and lower DCPs' perceived credibility of new health recommendations- especially if they are expected to blindly follow new advice as and when it becomes available. Through educating DCPs and correcting their misconceptions, new guidelines could be taken seriously, and established practice could change through addressing core beliefs.

There has been no UK-based research that documents any educational interventions to improve DCPs' knowledge of infections and antibiotic treatment. This is not surprising, as this is the first study that explores these ideas within the UK. American studies have looked at the impact of 'health consultants' as a means of training DCPs. Consultants have been described as health professionals (e.g. nurses, public health specialists) that offer advice relating to health and safety regulations specific to the day care environment, and the age group it caters for (Gaines et al., 2005). This may encompass conducting assessments, reviewing and developing policies, and training. A survey of DCPs within a state that did not have a mandate for using health consultants revealed that 'help with policy development' was one of the main areas DCPs felt health consultants could help them with (Gaines et al., 2005). In a three-year experimental study, DCPs with new access to health consultants as a training intervention (n=73) were compared to matched controls (n=38). The intervention group had significant increases in the number and quality of sickness exclusion policies when compared to baseline, with no significant differences recorded from controls (Alkon et al., 2009). Even though there have been no studies that measure actual exclusion practices as an outcome, there is an overall consensus that staff find the advice and training beneficial (Crowley, 2000). Gaines *et al.* (2005) found that most DCPs who did not have access to health consultants reported that they would use their services if they were available, even if they had to pay fees (although the researchers presented this as "*affordable fee*", without specifying an amount). DCPs

anticipated that they could pay for these services through their regular budgets, fundraising, or increasing parental fees. No further studies have explored whether this was feasible, although this body of work does demonstrate DCPs' enthusiasm for receiving extra training and help from professionals.

Addressing lay beliefs need not be limited to those surrounding exclusion. Knowledge of symptom management, and treatment (including antibiotic) indications can also be incorporated into interventions. These efforts could reduce day-care associated unnecessary GP consultations and antibiotic prescribing through: 1) addressing non-evidence-based exclusion practices (pathways 1a and 1b); 2) addressing non-evidence based written policies (pathways 2a, 2b, and 2d); 3) promoting evidence-based verbal advice from DCPs (pathway 3a and 3b), and 4) ensuring that DCPs understand instances when exclusion is beneficial, and practice meaningful, evidence-based re-admittance (pathways 1a, 1b and 4).

9.4.3.2 Parents

There has been a great deal of research attention devoted to changing parents' consulting and antibiotic-seeking behaviours. Most of these have used education as a means of encouraging parents to confidently manage their children's self-limiting infections at home. Successful interventions have included developing booklets for parents (Rasmussen, 1989), displaying posters/reading materials in primary care waiting rooms (Finkelstein et al., 2001; Huang et al., 2007), and using videos/animations (Schnellinger et al., 2010). Certain interventions that occur during the consultation have also been shown to be successful. These have included the promotion and adoption of shared decision-making models and better GP communication (Maor et al., 2011; Merenstein et al., 2005; Pshetizky et al., 2003), using a delayed prescription strategy (Cates, 1999), and having GPs explain the contents of information booklets in consultations with parents (Francis et al., 2009). Contrary to this, there have also been reports of intervention studies where written and video materials promoting appropriate antibiotic use failed to lead to significant reductions in prescriptions (Taylor et al., 2005) or

improvements in knowledge (Bauchner et al., 2001). It has been proposed that this may be partly due to the need to provide parents with positive, rather than negative messages about how to manage their child's illness (Francis et al., 2009).

Most of the intervention studies conducted have aimed to reduce antibiotic prescribing by raising awareness and/or increasing parent empowerment to self-manage their children's infections. There is even current research investigating the feasibility of using web applications to offer tailored advice for managing minor symptoms (Yardley et al., 2010a; Yardley et al., 2010b). However, parents participating in this study sometimes understood that GPs would not be able to treat their child, or that antibiotics were unlikely to be effective. They still consulted in order to re-admit their child to day care. This would suggest that parents of day care attendees may need to be considered as a sub-group of the larger pre-school parent population, as they have additional motivations for consulting. According to a randomised, controlled, community-based intervention study, clinicians' training and the distribution of educational materials to parents resulted in significant decreases in community-wide prescribing rates, although this did not extend to day care populations within the communities (Belongia et al., 1993). There is a possibility that the day care-related motivators for consulting, described in this thesis, could partially explain Belongia and colleagues' findings. Up until now, the influence of day care factors has not been considered in community wide interventions that promote change in consultation, and antibiotic-seeking behaviours.

9.4.4 Addressing parents' misconceptions of DCP requirements

Comparisons of parent and DCP interviews revealed discrepancies in reported exclusion practices. As suggested by Friedman (2004), parental misunderstandings of their DCPs' requirements have the potential to drive the cycle of unnecessary consulting and inappropriate prescribing. Pathway 4 in figure 9.1 was based on parents' reports that their DCPs are lenient with exclusion periods if the child is

taking antibiotics. This could be a misconception, as DCP interviews did not support this notion. The benefits of changing non-evidence-based practice may only become apparent if parents have a reasonably 'accurate' perception of DCPs' requirements. This calls for effective communication between parents and staff. An American survey eliciting DCPs' perceptions of what was needed for better infection containment and injury prevention revealed that parents' cooperation/awareness was the top response (approximately one third, out of almost 2000 respondents) (Sacks & Addiss, 1995), and that DCP-parent conflicts over exclusion policies were perceived to be common. A later study using focus groups of American DCPs confirmed that these conflicts were perceived as the most important barriers to health promotion (Taveras et al., 2006). The focus group interviews conducted also highlighted that DCPs experienced frustration over parents' reluctance to disclose children's illness for fear of exclusion. Although these studies were focusing on preventative behaviours, it was interesting to find that similar themes were echoed in this study. DCPs commonly reported having issues with parents complying with policies, and often suspected parent dishonesty.

Subjecting parents and DCPs to the same training, or same educational materials, could not only benefit the parent-DCP relationship, but could also increase the likelihood that parents and DCPs understand and interpret exclusion policies/requirements in the same way. After subjecting DCPs to an infection/antibiotic training programme, Taylor *et al.* (2008) found that DCPs felt it was important for parents to receive the same training. This study has touched on the possibility that miscommunication, or a lack of communication, *might* lead to parents' having incorrect perceptions of their DCP's re-admittance requirements. Ideally, the content and nature of interventions experienced by parents and DCPs should be identical, reducing the likelihood of disagreements emerging. It has also been proposed that DCPs themselves should deliver the information and training to parents. Croft *et al.* (2007) tested a program whereby DCPs would pass on the training they receive from professionals on to parents, concluding that the intervention resulted in significant differences in knowledge scores of parents in test centres when compared to control centres. However, significant

improvements were only observed for highly educated parents. The reasons for this were not explored further by the authors. Even though university-educated parents are likely to make up a substantial portion of day care clientele, it is important that these interventions are tailored to, and accessible by all parents.

Other educational interventions have had varying levels of success. A small Swedish study implemented an educational program, delivered by the authors, to DCPs and parents. Significantly greater numbers of parents felt that they were well informed about infections, and felt that the exclusion policy information presented to them by their DCP was satisfactory. However, there was no significant decrease in consultation and antibiotic prescription rates (Hedin et al., 2006). The authors proposed that the findings called for repeating the study on a larger scale, but this is yet to be conducted.

Overall, further work may be required to elucidate the best ways of educating different stakeholder groups. Interventions need to be evaluated in terms of changed behaviour, not just satisfaction levels. Ideally, the effects of interventions would need to be monitored on a long term basis, to evaluate whether they truly lead to changed attitudes and behaviour.

9.4.5 Addressing business-related factors

This thesis has predominantly focused on beliefs surrounding infection management from a clinical perspective. Although not as common in DCPs' accounts, there was evidence to show that DCPs' motivations to maintain 'good business' could also influence their exclusion practices. This worked in two ways: DCPs were sometimes more lenient when managing infections they felt required exclusion (mainly in childminders' cases), or excluded partly on the basis of how other parents would react to visually unpleasant symptoms of conjunctivitis. The latter example was touched upon in one interview, but raises questions surrounding DCPs' perceptions of parent preferences and expectations of the services they are paying for. Although not directly pursued in this study, I found that parents were not alarmed by the symptoms of conjunctivitis, and clearly

identified day care centres as breeding grounds for 'germs'. Would parents prefer it if DCPs allowed children with minor infections to remain in day care, with the knowledge that they too could benefit from this if their child has caught a similar infection? Focus group research, where parents and DCPs participate in discussions, could help to elucidate what each stakeholder group's expectations are, and whether this matches the other group's perceptions. A focus group approach could also encourage further discussion on how DCPs and parents can reach solutions where both parties are satisfied with the criteria exclusions are based upon.

9.5 Conclusion

Prior to this research, other authors had proposed that DCPs may contribute to parents consulting general practice unnecessarily, and pressurising GPs to prescribe antibiotic treatment. Although this study has only considered two of the relevant groups in the DCP-parent-GP triad, it is the first qualitative enquiry that considers DCPs' and parents' perspectives. The results can be considered in light of the plethora of studies that consider GPs' perceptions of parental expectations, and their reasons for prescribing.

The main finding of the study is that DCPs' actions can catalyse inappropriate prescribing and unnecessary GP consulting, and that these actions are based on lay misconceptions surrounding common infections prevalent in day care environments. The resultant inappropriate consultations and antibiotic prescribing can occur via numerous mechanisms.

DCPs' practices of advising antibiotic treatment has potential to influence parents' consulting behaviours, and create expectations that antibiotics will be prescribed for viral or self-limiting infections. In light of previous studies, GPs can perceive these expectations, and respond to them inappropriately. These expectations, if met by the GP, can become firmly fixed in the lay population, and inform future consulting behaviours and expectations for treatment.

DCPs' tendencies to relax exclusion policies on the basis of antibiotic treatment can also encourage parents to inappropriately seek antibiotics- even if the parent knows treatment is unlikely to be clinically beneficial. In these cases, GP consultations and antibiotic prescriptions had non-clinical perceived benefits from parents' perspectives. This study has shown the importance of parents' and GPs' perceptions of day care requirements, and their willingness to defer to these requirements for the sake of practicalities and convenience.

DCPs' routine encouragement of GP consulting behaviour can lead to unnecessary appointments in its own right, as parents tend to consult when instructed to. Furthermore, non-evidence-based exclusion practices can result in unnecessary or needlessly prolonged exclusion periods, leading to parental absenteeism from work, and an increased likelihood for consultations to occur.

The use of different methodological approaches, and the consideration of both DCP and parent perspectives, has worked well in creating a broad picture of what is occurring in day care centres, and the impact this is having on parents' lives. Looking beyond this, there are important public health and economic implications for this research. This study has identified a host of non-evidence-based practices and policies occurring in day care settings, which have the power to influence GP consultation and antibiotic prescribing rates. Steps need to be taken towards changing DCPs' established practices, whilst keeping parents and health care professionals informed of these changes. Efforts will need to extend beyond implementing evidence-based guidelines/policies, as DCPs' themselves need to be targeted with education and training. Successful changes in practice will be dependent on addressing DCPs' beliefs, and equipping them with the knowledge to make decisions and offer advice in line with current evidence. In light of the three way relationship between DCPs, parents, and GPs, all groups need to be integrated into, or at least be aware of, any future efforts to change practice.

REFERENCES

- Ahovuo-Saloranta, A., Rautakorpi, U.-M., Borisenko Oleg, V., Liira, H., Williams Jr John, W. and Mäkelä, M.** (2008), 'Antibiotics for acute maxillary sinusitis', *Cochrane Database of Systematic Reviews*, Chichester, UK, John Wiley & Sons, Ltd.
- Alanis, A.J.** (2005), 'Resistance to antibiotics: are we in the post-antibiotic era?', *Archives of medical research*, 36, 6, 697-705.
- Alkon, A., Bernzweig, J., To, K., Wolff, M. and Mackie, J.F.** (2009), 'Child care health consultation improves health and safety policies and practices', *Academic Pediatrics*, 9, 5, 366-370.
- Alliance for the Prudent Use of Antibiotics** (2005), 'Executive summary: global antimicrobial resistance alerts and implications', *Clin Infect Dis*, 41 Suppl 4, S221-3.
- Alpha.** (2011), 'Guide to childcare', URL: <http://alpha.gov.uk/guide-childcare/> Accessed: 22/11/2011.
- Altiner, A., Knauf, A., Moebes, J., Sielk, M. and Wilm, S.** (2004), 'Acute cough: a qualitative analysis of how GPs manage the consultation when patients explicitly or implicitly expect antibiotic prescriptions', *Family Practice*, 21, 5, 500-506.
- American Public Health Association and American Academy of Pediatrics** (1992), 'Caring for our children: national health and safety performance standards—guidelines for out-of-home child care programs', Washington DC, American Public Health Association.
- Andersson, D.I. and Hughes, D.** (2010), 'Antibiotic resistance and its cost: is it possible to reverse resistance?', *Nature Reviews Microbiology*, 8, 4, 260-271.
- Andersson, D.I. and Levin, B.R.** (1999), 'The biological cost of antibiotic resistance', *Current Opinion in Microbiology*, 2, 5, 489-493.
- André, M., Hedin, K., Håkansson, A., Mölstad, S., Rodhe, N. and Petersson, C.** (2007), 'More physician consultations and antibiotic prescriptions in families with high concern about infectious illness—adequate response to infection-prone child or self-fulfilling prophecy?', *Family Practice*, 24, 4, 302-307.
- Appleby, J., Crawford, R. and Emmerson, C.** (2009), 'How cold will it be? Prospects for NHS funding: 2011-17', *The King's Fund*, Institute for Fiscal Studies.
- Arias, C.A. and Murray, B.E.** (2009), 'Antibiotic-resistant bugs in the 21st century — A clinical super-challenge', *New England Journal of Medicine*, 360, 5, 439-443.
- Arnold, K.E., Leggiadro, R.J., Breiman, R.F., Lipman, H.B., Schwartz, B., Appleton, M.A., Cleveland, K.O., Szeto, H.C., Hill, B.C., Tenover, F.C., Elliott, J.A. and Facklam, R.R.** (1996), 'Risk factors for carriage of drug-resistant *Streptococcus pneumoniae* among children in Memphis, Tennessee', *The Journal of pediatrics*, 128, 6, 757-764.
- Arroll, B.** (2005), 'Antibiotics for upper respiratory tract infections: an overview of Cochrane reviews', *Respiratory Medicine*, 99, 3, 255-261.
- Ashworth, M., Charlton, J., Latinovic, R. and Gulliford, M.** (2006), 'Age-related changes in consultations and antibiotic prescribing for acute

- respiratory infections, 1995–2000. Data from the UK General Practice Research Database', *Journal of Clinical Pharmacy and Therapeutics*, 31, 5, 461-467.
- Barden, L., Dowell, S., Schwartz, B. and Lackey, C.** (1998), 'Current attitudes regarding use of antimicrobial agents: results from physicians' and parents' focus group discussions', *Clinical Pediatr*, 37, 11, 665-671.
- Barros, H. and Lunet, N.** (2003), 'Association between child-care and acute diarrhea: a study in Portuguese children.', *Rev. Saúde Pública*, 37, 5, 603-608.
- Bartlett, A.V., Moore, M., Gary, G.W., Starko, K.M., Erben, J.J. and Meredith, B.A.** (1985), 'Diarrheal illness among infants and toddlers in day care centers. II. Comparison with day care homes and households', *The Journal of pediatrics*, 107, 4, 503-509.
- Bauchner, H., Osganian, S., Smith, K. and Triant, R.** (2001), 'Improving parent knowledge about antibiotics: A video intervention', *Pediatrics*, 108, 4, 845-850.
- Bauchner, H., Pelton, S.I. and Klein, J.O.** (1999), 'Parents, physicians, and antibiotic use', *Pediatrics*, 103, 2, 395-401.
- Baxter, J. and Eyles, J.** (1997), 'Evaluating qualitative research in social geography: Establishing 'rigour' in interview analysis', *Transactions of the Institute of British Geographers*, 22, 4, 505-525.
- Bean, D.C., Livermore, D.M., Papa, I. and Hall, L.M.C.** (2005), 'Resistance among *Escherichia coli* to sulphonamides and other antimicrobials now little used in man', *Journal of Antimicrobial Chemotherapy*, 56, 5, 962-964.
- Becker, M.** (1974), 'The Health Belief Model and personal health behavior', *Health Education Monographs*, 2, 324-473.
- Belongia, E.A., Osterholm, M.T., Soler, J.T., Ammend, D.A., Braun, J.E. and MacDonald, K.L.** (1993), 'Transmission of *Escherichia coli* 0157:H7 infection in Minnesota child day-care facilities', *Journal of the American Medical Association*, 269, 7, 883-888.
- Benenson, M.W., Takafuji, E.T., Bancroft, W.H., Lemon, S.M., Callahan, M.C. and Leach, D.A.** (1980), 'A military community outbreak of hepatitis type A related to transmission in a child care facility', *American Journal of Epidemiology*, 112, 4, 471-81.
- Benitez-del-Castillo, J., Verboven, Y., Stroman, D. and Kodjikian, L.** (2011), 'The role of topical Moxifloxacin, a new antibacterial in Europe, in the treatment of bacterial conjunctivitis', *Clinical Drug Investigation*, 31, 8, 543-557.
- Berg, A.T., Shapiro, E.D. and Capobianco, L.A.** (1991), 'Group day care and the risk of serious infectious illnesses', *American Journal of Epidemiology*, 133, 2, 154-63.
- Berger, P.L. and Luckmann, T.** (1966), *The Social Construction of Reality: A Treatise in the Sociology of Knowledge.*, Garden City, NY., Doubleday.
- Björnsdóttir, I. and Hansen, E.H.** (2002), 'Intentions, strategies and uncertainty inherent in antibiotic prescribing', *European Journal of General Practice*, 8, 1, 18-24.
- Bloor, M. and Wood, F.** (2006), *Keywords in Qualitative Methods: A Vocabulary of Research Concepts*, SAGE.
- Bogaert, D., Engelen, M.N., Timmers-Reker, A.J.M., Elzenaar, K.P., Peerbooms, P.G.H., Coutinho, R.A., de Groot, R. and Hermans, P.W.M.** (2001), 'Pneumococcal carriage in children in The Netherlands: a molecular epidemiological study', *J. Clin. Microbiol.*, 39, 9, 3316-3320.

- Bosley, S.** (2010), 'Are you ready for a world without antibiotics?', *The Guardian*.
- Bradley, R.H., National Institute of Child Health and Human Development Early Child Care Research Network.** (2003), 'Child care and common communicable illnesses in children aged 37 to 54 months', *Archives of Pediatrics & Adolescent Medicine*, 157, 2, 196-200.
- Brady, M.T.** (2005), 'Infectious disease in pediatric out-of-home child care', *American journal of infection control*, 33, 5, 276-285.
- Braun, V. and Clarke, V.** (2006), 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3, 2, 77-101.
- Brian, M.J., Van, R., Townsend, I., Murray, B.E., Cleary, T.G. and Pickering, L.K.** (1993), 'Evaluation of the molecular epidemiology of an outbreak of multiply resistant *Shigella sonnei* in a day-care center by using pulsed-field gel electrophoresis and plasmid DNA analysis', *J. Clin. Microbiol.*, 31, 8, 2152-2156.
- Britten, N.** (1995), 'Qualitative research: qualitative interviews in medical research', *BMJ*, 311, 6999, 251-253.
- Britten, N. and Ukoumunne, O.** (1997), 'The influence of patients' hopes of receiving a prescription on doctors' perceptions and the decision to prescribe: a questionnaire survey', *BMJ*, 315, 7121, 1506-1510.
- Bronzwaer, S.L., Cars, O., Buchholz, U., Molstad, S., Goettsch, W., Veldhuijzen, I.K., Kool, J.L., Sprenger, M.J. and Degener, J.E.** (2002), 'The relationship between antibiotic use and antibiotic resistance in Europe', *Emerg Infect Dis*, 8, 3, 278-282.
- Brook, I.** (1988), 'Emergence and persistence of {beta}-lactamase--producing bacteria in the oropharynx following penicillin treatment', *Arch Otolaryngol Head Neck Surg*, 114, 6, 667-670.
- Brunell, P.A., Taylor-Wiedeman, J. and Lievens, A.W.** (1986), 'Varicella in day care centers', *Review of Infectious Diseases*, 8, 4, 589-590.
- Bryman, A.** (2008), *Social Research Methods* (3 Edition), Oxford University Press.
- Buckingham, A. and Saunders, P.** (2004), *The Survey Methods Workbook: From Design to Analysis*, Cambridge, Polity.
- Burke, J.P. and Pestotnik, S.L.** (1996), 'Breaking the chain of antibiotic resistance', *Current Opinion in Infectious Diseases*, 9, 4, 253-255.
- Butler, C.C., Dunstan, F., Heginbotham, M., Mason, B., Roberts, Z., Hillier, S., Howe, R., Palmer, S. and Howard, A.** (2007), 'Containing antibiotic resistance: decreased antibiotic-resistant coliform urinary tract infections with reduction in antibiotic prescribing by general practices', *British Journal of General Practice*, 57, 543, 785-792.
- Butler, C.C., Hood, K., Verheij, T., Little, P., Melbye, H., Nuttall, J., Kelly, M.J., Mölsted, S., Godycki-Cwirko, M., Almirall, J., Torres, A., Gillespie, D., Rautakorpi, U., Coenen, S. and Goossens, H.** (2009), 'Variation in antibiotic prescribing and its impact on recovery in patients with acute cough in primary care: prospective study in 13 countries', *BMJ*, 338.
- Butler, C.C., Rollnick, S., Kinnersley, P., Jones, A. and Stott, N.** (1998a), 'Reducing antibiotics for respiratory tract symptoms in primary care: consolidating 'how' and considering 'why''.', *Br J Gen Pract*, 48, 437, 1865-1870.
- Butler, C.C., Rollnick, S., Kinnersley, P., Tapper-Jones, L. and Houston, H.** (2004), 'Communicating about expected course and re-consultation for

- respiratory tract infections in children: an exploratory study', *Br J Gen Pract*, 54, 504, 536-538.
- Butler, C.C., Rollnick, S., Pill, R., Maggs-Rapport, F. and Stott, N.** (1998b), 'Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats', *BMJ*, 317, 7159, 637-642.
- Campbell, S.M. and Roland, M.O.** (1996), 'Why do people consult the doctor?', *Family Practice*, 13, 1, 75-83.
- Campion, P.D. and Gabriel, J.** (1984), 'Child consultation patterns in general practice comparing "high" and "low" consulting families.', *Br Med J (Clin Res Ed)*, 288, 6428, 1426-1428.
- Campion, P.D. and Gabriel, J.** (1985), 'Illness behaviour in mothers with young children', *Social Science & Medicine*, 20, 4, 325-330.
- Carabin, H., Gyorkos, T.W., Soto, J.C., Joseph, L., Payment, P. and Collet, J.-P.** (1999a), 'Effectiveness of a training program in reducing Infections in toddlers attending day care centers', *Epidemiology*, 10, 3, 219-227.
- Carabin, H., Gyorkos, T.W., Soto, J.C., Penrod, J., Joseph, L. and Collet, J.-P.** (1999b), 'Estimation of direct and indirect costs because of common infections in toddlers attending day care centers', *Pediatrics*, 103, 3, 556-564.
- Cars, O., Högberg, L.D., Murray, M., Nordberg, O., Sivaraman, S., Lundborg, C.S., So, A.D. and Tomson, G.** (2008), 'Meeting the challenge of antibiotic resistance', *BMJ*, 337.
- Cates, C.** (1999), 'An evidence based approach to reducing antibiotic use in children with acute otitis media: controlled before and after study', *BMJ*, 318, 7185, 715-716.
- CDC** (2006), 'Outbreaks of multidrug-resistant *Shigella sonnei* gastroenteritis associated with day care centers--Kansas, Kentucky, and Missouri, 2005', *MMWR Morbidity & Mortality Weekly Report*, 55, 39, 1068-71.
- Celedon, J.C., Litonjua, A.A., Weiss, S.T. and Gold, D.R.** (1999), 'Day care attendance in the first year of life and illnesses of the upper and lower respiratory tract in children with a familial history of atopy', *Pediatrics*, 104, 3, 495-500.
- Centers for Disease Control and Prevention [CDC]** (2010), 'Get smart: know when antibiotics work', *Treatment guidelines for upper respiratory tract infections*, URL: <http://www.cdc.gov/getsmart/campaign-materials/pediatric-treatment.html> Accessed: 14/12/2011.
- Chan, K.P., Goh, K.T., Chong, C.Y., Teo, E.S., Lau, G. and Ling, A.E.** (2003), 'Epidemic hand, foot and mouth disease caused by human enterovirus 71, Singapore', *Emerging Infectious Diseases*, 9, 1, 78-85.
- Chang, A., Zeledon-Friendly, A., Britt, A. and Ewing, B.** (1988), 'Management of illness and temporary disability in children enrolled in day-care centers: the Health House experience', *Am J Dis Child*, 142, 6, 651-655.
- Charani, E., Cooke, J. and Holmes, A.** (2010), 'Antibiotic stewardship programmes--what's missing?', *Journal of Antimicrobial Chemotherapy*, 65, 11, 2275-7177.
- Cherian, T., MC, S., Harrison, L., Rohn, D., MK, M. and Dick, J.** (1994), 'A cluster of pneumococcal disease in young children in child care', *JAMA*, 271, 9, 295-297.
- Chiou, C.C., Liu, Y.C., Huang, T.S., Hwang, W.K., Wang, J.H., Lin, H.H., Yen, M.Y. and Hsieh, K.S.** (1998), 'Extremely high prevalence of nasopharyngeal carriage of penicillin-resistant *Streptococcus pneumoniae*

among children in Kaohsiung, Taiwan', *Journal of Clinical Microbiology*, 36, 7, 1933-7.

- Chung, A., Perera, R., Brueggemann, A.B., Elamin, A.E., Harnden, A., Mayon-White, R., Smith, S., Crook, D.W. and Mant, D.** (2007), 'Effect of antibiotic prescribing on antibiotic resistance in individual children in primary care: prospective cohort study', *BMJ*, 335, 7617, 429-.
- Ciftci, E., Dogru, U., Aysev, D., Ince, E. and Guriz, H.** (2001), 'Investigation of risk factors for penicillin-resistant *Streptococcus pneumoniae* carriage in Turkish children.[Erratum appears in *Pediatr Int* 2001 Oct;43(5):565 Note: Aysev UD [corrected to Aysev D]]', *Pediatrics International*, 43, 4, 385-90.
- Ciofi degli Atti, M., Massari, M., Bella, A., Boccia, D., Filia, A., Salmaso, S. and Spes study group.** (2006), 'Clinical, social and relational determinants of paediatric ambulatory drug prescriptions due to respiratory tract infections in Italy', *European Journal of Clinical Pharmacology*, 62, 12, 1055-1064.
- Cizman, M.** (2003), 'The use and resistance to antibiotics in the community', *International Journal of Antimicrobial Agents*, 21, 4, 297-307.
- Cockburn, J. and Pit, S.** (1997), 'Prescribing behaviour in general practice: patients' expectations and doctors' perceptions of patient expectations- a questionnaire study', *BMJ*, 315, 520-523.
- Coenen, S., Michiels, B., Renard, D. and Van Royen, P.** (2006), 'Antibiotic prescribing for acute cough: the effect of perceived patient demand', *Br J Gen Pract*, 56, 524, 183-190.
- Coenen, S., Van Royen, P., Vermeire, E., Hermann, I. and Denekens, J.** (2000), 'Antibiotics for coughing in general practice: a qualitative decision analysis', *Family Practice*, 17, 5, 380-385.
- Cohen, D. and Crabtree, B.** (2006), 'Qualitative research guidelines project', URL: <http://www.qualres.org/HomeSamp-3702.html> Accessed: 17/11/2010.
- Copeland, K.A., Duggan, A.K. and Shope, T.R.** (2005), 'Knowledge and beliefs about guidelines for exclusion of ill children from child care', *Ambulatory Pediatrics*, 5, 6, 365-371.
- Copeland, K.A., Harris, E.N., Wang, N.-Y. and Cheng, T.L.** (2006), 'Compliance with American Academy of Pediatrics and American Public Health Association illness exclusion guidelines for child care centers in Maryland: who follows them and when?', *Pediatrics*, 118, 5, e1369-e1380.
- Costelloe, C., Metcalfe, C., Lovering, A., Mant, D. and Hay, A.D.** (2010), 'Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis', *BMJ*, 340, c2096.
- Coyne, I.T.** (1997), 'Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries?', *Journal of Advanced Nursing*, 26, 3, 623-630.
- Crocker, J.C., Powell, C.V.E., Evans, M.R., Hood, K. and Butler, C.C.** (2011), 'Paediatric pneumonia or empyema and prior antibiotic use in primary care: a case-control study', *Journal of Antimicrobial Chemotherapy*.
- Croft, D.R., Knobloch, M.J., Chyou, P.-H., Ellen, D.V., Janette, C., Davis, J.P., Besser, R.E. and Belongia, E.A.** (2007), 'Impact of a child care educational intervention on parent knowledge about appropriate antibiotic use', *WJM*, 106, 2, 78-84.
- Crowley, A.A.** (2000), 'Child care health consultation: the Connecticut experience', *Matern Child Health J*, 4, 1, 67-75.

- CSSIW (2007), 'Services and inspection reports', URL: <http://www.csiw.wales.gov.uk/dataviewer/index.asp> Accessed: 01/06/2010.
- Dagan, R., Barkai, G., Givon-Lavi, N., Sharf, A.Z., Vardy, D., Cohen, T., Lipsitch, M. and Greenberg, D.** (2008), 'Seasonality of antibiotic-resistant *Streptococcus pneumoniae* that causes acute otitis media: a clue for an antibiotic-restriction policy?', *Journal of Infectious Diseases*, 197, 8, 1094-1102.
- Dagan, R., Melamed, R., Muallem, M., Piglansky, L. and Yagupsky, P.** (1996), 'Nasopharyngeal colonization in southern Israel with antibiotic-resistant pneumococci during the first 2 years of life: relation to serotypes likely to be included in Pneumococcal conjugate vaccines', *Journal of Infectious Diseases*, 174, 6, 1352-1355.
- Dagan, R. and O'Brien, K.L.** (2005), 'Modeling the association between pneumococcal carriage and child-care center attendance', *Clinical Infectious Diseases*, 40, 9, 1223-6.
- Daly, K.A., Brown, J.E., Lindgren, B.R., Meland, M.H., Le, C.T. and Giebink, G.S.** (1999), 'Epidemiology of otitis media onset by six months of age', *Pediatrics*, 103, 6, 1158-1166.
- Damoiseaux, R.A.M.J., van Balen, F.A.M., Hoes, A.W., Verheij, T.J.M. and de Melker, R.A.** (2000), 'Primary care based randomised, double blind trial of amoxicillin versus placebo for acute otitis media in children aged under 2 years', *BMJ*, 320, 7231, 350-354.
- Davey, P., Pagliari, C. and Hayes, A.** (2002), 'The patient's role in the spread and control of bacterial resistance to antibiotics', *Clinical Microbiology and Infection*, 8, 43-68.
- Davies, J.** (2007), 'Microbes have the last word', *EMBO Rep*, 8, 7, 616-621.
- Day Care Trust** (2011), 'Factsheets for parents: what are my childcare options?', URL: http://www.daycaretrust.org.uk/data/files/Information_Services/Factsheets/what_are_my_childcare_options_in_england_june_2011.pdf Accessed: 21/22/2011.
- Dayie, R.A., Aronson, S.S., Jansen-McWilliams, L. and Kelleher, K.J.** (2001), 'Use of a statewide system to improve health and safety in child care facilities', *Ambulatory Pediatrics*, 1, 2, 73-78.
- De Lencastre, H. and Tomasz, A.** (2002), 'From ecological reservoir to disease: the nasopharynx, day-care centres and drug-resistant clones of *Streptococcus pneumoniae*. [Review] [22 refs]', *Journal of Antimicrobial Chemotherapy*, 50, 75-81.
- Denzin, N.** (1978), *The Research Act. A Theoretical Introduction to Sociological Methods*, New York, McGraw-Hill.
- Denzin, N. and Lincoln, Y.** (2005), 'Paradigms and perspectives in contention', in Norman K. Denzin, Y.S.L. (ed.), *The Sage Handbook of Qualitative Research*, Thousand Oaks, CA, Sage.
- Donnan, P.T., Wei, L., Steinke, D.T., Phillips, G., Clarke, R., Noone, A., Sullivan, F.M., MacDonald, T.M. and Davey, P.G.** (2004), 'Presence of bacteriuria caused by trimethoprim resistant bacteria in patients prescribed antibiotics: multilevel model with practice and individual patient data', *BMJ*, 328, 7451, 1297.
- Doyle, A.-B.** (1976), 'Incidence of illness in early group and family day-care', *Pediatrics*, 58, 4, 607-613.
- Duckworth, G.** (2002), 'Clinical implications of antimicrobial resistance: how big is the problem?', *Int J Infect Dis*, 6 Suppl 1, S1-7.

- Duggirala, H.J., Hassig, S.E., Santana, S. and Rice, J.** (2005), 'Evaluation of a hepatitis A immunization program', *Pediatric Infectious Disease Journal*, 24, 11, 974-8.
- Dunais, B., Pradier, C., Carsenti, H., Sabah, M., Mancini, G., Fontas, E. and Dellamonica, P.** (2003), 'Influence of child care on nasopharyngeal carriage of *Streptococcus pneumoniae* and *Haemophilus influenzae*', *Pediatric Infectious Disease Journal*, 22, 7, 589-92.
- Edwards, P.J., Roberts, I., Clarke Mike, J., DiGuseppi, C., Wentz, R., Kwan, I., Cooper, R., Felix Lambert, M. and Pratap, S.** (2009), 'Methods to increase response to postal and electronic questionnaires', *Cochrane Database of Systematic Reviews*, Chichester, UK, John Wiley & Sons, Ltd.
- El-Radhi, A.S.M.** (2008), 'Why is the evidence not affecting the practice of fever management?', *Archives of Disease in Childhood*, 93, 11, 918-920.
- Enne, V.I., Livermore, D.M., Stephens, P. and Hall, L.M.C.** (2001), 'Persistence of sulphonamide resistance in *Escherichia coli* in the UK despite national prescribing restriction', *The Lancet*, 357, 9265, 1325-1328.
- Ertmann, R.K., Siersma, V., Reventlow, S. and Söderström, M.** (2011), 'Infants' symptoms of illness assessed by parents: Impact and implications', *Scandinavian Journal of Primary Health Care*, 29, 2, 67-74.
- Ertmann, R.K., Söderström, M. and Reventlow, S.** (2005), 'Parents' motivation for seeing a physician', *Scandinavian Journal of Primary Health Care*, 23, 3, 154-158.
- European Centre for Disease Control and Prevention & European Medicines Agency** (2009), 'Annual epidemiological report on communicable diseases in Europe'.
- Everitt, H.** (2009), 'Acute conjunctivitis', *InnovAiT*, 2, 1, 44-49.
- Ferson, M.J. and Bell, S.M.** (1991), 'Outbreak of Coxsackievirus A16 hand, foot, and mouth disease in a child day-care center', *American Journal of Public Health*, 81, 12, 1675-6.
- Finkelstein, J.A., Davis, R.L., Dowell, S.F., Metlay, J.P., Soumerai, S.B., Rifas-Shiman, S.L., Higham, M., Miller, Z., Miroshnik, I., Pedan, A. and Platt, R.** (2001), 'Reducing antibiotic use in children: a randomized trial in 12 practices', *Pediatrics*, 108, 1, 1-7.
- Fornasini, M., Reves, R.R., Murray, B.E., Morrow, A.L. and Pickering, L.K.** (1992), 'Trimethoprim-resistant *Escherichia coli* in households of children attending day care centers', *Journal of Infectious Diseases*, 166, 2, 326-30.
- Francis, N., Wood, F., Simpson, S., Hood, K. and Butler, C.C.** (2008), 'Developing an 'interactive' booklet on respiratory tract infections in children for use in primary care consultations', *Patient education and counseling*, 73, 2, 286-293.
- Francis, N.A., Butler, C.C., Hood, K., Simpson, S., Wood, F. and Nuttall, J.** (2009), 'Effect of using an interactive booklet about childhood respiratory tract infections in primary care consultations on reconsulting and antibiotic prescribing: a cluster randomised controlled trial', *BMJ*, 339.
- Francis, N.A., Crocker, J.C., Gamper, A., Brookes-Howell, L., Powell, C. and Butler, C.C.** (2011), 'Missed opportunities for earlier treatment? A qualitative interview study with parents of children admitted to hospital with serious respiratory tract infections', *Archives of Disease in Childhood*, 96, 2, 154-159.
- Freythuth, F., Langeard, M.M., Guihard, J., Delavenne, J., Leroy, D., Marteret, P. and Valdazo, A.** (1980), 'Outbreak of hand, foot and mouth

disease in a day-nursery. A new clinical form? ', *Nouvelle Presse Medicale*, 9, 32, 2233-4.

- Friedman, J.F., Lee, G.M., Kleinman, K.P. and Finkelstein, J.A.** (2003), 'Acute care and antibiotic seeking for upper respiratory tract infections for children in day care: parental knowledge and day care center policies', *Arch Pediatr Adolesc Med*, 157, 4, 369-374.
- Friedman, J.F., Lee, G.M., Kleinman, K.P. and Finkelstein, J.A.** (2004), 'Child care center policies and practices for management of ill children', *Ambulatory Pediatrics*, 4, 5, 455-60.
- Frydenberg, A. and Starr, M.** (2003), 'Slapped cheek disease. how it affects children and pregnant women.', *Australian Family Physician*, 32, 8, 589-92.
- Fujita, K., Muroto, K., Yoshikawa, M. and Murai, T.** (1994), 'Decline of erythromycin resistance of group A Streptococci in Japan', *Pediatr Infect Dis*, 13, 12, 1075-1078.
- Furman, L.** (1991), 'Infirmity-style sick-child day care: do we need more information?', *Pediatrics*, 88, 2, 290-293.
- Gaines, S.K., Wold, J.L., Spencer, L. and Leary, J.M.** (2005), 'Assessing the Need for Child-Care Health Consultants', *Public Health Nursing*, 22, 1, 8-16.
- Gardner, G., Frank, A.L. and Taber, L.H.** (1984), 'Effects of social and family factors on viral respiratory infection and illness in the first year of life', *Journal of Epidemiology and Community Health*, 38, 1, 42-48.
- George, A. and Rubin, G.** (2003), 'A systematic review and meta-analysis of treatments for impetigo', *British Journal of General Practice*, 53, 491, 480-487.
- Giebink, G.S.** (1993), 'Care of the ill child in day-care settings', *Pediatrics*, 91, 1, 229-233.
- Gilbart, E. and Kreiger, N.** (1998), 'Improvement in cumulative response rates following implementation of a financial incentive', *American Journal of Epidemiology*, 148, 1, 97-99.
- Gingrich, G.A., Hadler, S.C., Elder, H.A. and Ash, K.O.** (1983), 'Serologic investigation of an outbreak of hepatitis A in a rural day-care center', *American Journal of Public Health*, 73, 10, 1190-3.
- Given, L.M.** (2008), *The Sage Encyclopedia of Qualitative Research Methods*, SAGE Publications.
- Givon-Lavi, N., Dagan, R., Fraser, D., Yagupsky, P. and Porat, N.** (1999), 'Marked differences in pneumococcal carriage and resistance patterns between day care centers located within a small area', *Clinical Infectious Diseases*, 29, 5, 1274-1280.
- Givon-Lavi, N., Fraser, D., Porat, N. and Dagan, R.** (2002), 'Spread of Streptococcus pneumoniae and antibiotic-resistant S. pneumoniae from day-care center attendees to their younger siblings', *Journal of Infectious Diseases*, 186, 11, 1608-14.
- Glaser, B.G. and Strauss, A.L.** (1967), *The Discovery of Grounded Theory: Strategies for Qualitative Research*, London, Wiedenfeld and Nicholson.
- Goldman, S.L. and Owen, M.T.** (1994), 'The impact of parental trait anxiety on the utilization of health care services in infancy: a prospective study', *Journal of Pediatric Psychology*, 19, 3, 369-381.
- Goossens, H., Ferech, M., Vander Stichele, R. and Elseviers, M.** (2005), 'Outpatient antibiotic use in Europe and association with resistance: a cross-national database study', *The Lancet*, 365, 9459, 579-587.

- Gould, I.M.** (1999), 'A review of the role of antibiotic policies in the control of antibiotic resistance', *Journal of Antimicrobial Chemotherapy*, 43, 4, 459-465.
- Greenhalgh, T. and Taylor, R.** (1997), 'How to read a paper: papers that go beyond numbers (qualitative research)', *BMJ*, 315, 7110, 740-743.
- Gross, G.J. and Howard, M.** (2001), 'Mothers' decision-making processes regarding health care for their children', *Public Health Nursing*, 18, 3, 157-168.
- Guillemot, D., Varon, E., Bernède, C., Weber, P., Henriët, L., Simon, S., Laurent, C., Lecoëur, H. and Carbon, C.** (2005), 'Reduction of antibiotic use in the community reduces the rate of colonization with penicillin G—nonsusceptible *Streptococcus pneumoniae*', *Clinical Infectious Diseases*, 41, 7, 930-938.
- Halcomb, E.J. and Davidson, P.M.** (2006), 'Is verbatim transcription of interview data always necessary?', *Applied nursing research : ANR*, 19, 1, 38-42.
- Hamberg, K., Johansson, E., Lindgren, G. and Westman, G.** (1994), 'Scientific rigour in qualitative research—examples from a study of women's health in family practice', *Family Practice*, 11, 2, 176-181.
- Hament, J.-M., Kimpen, J.L.L., Flier, A. and Wolfs, T.F.W.** (1999), 'Respiratory viral infection predisposing for bacterial disease: a concise review', *FEMS Immunology & Medical Microbiology*, 26, 3-4, 189-195.
- Harbarth, S., Harris, A.D., Carmeli, Y. and Samore, M.H.** (2001), 'Parallel analysis of individual and aggregated data on antibiotic exposure and resistance in gram-negative bacilli', *Clinical Infectious Diseases*, 33, 9, 1462-1468.
- Hardy, A.M. and Fowler, M.G.** (1993), 'Child care arrangements and repeated ear infections in young children', *American Journal of Public Health*, 83, 9, 1321-1325.
- Hashikawa, A.N., Juhn, Y.J., Nimmer, M., Copeland, K., Shun-Hwa, L., Simpson, P., Stevens, M.W. and Brousseau, D.C.** (2010), 'Unnecessary child care exclusions in a state that endorses national exclusion guidelines', *Pediatrics*, 125, 5, 1003-1009.
- Haskins, R. and Kotch, J.** (1986), 'Day care and illness: evidence, cost, and public policy', *Pediatrics*, 77, 6 Pt 2, 951-82.
- Hay, A.D., Wilson, A., Fahey, T. and Peters, T.J.** (2003), 'The duration of acute cough in pre-school children presenting to primary care: a prospective cohort study', *Family Practice*, 20, 6, 696-705.
- Health Protection Agency [HPA]** (2010a), 'Antimicrobial resistance', URL: <http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1191942146521?p=1191942146521> Accessed: 1/11/2010.
- Hedin, K., Petersson, C., Cars, H., Beckman, A. and Håkansson, A.** (2006), 'Infection prevention at day-care centres: Feasibility and possible effects of intervention', *Scandinavian Journal of Primary Health Care*, 24, 1, 44-49.
- Heginbotham, M.L. and The Welsh Antibiotic Study Group.** (2004), 'The epidemiology of antibiotic resistance', *The 14th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID)*, Prague.
- Hennessy, T.W., Petersen, K.M., Bruden, D., Parkinson, A.J., Hurlburt, D., Getty, M., Schwartz, B. and Butler, J.C.** (2002), 'Changes in antibiotic-prescribing practices and carriage of penicillin-resistant *Streptococcus pneumoniae*: a controlled intervention trial in rural Alaska', *Clinical Infectious Diseases*, 34, 12, 1543-1550.

- Hernandez, F.S., Morales, R.H., Cuevas, P.R. and Gallardo, G.H.** (1999), 'The day care center as a risk factor for acute respiratory infections', *Archives of medical research*, 30, 3, 216-23.
- Hill, M.** (1997), 'Participatory research with children', *Child & Family Social Work*, 2, 3, 171-183.
- Hillier, S., Bell, J., Heginbotham, M., Roberts, Z., Dunstan, F., Howard, A., Mason, B. and Butler, C.C.** (2006), 'When do general practitioners request urine specimens for microbiology analysis? The applicability of antibiotic resistance surveillance based on routinely collected data', *Journal of Antimicrobial Chemotherapy*, 58, 6, 1303-1306.
- Hillis, S.D., Miranda, C.M., McCann, M., Bender, D. and Weigle, K.** (1992), 'Day care center attendance and diarrheal morbidity in Colombia', *Pediatrics*, 90, 4, 582-588.
- Hiruta, N., Murase, T. and Okamura, N.** (2001), 'An outbreak of diarrhoea due to multiple antimicrobial-resistant Shiga toxin-producing *Escherichia coli* O26:H11 in a nursery', *Epidemiol Infect.*, 127, 2, 221-227.
- Hjern, A.** (2000), 'Socio-economic differences in daycare arrangements and use of medical care and antibiotics in Swedish preschool children', *Acta Paediatrica*, 89, 10, 1250 - 1256.
- Hoberman, A., Paradise, J.L., Rockette, H.E., Shaikh, N., Wald, E.R., Kearney, D.H., Colborn, D.K., Kurs-Lasky, M., Bhatnagar, S., Haralam, M.A., Zoffel, L.M., Jenkins, C., Pope, M.A., Balentine, T.L. and Barbadora, K.A.** (2011), 'Treatment of acute otitis media in children under 2 years of age', *New England Journal of Medicine*, 364, 2, 105-115.
- Hochbaum, G.** (1956), 'Why people seek diagnostic X-rays', *Public Health Reports*, 71, 377-380.
- Holberg, C.J., Wright, A.L., Martinez, F.D., Morgan, W.J., Taussig, L.M. and Associates, G.H.M.** (1993), 'Child day care, smoking by caregivers, and lower respiratory tract illness in the first 3 years of life', *Pediatrics*, 91, 5, 885-892.
- Hollinghurst, S., Gorst, C., Fahey, T. and Hay, A.** (2008), 'Measuring the financial burden of acute cough in pre-school children: a cost of illness study', *BMC Family Practice*, 9, 1, 10.
- Holmes, S.J., Morrow, A.L. and Pickering, L.K.** (1996), 'Child-care practices: effects of social change on the epidemiology of infectious diseases and antibiotic resistance', *Epidemiol Rev*, 18, 1, 10-28.
- Holmes, S.J., Solomon, S.L., Morrow, A.L., Schwartz, B. and Pickering, L.K.** (1997), 'Risk factors for carriage of penicillin-resistant *Streptococcus pneumoniae* (*S. pneumoniae*) in young children', *Pediatric Research*, 41, 4 PART 2, 122A.
- Howie, J.G.** (1983), 'Some non-bacteriological determinants and implications of antibiotic use in upper respiratory tract illness.', *Scand J Infect Dis* 39, Suppl, 68-72.
- HPA** (2010b), 'Guidance on infection control in schools and other childcare settings', URL: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947358374
Accessed: 06/04/2012.
- HPA** (2010c), 'Factsheet on molluscum contagiosum', URL: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947386999
Accessed: 10/02/2011

- HPA (2010d), 'Factsheet on hand, foot and mouth', URL:
http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947383816
 Accessed: 10/02/2011.
- HPA (2010e), 'Factsheet on conjunctivitis', URL:
http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947319532
 Accessed: 10/02/2011.
- HPA (2010f), 'Factsheet on whooping cough', URL:
http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947397320
 Accessed: 10/02/2011.
- HPA (2011), 'Pneumococcal disease', URL:
<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Pneumococcal/> Accessed: 28/01/2011.
- Huang, S.S., Rifas-Shiman, S.L., Kleinman, K., Kotch, J., Schiff, N., Stille, C.J., Steingard, R. and Finkelstein, J.A.** (2007), 'Parental knowledge about antibiotic use: results of a cluster-randomized, multicomunity intervention', *Pediatrics*, 119, 4, 698-706.
- Hurwitz, E.S., Gunn, W.J., Pinsky, P.F. and Schonberger, L.B.** (1991), 'Risk of respiratory illness associated with day-care attendance: a nationwide study', *Pediatrics*, 87, 1, 62-9.
- Hutto, C., Ricks, R., Garvie, M. and Pass, R.F.** (1985), 'Epidemiology of cytomegalovirus infections in young children: day care vs. home care', *Pediatric Infectious Disease*, 4, 2, 149-52.
- Istre, G.R., Conner, J.S., Broome, C.V., Hightower, A. and Hopkins, R.S.** (1985), 'Risk factors for primary invasive Haemophilus influenzae disease: Increased risk from day care attendance and school-aged household members', *The Journal of pediatrics*, 106, 2, 190-195.
- Ito, M., Hotomi, M., Maruyama, Y., Hatano, M., Sugimoto, H., Yoshizaki, T. and Yamanaka, N.** (2010), 'Clonal spread of beta-lactamase-producing amoxicillin-clavulanate-resistant (BLPACR) strains of non-typeable Haemophilus influenzae among young children attending a day care in Japan', *International journal of pediatric otorhinolaryngology*, 74, 8, 901-6.
- Jackson, L.A., Stewart, L.K., Solomon, S.L., Boase, J., Alexander, E.R., Heath, J.L., McQuillan, G.K., Coleman, P.J., Stewart, J.A. and Shapiro, C.N.** (1996), 'Risk of infection with hepatitis A, B or C, cytomegalovirus, varicella or measles among child care providers', *Pediatric Infectious Disease Journal*, 15, 7, 584-9.
- Jacobs, M.R., Felmingham, D., Appelbaum, P.C., Grüneberg, R.N. and Group, t.A.P.** (2003), 'The Alexander Project 1998–2000: susceptibility of pathogens isolated from community-acquired respiratory tract infection to commonly used antimicrobial agents', *Journal of Antimicrobial Chemotherapy*, 52, 2, 229-246.
- Jacques, P., Moens, G., Van Damme, P., Goubau, P., Vranckx, R., Steeno, J., Muylle, L. and Desmyter, J.** (1994), 'Increased risk for hepatitis A among female day nursery workers in Belgium', *Occupational Medicine*, 44, 5, 259-61.
- Janz, N., Champion, V. and Strecher, V.** (2002), 'The Health Belief Model', in Glanz, K., Rimer, B. and Viswanath, K. (eds.), *Health Behavior and Health Education: Theory, Research, and Practice* (3 Edition), San Francisco, CA, Wiley & Sons.
- Jenkins, C.R. and Dillman, D.A.** (1995), 'Towards a theory of self-administered questionnaire design', in Lyberg, L., Biemer, P., Collins, M., DeLeeuw, E.,

- Dippo, C., Schwarz, N. and Trewin, D. (eds.), *Survey Measurement and Process Quality*, New York, Wiley-Interscience.
- Jensen, J.U., Jensen, E.T., Larsen, A.R., Meyer, M., Junker, L., Ronne, T., Skov, R., Jepsen, O.B. and Andersen, L.P.** (2006), 'Control of a methicillin-resistant *Staphylococcus aureus* (MRSA) outbreak in a day-care institution', *Journal of Hospital Infection*, 63, 1, 84-92.
- Johnsen, P.J., Townsend, J.P., Bohn, T., Simonsen, G.S., Sundsfjord, A. and Nielsen, K.M.** (2009), 'Factors affecting the reversal of antimicrobial-drug resistance', *Lancet Infectious Diseases*, 9, 6, 357-364.
- Jonassen, D.** (1991), 'Objectivism versus constructivism: do we need a new philosophical paradigm?', *Educational Technology Research and Development*, 39, 3, 5-14.
- Jong, B.M.d., Ent, C.K.v.d., Zalm, M.M.v.d., Putte-Katier, N.v., Verheij, T.J.M., Kimpen, J.L.L., Uiterwaal, C.S.P.M. and group, o.b.o.t.W.s.** (2009), 'Respiratory symptoms in young infancy: child, parent and physician related determinants of drug prescription in primary care', *Pharmacoepidemiology and Drug Safety*, 18, 7, 610-618.
- Jorm, L.R. and Capon, A.G.** (1994), 'Communicable disease outbreaks in long day care centres in western Sydney: occurrence and risk factors', *Journal of Paediatrics and Child Health*, 30, 2, 151-154.
- Kahan, E., Gross, S. and Cohen, H.A.** (2005), 'Exclusion of ill children from child-care centers in Israel', *Patient education and counseling*, 56, 1, 93-97.
- Kahan, E., Gross, S., Horev, Z., Grosman, z. and Cohen, H.** (2006), 'Pediatrician attitudes to exclusion of ill children from child-care centers in Israel: pressure on ambulatory practices', *Patient education and counseling*, 60, 2, 164-170.
- Katsarolis, I., Poulakou, G., Analitis, A., Matthaopoulou, I., Roilides, E., Antachopoulos, C., Kafetzis, D.A., Daikos, G.L., Vorou, R., Koubaniou, C., Pneumatikos, I., Samonis, G., Syriopoulou, V., Giamarellou, H. and Kanellakopoulou, K.** (2009), 'Risk factors for nasopharyngeal carriage of drug-resistant *Streptococcus pneumoniae*: data from a nation-wide surveillance study in Greece', *Bmc Infectious Diseases*, 9.
- Kelley, K., Clark, B., Brown, V. and Sitzia, J.** (2003), 'Good practice in the conduct and reporting of survey research', *International Journal for Quality in Health Care*, 15, 3, 261-266.
- Kellner, J.D., Ford-Jones, E.L. and Toronto Child Care Centre Study Group** (1999), 'Streptococcus pneumoniae carriage in children attending 59 Canadian child care centers.', *Archives of Pediatrics & Adolescent Medicine*, 153, 5, 495-502.
- King, N. and Horrocks, C.** (2010), *Interviews in Qualitative Research*, SAGE.
- Kleinman, A.** (1980), *Patients and Healers in the Context of Culture: An Exploration of the Borderland Between Anthropology, Medicine, and Psychiatry*, Los Angeles, University of California Press.
- Koopman, L.P., Smit, H.A., Heijnen, M.-L.A., Wijga, A., van Strien, R.T., Kerkhof, M., Gerritsen, J., Brunekreef, B., de Jongste, J.C. and Neijens, H.J.** (2001), 'Respiratory infections in infants: interaction of parental allergy, child care, and siblings—the PIAMA study', *Pediatrics*, 108, 4, 943-948.
- Kristinsson, K.** (1997), 'Effect of antimicrobial use and other risk factors on antimicrobial resistance in pneumococci', *Microbial Drug Resistance*, 3, 2, 117-123.

- Krosnick, J.A. and Presser, S.** (2010), 'Question and questionnaire design', in Marsden, P.V. and Wright, J.D. (eds.), *Handbook of Survey Research* (2 Edition), Bingley, Emerald Group Publishing.
- Kumar, S., Little, P. and Britten, N.** (2003), 'Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study', *BMJ*, 326, 7381, 138-.
- Kuzujanakis, M., Kleinman, K., Rifas-Shiman, S. and Finkelstein, J.A.** (2003), 'Correlates of parental antibiotic knowledge, demand, and reported use', *Ambulatory Pediatrics*, 3, 4, 203-210.
- Kvale, S.** (1996), *InterViews: An Introduction to Qualitative Research Interviewing*, London, SAGE.
- Lamaro-Cardoso, J., de Lencastre, H., Kipnis, A., Pimenta, F.C., Oliveira, L.S.C., Oliveira, R.M., Nouer, S.S., Aires-de-Sousa, M., Milheirico, C. and Andrade, A.L.S.** (2009), 'Molecular epidemiology and risk factors for nasal carriage of *Staphylococcus aureus* and Methicillin-resistant *S. aureus* in infants attending day care centers in Brazil', *J. Clin. Microbiol.*, 47, 12, 3991-3997.
- Landis, S.E. and Chang, A.** (1991), 'Child care options for ill children', *Pediatrics*, 88, 4, 705-718.
- Landis, S.E., Earp, J.A.L. and Sharp, M.** (1988), 'Day-Care center exclusion of sick children: comparison of opinions of day-care staff, working mothers, and pediatricians', *Pediatrics*, 81, 5, 662-667.
- Levine, O.S., Farley, M., Harrison, L.H., Lefkowitz, L., McGeer, A. and Schwartz, B.** (1999), 'Risk factors for invasive pneumococcal disease in children: a population-based case-control study in North America', *Pediatrics*, 103, 3.
- Levy, S.B., FitzGerald, G.B. and Macone, A.B.** (1976), 'Changes in intestinal flora of farm personnel after introduction of a Tetracycline-supplemented feed on a farm', *New England Journal of Medicine*, 295, 11, 583-588.
- Levy, S.B. and Marshall, B.** (2004), 'Antibacterial resistance worldwide: causes, challenges and responses', *Nature Medicine*, 10, 12, S122-S129.
- Lincoln, Y.S. and Guba, E.G.** (1985), *Naturalistic Inquiry*, Newbury Park, CA, Sage Publications.
- Little, P., Gould, C., Williamson, I., Warner, G., Gantley, M. and Kinmonth, A.L.** (1997), 'Reattendance and complications in a randomised trial of prescribing strategies for sore throat: the medicalising effect of prescribing antibiotics', *BMJ*, 315, 7104, 350-352.
- Little, P., Somerville, J., Williamson, I., Warner, G., Moore, M., Wiles, R., George, S., Smith, A. and Peveler, R.** (2001), 'Family influences in a cross-sectional survey of higher child attendance.', *British Journal of General Practice*, 51, 473, 977-981.
- Ljubin-Sternak, S., Slavic-Vrzic, V., Vilibic-Cavlek, T., Aleraj, B. and Gjenero-Margan, I.** (2011), 'Outbreak of hand, foot and mouth disease caused by Coxsackie A16 virus in a childcare centre in Croatia, February to March 2011', *Euro Surveillance: Bulletin Europeen sur les Maladies Transmissibles = European Communicable Disease Bulletin*, 16, 21.
- Louhi-Pirkanniemi, K., Rautava, P., Aromaa, M., Ojanlatva, A., Mertsola, J., Helenius, H. and Sillanpää, M.** (2004), 'Recurrent antibiotic use in a small child and the effects on the family', *Scandinavian Journal of Primary Health Care*, 22, 1, 16-21.

- Louhiala, P.J., Jaakkola, N., Ruotsalainen, R. and Jaakkola, J.J.** (1995), 'Form of day care and respiratory infections among Finnish children', *American Journal of Public Health*, 85, 8 Pt 1, 1109-12.
- Lu, N., Samuels, M.E., Shi, L., Baker, S.L., Glover, S.H. and Sanders, J.M.** (2004), 'Child day care risks of common infectious diseases revisited', *Child: Care, Health & Development*, 30, 4, 361-8.
- M'Ikanatha, N.M., Gasink, L.B., Kunselman, A., Warren, K. and Lautenbach, E.** (2010), 'Child care center exclusion policies and directors' opinions on the use of antibiotics', *Infection Control & Hospital Epidemiology*, 31, 4, 408-11.
- MacDonald, K.L., White, K.A., Heiser, J., Gabriel, L. and Osterholm, M.T.** (1990), 'Evaluation of a sick child day care program: lack of detected increased risk of subsequent infections', *Pediatric Infectious Disease Journal*, 9, 1, 15-20.
- Macfarlane, J., Holmes, W., Macfarlane, R. and Britten, N.** (1997), 'Influence of patients' expectations on antibiotic management of acute lower respiratory tract illness in general practice: questionnaire study', *BMJ*, 315, 7117, 1211-1214.
- Magee, J.T., Pritchard, E.L., Fitzgerald, K.A., Dunstan, F.D.J. and Howard, A.J.** (1999), 'Antibiotic prescribing and antibiotic resistance in community practice: retrospective study, 1996-8', *BMJ*, 319, 7219, 1239-1240.
- Mainous, A., Evans, M., Hueston, W., Titlow, W. and McCown, L.** (1998), 'Patterns of antibiotic-resistant *Streptococcus pneumoniae* in children in a day-care setting', *J Fam Pract*, 46, 2, 119-120.
- Malhotra-Kumar, S., Lammens, C., Coenen, S., Van Herck, K. and Goossens, H.** (2007), 'Effect of azithromycin and clarithromycin therapy on pharyngeal carriage of macrolide-resistant streptococci in healthy volunteers: a randomised, double-blind, placebo-controlled study', *The Lancet*, 369, 9560, 482-490.
- Mangione-Smith, R., McGlynn, E.A., Elliott, M.N., Krogstad, P. and Brook, R.H.** (1999), 'The relationship between perceived parental expectations and pediatrician antimicrobial prescribing behavior', *Pediatrics*, 103, 4, 711-718.
- Mangione-Smith, R., McGlynn, E.A., Elliott, M.N., McDonald, L., Franz, C.E. and Kravitz, R.L.** (2001), 'Parent expectations for antibiotics, physician-parent communication, and satisfaction', *Arch Pediatr Adolesc Med*, 155, 7, 800-806.
- Manikkavasagan, G., Dezateux, C., Wade, A. and Bedford, H.** (2010), 'The epidemiology of chickenpox in UK 5-year olds: an analysis to inform vaccine policy', *Vaccine*, 28, 48, 7699-7705.
- Maor, Y., Raz, M., Rubinstein, E., Derazne, E., Ringel, S., Roizin, H., Rahav, G., Regev-Yochay, G. and group, f.t.I.J.A.P.s.** (2011), 'Changing parents' opinions regarding antibiotic use in primary care', *European Journal of Pediatrics*, 170, 3, 359-364.
- Marshall, C. and Rossman, G.B.** (1999), *Designing Qualitative Research* (3rd Edition), Newbury Park, CA, Sage.
- McCormick, A., Fleming D and J., C.** (1995), 'Morbidity statistics from general practice. Fourth national study 1991-1992.', London: HMSO.
- Merenstein, D., Diener-West, M., Krist, A., Pinneger, M. and Cooper, L.A.** (2005), 'An assessment of the shared-decision model in parents of children with acute otitis media', *Pediatrics*, 116, 6, 1267-1275.

- Meropol, S.B., Chen, Z. and Metlay, J.P.** (2009), 'Reduced antibiotic prescribing for acute respiratory infections in adults and children', *British Journal of General Practice*, 59, 567, e321-e328.
- Miller, E., Fairley, C.K., Cohen, B.J. and Seng, C.** (1998), 'Immediate and long term outcome of human parvovirus B19 infection in pregnancy', *BJOG: An International Journal of Obstetrics & Gynaecology*, 105, 2, 174-178.
- Miller, J.K.M.** (1986), *Reliability and Validity in Qualitative Research.*, London, Sage.
- Moore, M., Little, P., Rumsby, K., Kelly, J., Watson, L., Warner, G., Fahey, T. and Williamson, I.** (2009), 'Effect of antibiotic prescribing strategies and an information leaflet on longer-term reconsultation for acute lower respiratory tract infection', *British Journal of General Practice*, 59, 567, 728-734.
- Morais, L.M., de Paula, V.S., Arantes, M.R., Oliveira, M.L. and Gaspar, A.M.** (2006), 'Early infection and asymptomatic spread of hepatitis A virus in a public child care center in Rio de Janeiro, Brazil: should attending children under two years of age be vaccinated?', *Memorias do Instituto Oswaldo Cruz*, 101, 4, 401-5.
- Morgan, G. and Smircich, L.** (1980), 'The case for qualitative research', *The Academy of Management Review*, 5, 4, 491-500.
- Moro, M., M, M., Gagliotti, C., Di Mario, S., Resti, D. and The "Progetto Bambini a Antibiotici (ProBA)" Regional Group** (2009), 'Why do paediatricians prescribe antibiotics? Results of an Italian regional project', *BMC Pediatric*.
- Nasrin, D., Collignon, P.J., Roberts, L., Wilson, E.J., Pilotto, L.S. and Douglas, R.M.** (2002), 'Effect of β lactam antibiotic use in children on pneumococcal resistance to penicillin: Prospective cohort study', *BMJ*, 324, 7328, 28-30.
- National Childcare Campaign: Daycare Trust** (2010), 'Childcare options', URL: <http://www.daycaretrust.org.uk/pages/childcare-options.html> Accessed: 12/11/2010.
- National Foundation for Infectious Diseases** (2006), 'Pneumococcal disease', URL: http://www.nfid.org/pneumococcal/media_backgrounder.html Accessed: 29/01/2011
- National Health Service [NHS] Prescription Services** (2011), 'National antibiotics charts - prescription services information services 2011', NHS Business Services Authority.
- National Institute for Health and Clinical Excellence [NICE].** (2008), 'Respiratory tract infections – antibiotic prescribing: prescribing of antibiotics for self-limiting respiratory tract infections in adults and children in primary care. ', *Clinical guideline 69*, URL: <http://www.nice.org.uk/nicemedia/pdf/CG69FullGuideline.pdf> Accessed: 16/04/2012.
- National Institute of Child Health and Human Development Early Child Care Research Network** (2001), 'Child care and common communicable illnesses: results from the National Institute of Child Health and Human Development Study of Early Child Care', *Archives of Pediatrics & Adolescent Medicine*, 155, 4, 481-8.
- Neill, S.J.** (2000), 'Acute childhood illness at home: the parents' perspective', *Journal of Advanced Nursing*, 31, 4, 821-832.
- Nesti, M. and Goldbaum, M.** (2007), 'Infectious diseases and daycare and preschool education.', *J Pediatr (Rio J)*, 83, 4, 299-312.

- Neto, A.S., Lavado, P., Flores, P., Dias, R., Pessanha, M.A., Sousa, E., Palminha, J.M., Caniça, M., Esperança-Pina, J.** (2003), 'Risk factors for the nasopharyngeal carriage of respiratory pathogens by Portuguese children: phenotype and antimicrobial susceptibility of *Haemophilus influenzae* and *Streptococcus pneumoniae*.', *Microbial Drug Resistance*, 9, 1, 99-108.
- NHS** (2009a), 'NHS Choices: Respiratory tract infection', URL: <http://www.nhs.uk/conditions/Respiratory-tract-infection/Pages/Introduction.aspx> Accessed: 07/02/2011.
- NHS** (2009b), 'NHS choices: diarrhoea and vomiting in children', URL: <http://www.nhs.uk/Planners/birthtofive/Pages/Diarrhoeaandvomiting.aspx> Accessed: 04/02/2011.
- NHS** (2009c), 'How long is someone infectious after a viral condition?', URL: <http://www.nhs.uk/chq/Pages/1068.aspx?CategoryID=67&SubCategoryID=150> Accessed: 10/02/2011.
- NHS** (2010), 'Treating infective conjunctivitis', *NHS Choices*, URL: <http://www.nhs.uk/Conditions/Conjunctivitis-infective/Pages/Treatment.aspx> Accessed: 15/04/2012.
- Nicolle, L., Strausbaugh, L. and Garibaldi, R.** (1996), 'Infections and antibiotic resistance in nursing homes', *Clin. Microbiol. Rev.*, 9, 1, 1-17.
- Nilsson, P., Köhler, M., Östergren, P.-O. and Khan, F.A.** (2007), 'Children exposed to environmental smoking have a higher antibiotic consumption', *Vaccine*, 25, 13, 2533-2535.
- Nilsson, P. and Laurell, M.H.** (2001), 'Carriage of penicillin-resistant *Streptococcus pneumoniae* by children in day-care centers during an intervention program in Malmo, Sweden', *Pediatric Infectious Disease Journal*, 20, 12, 1144-9.
- Nilsson, P. and Laurell, M.H.** (2005), 'Impact of socioeconomic factors and antibiotic prescribing on penicillin- non-susceptible *Streptococcus pneumoniae* in the city of Malmo', *Scandinavian Journal of Infectious Diseases*, 37, 6-7, 436-41.
- Nordlie, A. and Andersen, B.** (2004), 'Parents' attitude to physician's role in the prescription of antibiotics to their children', *Tidsskr Nor Laegeforen*, 124, 17, 2240- 2241.
- Nowak, R.** (1994), 'Hungary sees an improvement in penicillin resistance', *Science*, 264, 5157, 364.
- Nunes, S., Sa-Leao, R., Carrico, J., Alves, C.R., Mato, R., Avo, A.B., Saldanha, J., Almeida, J.S., Sanches, I.S. and de Lencastre, H.** (2005), 'Trends in drug resistance, serotypes, and molecular types of *Streptococcus pneumoniae* colonizing preschool-age children attending day care centers in Lisbon, Portugal: a summary of 4 years of annual surveillance', *Journal of Clinical Microbiology*, 43, 3, 1285-93.
- Nurmi, T., Salminen, E. and Ponka, A.** (1991), 'Infections and other illnesses of children in Day-Care centers in Helsinki II: The economic losses', *Infection*, 19, 5, 331-335.
- OECD** (2011a), 'PF3.2: Enrolment in childcare and preschools', *OECD Family Database.*, Paris.
- OECD** (2011b), 'PF4.1: Typology of childcare and early education services', *OECD Family Database*, Paris.
- Oliver, C.** (2011), 'Critical realist grounded theory: a new approach for social work research', *British Journal of Social Work*.

- Organization for Economic Co-operation and Development (OECD)** (2011), 'PF3.2: Enrolment in childcare and preschools', *OECD Family Database*, Paris.
- Osterholm, M.T.** (1994), 'Infectious disease in child day care: an overview', *Pediatrics*, 94, 6, 987-a-990.
- Paisley, J., Lauer, B.A., McIntosh, K., Glode, M.P., Schachter, J., Rumack, C.** (1984), 'Pathogens associated with acute lower respiratory tract infection in young children.', *Pediatr Infect Dis*, 3, 1, 14-19.
- Panella, H., Bayas, J.M., Maldonado, R., Cayla, J.A., Vilella, A., Sala, C., Carbo, J.M. and Bruguera, M.** (1998), 'Epidemic outbreak of hepatitis A related to a day care center', *Gastroenterologia y Hepatologia*, 21, 7, 319-23.
- Pappas, D., Schwartz, R., Sheridan, M. and Hayden, G.** (2000), 'Medical Exclusion of Sick Children From Child Care Centers: A Plea for Reconciliation', *Southern Medical Journal*, 93, 6, 575‐578.
- Parsons, T.** (1951), 'Illness and the role of the physician: a sociological perspective', *American Journal of Orthopsychiatry*, 21, 3, 452-460.
- Pass, R.F., Hutto, C., Ricks, R. and Cloud, G.A.** (1986), 'Increased rate of cytomegalovirus infection among parents of children attending day-care centers', *New England Journal of Medicine*, 314, 22, 1414-1418.
- Pass, R.F., Hutto, S.C., Reynolds, D.W. and Polhill, R.B.** (1984), 'Increased frequency of cytomegalovirus infection in children in group day care', *Pediatrics*, 74, 1, 121-6.
- Patton, M.Q.** (1999), 'Enhancing the quality and credibility of qualitative analysis.', *Health Statistics Quarterly*, 34, (5 pt 20, 1189=1208.
- Petersen, I., Johnson, A.M., Islam, A., Duckworth, G., Livermore, D.M. and Hayward, A.C.** (2007), 'Protective effect of antibiotics against serious complications of common respiratory tract infections: retrospective cohort study with the UK General Practice Research Database', *BMJ*, 335, 7627, 982-.
- Pettersson, C. and Hakansson, A.** (1996), 'High-consulting children indicate illness-prone families', *Scand J Prim Health Care.*, 14, 2, 71-78.
- Pettersson, C. and Håkansson, A.** (1990), 'A retrospective study of respiratory tract infections among children in different forms of day care', *Scandinavian Journal of Primary Health Care*, 8, 2, 119-122.
- Petrosillo, N., Pantosti, A., Bordi, E., Spano, A., Del Grosso, M., Tallarida, B. and Ippolito, G.** (2002), 'Prevalence, determinants, and molecular epidemiology of Streptococcus pneumoniae isolates colonizing the nasopharynx of healthy children in Rome', *European Journal of Clinical Microbiology & Infectious Diseases*, 21, 3, 181-8.
- Petursson, P.** (2005), 'GPs' reasons for "non-pharmacological" prescribing of antibiotics A phenomenological study', *Scandinavian Journal of Primary Health Care*, 23, 2, 120-125.
- Pichichero, M.E.** (1999), 'Understanding Antibiotic Overuse for Respiratory Tract Infections in Children', *Pediatrics*, 104, 6, 1384-1388.
- Pichichero, M.E.** (2002), 'Dynamics of antibiotic prescribing for children', *JAMA*, 287, 23, 3133-3135.
- Pohjanpelto, P. and Ponka, A.** (1985), 'Outbreak of hepatitis A in a day care center in Finland', *Scandinavian Journal of Infectious Diseases*, 17, 3, 331-2.
- Poland, B.D.** (1995), 'Transcription quality as an aspect of rigor in qualitative research', *Qualitative Inquiry*, 1, 3, 290-310.

- Polyzoi, E. and Babb, J.C.** (2004), 'The challenge of caring for mildly ill children: a Canadian national childcare study', *Early Childhood Research Quarterly*, 19, 3, 431-448.
- Ponka, A., Nurmi, T., Salminen, E. and Nykyri, E.** (1991), 'Infections and other illnesses of children in day-care centers in Helsinki. I: Incidences and effects of home and day-care center variables', *Infection*, 19, 4, 230-6.
- Priest, P., Yudkin, P., McNulty, C., Mant, D. and Wise, R.** (2001), 'Antibacterial prescribing and antibacterial resistance in English general practice: cross sectional study Commentary: antibiotic resistance is a dynamic process', *BMJ*, 323, 7320, 1037-1041.
- Principi, N., Marchisio, P., Schito, G.C. and Mannelli, S.** (1999), 'Risk factors for carriage of respiratory pathogens in the nasopharynx of healthy children. Ascanius Project Collaborative Group', *Pediatric Infectious Disease Journal*, 18, 6, 517-23.
- Pshetizky, Y., Naimer, S. and Shvartzman, P.** (2003), 'Acute otitis media—a brief explanation to parents and antibiotic use', *Family Practice*, 20, 4, 417-419.
- Rasmussen, F.** (1989), 'Mothers' benefit of a self-care booklet and a self-care educational session at child health centres', *Social Science & Medicine*, 29, 2, 205-212.
- Rasmussen, F. and Sundelin, C.** (1990), 'Use of medical care and antibiotics among preschool children in different day care settings', *Acta Paediatrica Scandinavica*, 79, 8-9, 838-46.
- Rauch, A.M., O'Ryan, M., Van, R. and Pickering, L.K.** (1990), 'Invasive disease due to multiply resistant *Streptococcus pneumoniae* in a Houston, Texas, day-care center', *Am J Dis Child*, 144, 8, 923-927.
- Regev-Yochay, G., Raz, M., Shainberg, B., Dagan, R., Varon, M., Dushenat, M. and Rubinstein, E.** (2003), 'Independent risk factors for carriage of penicillin-non-susceptible *Streptococcus pneumoniae*', *Scandinavian Journal of Infectious Diseases*, 35, 4, 219-22.
- Reichler, M.R., Allphin, A.A., Breiman, R.F., Schreiber, J.R., Arnold, J.E., McDougal, L.K., Facklam, R.R., Boxerbaum, B., May, D., Walton, R.O. and Jacobs, M.R.** (1992), 'The spread of multiply resistant *Streptococcus pneumoniae* at a day care center in Ohio', *Journal of Infectious Diseases*, 166, 6, 1346-1353.
- Reves, R.R., Morrow, A.L., Bartlett, A.V., Caruso, C.J., Plumb, R.L., Lu, B.T. and Pickering, L.K.** (1993), 'Child day care increases the risk of clinic visits for acute diarrhea and diarrhea due to Rotavirus', *American Journal of Epidemiology*, 137, 1, 97-107.
- Reves, R.R., Murray, B.E., Pickering, L.K., Prado, D., Maddock, M. and Bartlett, A.V., 3rd** (1987), 'Children with trimethoprim- and ampicillin-resistant fecal *Escherichia coli* in day care centers', *Journal of Infectious Diseases*, 156, 5, 758-62.
- Reves, R.R. and Pickering, L.K.** (1992), 'Impact of child day care on infectious diseases in adults. [Review] [60 refs]', *Infectious Disease Clinics of North America*, 6, 1, 239-50.
- Richardson, M., Elliman, D., Maguire, H., Simpson, J. and Nicoll, A.** (2001), 'Evidence base of incubation periods, periods of infectiousness and exclusion policies for the control of communicable diseases in schools and preschools', *The Pediatric Infectious Disease Journal*, 20, 4, 380-91.

- Rietveld, R., ter Riet, G., Bindels, P., Bink, D., Sloos, J. and Van Weert, H.** (2005), 'The treatment of acute infectious conjunctivitis with fusidic acid: a randomised controlled trial', *Br J Gen Pract*, 55, 924 - 930.
- Roberts, J.A., Kruger, P., Paterson, D.L. and Lipman, J.** (2008), 'Antibiotic resistance - What's dosing got to do with it?', *Critical Care Medicine*, 36, 8, 2433-2440.
- Rose, P., Ziebland, S., Harnden, A., Mayon-White, R. and Mant, D.** (2006), 'Why do General Practitioners prescribe antibiotics for acute infectious conjunctivitis in children? Qualitative interviews with GPs and a questionnaire survey of parents and teachers', *Fam pract*, 23, 226 - 232.
- Rosenstock, I.** (1966), 'Why people use health services', *Milbank Memorial Fund Quarterly* 44, 94-124.
- Rosenstock, I.M., Strecher, V.J. and Becker, M.H.** (1988), 'Social Learning Theory and the Health Belief Model', *Health Education & Behavior*, 15, 2, 175-183.
- Sá-Leão, R., Nunes, S., Brito-Avo, A., Alves, C.R., Carrico, J.A., Saldanha, J., Almeida, J.S., Santos-Sanches, I. and de Lencastre, H.** (2008), 'High rates of transmission of and colonization by *Streptococcus pneumoniae* and *Haemophilus influenzae* within a day care center revealed in a longitudinal study', *Journal of Clinical Microbiology*, 46, 1, 225-34.
- Sá-Leão, R., Tomasz, A., Sanches, I.S., Brito-Avô, A., Vilhelmsson, S.E., Kristinsson, K.G. and de Lencastre, H.** (2000a), 'Carriage of internationally spread clones of *Streptococcus pneumoniae* with unusual drug resistance patterns in children attending day care centers in Lisbon, Portugal', *Journal of Infectious Diseases*, 182, 4, 1153-1160.
- Sá-Leão, R., Tomasz, A., Sanches, I.S., Nunes, S., Alves, C.R., Avo, A.B., Saldanha, J., Kristinsson, K.G. and de Lencastre, H.** (2000b), 'Genetic diversity and clonal patterns among antibiotic-susceptible and -resistant *Streptococcus pneumoniae* colonizing children: day care centers as autonomous epidemiological units', *J. Clin. Microbiol.*, 38, 11, 4137-4144.
- Sacks, J.J. and Addiss, D.G.** (1995), 'The perceived needs of child care center directors in preventing injuries and infectious diseases', *American Journal of Public Health*, 85, 2, 266-7.
- Sadetzki, S., Rostmi, N. and Modan, B.** (1999), 'Hepatitis A outbreak originating in a day care center: a community case report', *European Journal of Epidemiology*, 15, 6, 549-51.
- Sakata, H., Toyonaga, Y., Sato, Y., Hanaki, H., Nonoyama, M., Oishi, T. and Sunakawa, K.** (2009), 'Nationwide survey of the development of drug-resistance in the pediatric field: drug sensitivity of *Haemophilus influenzae* in Japan', *Journal of Infection and Chemotherapy*, 15, 6, 402-409.
- Sale, J.E.M., Lohfeld, L.H. and Brazil, K.** (2002), 'Revisiting the quantitative-qualitative debate: implications for mixed-methods research', *Quality & Quantity*, 36, 1, 43-53.
- Samore, M.H., Magill, M.K., Alder, S.C., Severina, E., Morrison-de Boer, L., Lyon, J.L., Carroll, K., Leary, J., Stone, M.B., Bradford, D., Reading, J., Tomasz, A. and Sande, M.A.** (2001), 'High rates of multiple antibiotic resistance in *Streptococcus pneumoniae* from healthy children living in isolated rural communities: association With Cephalosporin use and intrafamilial transmission', *Pediatrics*, 108, 4, 856-865.
- Sandelowski, M.** (1995), 'Sample size in qualitative research', *Research in Nursing & Health*, 18, 2, 179-183.

- Sanders, S., Glasziou Paul, P., Del Mar Chris, B. and Rovers Maroeska, M.** (2004), 'Antibiotics for acute otitis media in children', *Cochrane Database of Systematic Reviews*, Chichester, UK, John Wiley & Sons, Ltd.
- Sato, Y., Toyonaga, Y., Hanaki, H., Nonoyama, M., Oishi, T. and Sunakawa, K.** (2009), 'Nationwide survey of the development of drug-resistant pathogens in the pediatric field: drug sensitivity of *Streptococcus pneumoniae* in Japan', *Journal of Infection and Chemotherapy*, 15, 6, 396-401.
- Saunders, N.R., Tennis, O., Jacobson, S., Gans, M. and Dick, P.T.** (2003), 'Parents' responses to symptoms of respiratory tract infection in their children', *Canadian Medical Association Journal*, 168, 1, 25-30.
- Scalzo, C., Williams, P.G. and Holmbeck, G.N.** (2005), 'Maternal self-assessed health and emotionality predict maternal response to child illness', *Children's Health Care*, 34, 1, 61-79.
- Schneider-Lindner, V., Quach, C., Hanley, J.A. and Suissa, S.** (2011), 'Secular trends of antibacterial prescribing in UK paediatric primary care', *Journal of Antimicrobial Chemotherapy*, 66, 2, 424-433.
- Schnellinger, M., Finkelstein, M., Thygeson, M.V., Vander Velden, H., Karpas, A. and Madhok, M.** (2010), 'Animated video vs pamphlet: comparing the success of educating parents about proper antibiotic use', *Pediatrics*, 125, 5, 990-996.
- Schwartz, R.H., Freij, B.J., Ziai, M. and Sheridan, M.J.** (1997), 'Antimicrobial prescribing for acute purulent rhinitis in children: a survey of pediatricians and family practitioners', *The Pediatric Infectious Disease Journal*, 16, 2, 185-190.
- Seppala, H., Klaukka, T., Vuopio-Varkila, J., Muotiala, A., Helenius, H., Lager, K., Huovinen, P. and The Finnish Study Group for Antimicrobial Resistance** (1997), 'The effect of changes in the consumption of macrolide antibiotics on Erythromycin resistance in group A *Streptococci* in Finland', *N Engl J Med*, 337, 7, 441-446.
- Shapiro, E.D., Kuritsky, J. and Potter, J.** (1986), 'Policies for the exclusion of ill children from group day care: an unresolved dilemma', *Reviews of Infectious Diseases*, 8, 4, 622-625.
- Sheikh, A. and Hurwitz, B.** (2001), 'Topical antibiotics for acute bacterial conjunctivitis: a systematic review', *British Journal of General Practice*, 51, 467, 473-477.
- Shenton, A.K.** (2004), 'Strategies for ensuring trustworthiness in qualitative research projects', *Education for Information*, 22, 2, 63-75.
- Siedler, A., Reinert, R.R., Toschke, M., Al-Lahham, A., von Kries, R. and Esped Clinic and Laboratory Study Group** (2005), 'Regional differences in the epidemiology of invasive pneumococcal disease in toddlers in Germany', *Pediatric Infectious Disease Journal*, 24, 12, 1114-5.
- Silverstein, M., Sales, A.E. and Koepsell, T.D.** (2003), 'Health care utilization and expenditures associated with child care attendance: a nationally representative sample', *Pediatrics*, 111, 4, e371-e375.
- Skull, S.A., Ford-Jones, E.L., Kulin, N.A., Einarson, T.R. and Wang, E.E.** (2000), 'Child care center staff contribute to physician visits and pressure for antibiotic prescription', *Archives of Pediatrics & Adolescent Medicine*, 154, 2, 180-3.
- Slack-Smith, L.M., Read, A.W. and Stanley, F.J.** (2000), 'Parental attitudes to health of children in child-care centres and options when children are ill', *Journal of Paediatrics and Child Health*, 36, 6, 577-580.

- Slack-Smith, L.M., Read, A.W. and Stanley, F.J.** (2002a), 'Experience of respiratory and allergic illness in children attending childcare', *Child: Care, Health and Development*, 28, 2, 171-177.
- Slack-Smith, L.M., Read, A.W. and Stanley, F.J.** (2002b), 'A prospective study of absence for illness and injury in childcare children', *Child: Care, Health and Development*, 28, 6, 487-494.
- Smith Susan, M., Fahey, T., Smucny, J. and Becker Lorne, A.** (2004), 'Antibiotics for acute bronchitis', *Cochrane Database of Systematic Reviews*, Chichester, UK, John Wiley & Sons, Ltd.
- Souli, M., Volonakis, K., Kapaskelis, A., Galani, I., Grammelis, V., Vorou, R., Tsivra, M., Chryssouli, Z., Katsala, D. and Giamarellou, H.** (2007), 'Characterisation of macrolide-non-susceptible Streptococcus pneumoniae colonising children attending day-care centres in Athens, Greece during 2000 and 2003', *Clinical Microbiology & Infection*, 13, 1, 70-7.
- Speight, S., Smith, R., La Valle, I., Schneider, V., Perry, J., Coshall, C. and Tipping, S.** (2008), 'Childcare and early years survey of parents 2008', National Centre for Social Research.
- Spellberg, B., Powers, John H., Brass, Eric P., Miller, Loren G. and Edwards, J., John E.** (2004), 'Trends in Antimicrobial Drug Development: Implications for the Future', *Clinical Infectious Diseases*, 38, 9, 1279-1286.
- Spinks, A., Glasziou Paul, P. and Del Mar Chris, B.** (2006), 'Antibiotics for sore throat', *Cochrane Database of Systematic Reviews*, Chichester, UK, John Wiley & Sons, Ltd.
- Spyridis, N. and Sharland, M.** (2008), 'The European Union Antibiotic Awareness Day: the paediatric perspective', *Arch Dis Child*, 93, 11, 909-910.
- Staat, M.A., Morrow, A., Reves, R.R., Bartlett, A.V. and Pickering, L.K.** (1991), 'Diarrhea in children newly enrolled in day-care centers in Houston', *The Pediatric Infectious Disease Journal*, 10, 4, 282-286.
- Standing Medical Advisory Committee [SMAC].** (1998), 'The path of least resistance.', London, Department of Health.
- Steinke, D. and Davey, P.** (2001), 'Association between antibiotic resistance and community prescribing: a critical review of bias and confounding in published studies', *Clinical Infectious Diseases*, 33, s3, S193-S205.
- Stephenson, W.P., Doern, G., Gantz, N., Lipworth, L. and Chapin, K.** (1985), 'Pharyngeal carriage rates of Haemophilus influenzae, type b and non-b, and prevalence of ampicillin-resistant Haemophilus influenzae among healthy day-care children in central Massachusetts', *American Journal of Epidemiology*, 122, 5, 868-75.
- Steup, M.** (2005), 'Epistemology', in Zalta, E.N. (ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2010 Edition Edition), Stamford, USA., URL: <http://plato.stanford.edu/entries/epistemology/> Accessed: 22/11/2010.
- Stivers, T., Mangione-Smith, R., Elliott, M., McDonald, L. and Heritage, J.** (2003), 'Why do physicians think parents expect antibiotics? What parents report vs what physicians believe.', *J Fam Pract*, 52, 2, 140-148.
- Strangert, K.** (1977), 'Otitis media in young children in different types of day-care.', *Scand J Infect Dis*, 9, 2, 119-123.
- Strangert, K., Carlstrom, G., Jeansson, S. and Nord, C.E.** (1976), 'Infections in preschool children in group day care', *Acta Paediatrica Scandinavica*, 65, 4, 455-463.
- Stratchounski, L.S., Kretchikova, O.I., Reshedko, G.K., Stetsiouk, O.U., Kandalov, M.M., Egorova, O.A., Boyko, L.M., Ryabkova, E.L.,**

- Tarasova, G.D. and Blokhin, B.M.** (2001), 'Antimicrobial susceptibility of nasopharyngeal isolates of Haemophilus influenzae from healthy children in day-care centres: results of multicentre study in Russia', *International Journal of Antimicrobial Agents*, 18, 4, 347-51.
- Sudman, S. and Bradburn, N.M.** (1982), *Asking Questions: the Definitive Guide to Questionnaire Design : For Market Research, Political Polls, and Social and Health Questionnaires*, San Francisco, Calif, Jossey-Bass.
- Summerfield, C. and Babb, P.** (2004), 'Social trends', *Number 34*, Office for National Statistics.
- Sundqvist, M., Geli, P., Andersson, D.I., Sjölund-Karlsson, M., Runehagen, A., Cars, H., Abelson-Storby, K., Cars, O. and Kahlmeter, G.** (2010), 'Little evidence for reversibility of trimethoprim resistance after a drastic reduction in trimethoprim use', *Journal of Antimicrobial Chemotherapy*, 65, 2, 350-360.
- Takala, A.K., Jero, J., Kela, E., Rönberg, P.-R., Koskeniemi, E. and Eskola, J.** (1995), 'Risk factors for primary invasive pneumococcal disease among children in Finland', *JAMA: The Journal of the American Medical Association*, 273, 11, 859-864.
- Tan, T.Q., Mason, E.O., Jr and Kaplan, S.L.** (1993), 'Penicillin-resistant systemic pneumococcal infections in children: a retrospective case-control study', *Pediatrics*, 92, 6, 761-767.
- Taubes, G.** (2008), 'The bacteria fight back', *Science*, 321, 5887, 356-361.
- Taveras, E.M., LaPelle, N., Gupta, R.S. and Finkelstein, J.A.** (2006), 'Planning for health promotion in low-income preschool child care settings: focus groups of parents and child care providers', *Ambulatory Pediatrics*, 6, 6, 342-346.
- Taylor, J.A., Kwan-Gett, T.S.C. and McMahon, E.M.J.** (2005), 'Effectiveness of a parental educational intervention in reducing antibiotic use in children: a randomized controlled trial', *The Pediatric Infectious Disease Journal*, 24, 6, 489-493.
- Taylor, M., Adams, C.L. and Ellis, A.** (2008), 'Gatekeepers of health: a qualitative assessment of child care centre staff's perspectives, practices and challenges to enteric illness prevention and management in child care centres', *BMC Public Health*, 8, 212.
- Taylor, S.** (2010), 'Theory and research', in Gosling, R. and Taylor, S. (eds.), *Principles of Sociology*, London, University of London External System.
- Thompson, P.L., Spyridis, N., Sharland, M., Gilbert, R.E., Saxena, S., Long, P.F., Johnson, A.P. and Wong, I.C.K.** (2009), 'Changes in clinical indications for community antibiotic prescribing for children in the UK from 1996 to 2006: will the new NICE prescribing guidance on upper respiratory tract infections just be ignored?', *Archives of Disease in Childhood*, 94, 5, 337-340.
- Thrane, N., Olesen, C., MD, J.T.M., Sondergaard, C., Schonheyder, H.C. and Sorensen, H.T.** (2001), 'Influence of day care attendance on the use of systemic antibiotics in 0- to 2-year-old children', *Pediatrics*, 107, 5, e76-.
- Tonkin-Crine, S., Yardley, L. and Little, P.** (2011), 'Antibiotic prescribing for acute respiratory tract infections in primary care: a systematic review and meta-ethnography', *Journal of Antimicrobial Chemotherapy*, 66, 10, 2215-2223.
- Torun, M.M., Namal, N., Demirci, M., Bahar, H. and Kocazeybek, B.** (2007), 'Pharyngeal carriage and antimicrobial resistance of Haemophilus

- influenzae in non-type-b-vaccinated healthy children attending day care centers in Turkey', *Chemotherapy*, 53, 2, 114-7.
- Turnidge, J. and Christiansen, K.** (2004), 'Antibiotic use and resistance—proving the obvious', *The Lancet*, 365, 9459, 548-549.
- Ulrich, C.M., Danis, M., Koziol, D., Garrett-Mayer, E., Hubbard, R. and Grady, C.** (2005), 'Does it pay to pay? A randomized trial of prepaid financial incentives and lottery incentives in surveys of nonphysician healthcare professionals', *Nursing Research*, 54, 3, 178-183.
- Vally, H., Dowse, G.K., Eastwood, K. and Cameron, S.** (2007), 'An outbreak of chickenpox at a child care centre in Western Australia. Costs to the community and implications for vaccination policy', *Australian and New Zealand Journal of Public Health*, 31, 2, 113-119.
- van de Sande-Bruinsma, N., Grundmann, H., Verloo, D., Tiemersma, E., Monen, J., Goossens, H., Ferech, M., European Antimicrobial Resistance Surveillance System Group. and Group., E.S.o.A.C.P.** (2008), 'Antimicrobial drug use and resistance in Europe', *Emerg Infect Dis*, 14, 11, 1722-1730.
- Vandekar, A., Knottnerus, A., Meertens, R., Dubois, V. and Kok, G.** (1992), 'Why do patients consult the general practitioner- determinants of their decision', *British Journal of General Practice*, 42, 361, 313-316.
- Velasquez, P.A., Parussolo, L., Cardoso, C.L., Tognim, M.C. and Garcia, L.B.** (2009), 'High prevalence of children colonized with penicillin-resistant *Streptococcus pneumoniae* in public day-care centers', *Jornal de Pediatria*, 85, 6, 516-22.
- VGHI** (2008b), 'Scabies information sheet', URL: http://www.health.vic.gov.au/ideas/bluebook/scabies_info Accessed: 05/04/2011.
- VGHI** (2008c), 'Impetigo (school sores) information sheet', URL: http://www.health.vic.gov.au/ideas/bluebook/impetigo_info Accessed: 05/04/2011.
- Victorian Government Health Information [VGHI]** (2008a), 'Ringworm or tinea', URL: <http://www.health.vic.gov.au/ideas/bluebook/ringworm> Accessed: 05/04/2011.
- Vinker, S., Ron, A. and Kitai, E.** (2003), 'The knowledge and expectations of parents about the role of antibiotic treatment in upper respiratory tract infection - a survey among parents attending the primary physician with their sick child', *BMC Family Practice*, 4, 1, 20.
- Wald, E.R., Dashefsky, B., Byers, C., Guerra, N. and Taylor, F.** (1988), 'Frequency and severity of infections in day care', *Journal of Pediatrics*, 112, 4, 540-6.
- Walsh, A. and Edwards, H.** (2006), 'Management of childhood fever by parents: literature review', *Journal of Advanced Nursing*, 54, 2, 217-227.
- Watson, R.L., Dowell, S.F., Jayaraman, M., Keyserling, H., Kolczak, M. and Schwartz, B.** (1999), 'Antimicrobial use for pediatric upper respiratory infections: reported practice, actual practice, and parent beliefs', *Pediatrics*, 104, 6, 1251-1257.
- Wellard, S. and McKenna, L.G.** (2001), 'Turning tapes into text: issues surrounding the transcription of interviews', *Contemporary Nurse*, 11, 2-3, 180-186.
- Welsh Assembly Government** (2011), 'Welsh Index of Multiple Deprivation', URL: <http://wales.gov.uk/topics/statistics/theme/wimd/wimd2011/?lang=en> Accessed: 07/02/2012

- Welsh Assembly Government** (undated), 'How to Choose Quality Childcare'.
- Welsh Assembly Government.** (2002a), 'National Minimum Standards for Full Day Care. Section 10.12'.
- Welsh Assembly Government.** (2002b), 'National Minimum Standards for Childminders. Section 9.3'.
- Welsh Assembly Government.** (2003), 'National minimum standards for sessional care. Section 9.11'.
- Wilkinson, S., Joffe, H. and Yardley, L.** (2004), 'Qualitative data collection: interviews and focus groups', in Marks, D. and Yardley, L. (eds.), *Research Methods for Clinical and Health Psychology*, London, SAGE.
- Willig, C.** (2001), 'From recipes to adventures', in Willig, C. (ed.), *Introducing Qualitative Research in Psychology: Adventures in Theory and Method.*, Buckingham, Open University Press.
- Winchester, C.C., Macfarlane, T.V., Thomas, M. and Price, D.** (2009), 'Antibiotic prescribing and outcomes of lower respiratory tract infection in UK primary care', *Chest*, 135, 5, 1163-1172.
- Wise, R.** (2002), 'Antimicrobial resistance: priorities for action', *Journal of Antimicrobial Chemotherapy*, 49, 4, 585-586.
- Wood, F., Simpson, S. and Butler, C.C.** (2007), 'Socially responsible antibiotic choices in primary care: a qualitative study of GPs' decisions to prescribe broad-spectrum and fluoroquinolone antibiotics', *Family Practice*, 24, 5, 427-434.
- Woodhead, M., Fleming, D. and Wise, R.** (2004), 'Antibiotics, resistance, and clinical outcomes', *BMJ*, 328, 7451, 1270-1271.
- Woodward, A., Douglas, R.M., Graham, N.M. and Miles, H.** (1991), 'Acute respiratory illness in Adelaide children--the influence of child care.', *Med J Aust*, 154, 12, 805-808.
- World Health Organisation [WHO]** (2001), 'WHO global strategy for containment of antimicrobial resistance', Geneva, WHO.
- Wrigley, T., Tinto, A. and Majeed, A.** (2002), 'Age-and sex-specific antibiotic prescribing patterns in general practice in England and Wales, 1994 to 1998', *Health Statistics Quarterly*, 14, 14-20.
- Wyke, S., Hewison, J. and Russell, I.T.** (1990), 'Respiratory illness in children: what makes parents decide to consult?', *Br J Gen Pract*, 40, 335, 226-229.
- Yagupsky, P., Porat, N., Fraser, D., Prajgrod, F., Merires, M., McGee, L., Klugman, K.P. and Dagan, R.** (1998), 'Acquisition, carriage, and transmission of pneumococci with decreased antibiotic susceptibility in young children attending a day care facility in southern Israel', *Journal of Infectious Diseases*, 177, 4, 1003-12.
- Yardley, L., Joseph, J., Michie, S., Weal, M., Wills, G. and Little, P.** (2010a), 'Evaluation of a web-based intervention providing tailored advice for self-management of minor respiratory symptoms: exploratory randomized controlled trial', *Journal of Medical Internet Research*, 12, 4, 97-108.
- Yardley, L. and Marks, D.** (2004), 'Introduction to research methods in clinical and health psychology', in Marks, D. and Yardley, L. (eds.), *Research Methods for Clinical and Health Psychology*, London, SAGE.
- Yardley, L., Morrison, L.G., Andreou, P., Joseph, J. and Little, P.** (2010b), 'Understanding reactions to an internet-delivered health-care intervention: accommodating user preferences for information provision', *Bmc Medical Informatics and Decision Making*, 10.

APPENDICES

Appendix 1.1 Proof of Ethical Approval

18th June 2009

Miss L Rooshenas
Department of Primary Care and Public Health
Clinical Epidemiology Interdisciplinary Research Group
Cardiff University
3rd Floor, Neuadd Meirionnydd
Heath Park
CARDIFF
CF14 4YS

Dear Miss Rooshenas

Re: Managing Common Infections in Day Care Settings: The Belief Around and Consequences of Exclusion Policies for Children, Parents/Guardians and Staff.

MDSREC Reference Number: 09/34

Thank you for your letter of 16th June 2009 detailing revisions to the protocol for the above study.

Ethical Opinion

On behalf of the committee I am pleased to confirm a favourable ethical opinion for the above research project.

Conditions of Approval

The Medical Dental School Research Ethics Committee requires that any modification to the approved protocol be notified to the Committee.

It should be noted that Ethical Approval is valid for a period of two years from the date it was approved by the Medical Dental School Research Ethics Committee. After this time, if the project has not commenced, you should reapply to the Medical Dental School Research Ethics Committee.

To conform with Cardiff University requirements an annual monitoring form will be issued in due course, with regards to all approved projects.

Documents Considered

Document Type:	Version	Date Received
Application Form	Form signed 29 th April 2009	29 th April 2009

Document Type:	Version	Date Received
Purpose and Academic Rationale	Version 0.3 – 29 th April 2009	29 th April 2009
Project Schedule	Version 0.1 – 29 th April 2009	29 th April 2009
Project Schedule – 2	Version 0.1 – 29 th April 2009	29 th April 2009
Appendix 2 – Covering Letter to Nursery	Version 0.2 – 15 th March 2009	4 th June 2009
Questionnaire Information Sheets	Version 0.4 – 16 th June 2009	4 th June 2009
Questionnaire Cover Sheets	Version 0.3 – 16 th June 2009	29 th April 2009
Questionnaire	Version 0.3 – 25 th April 2009	29 th April 2009
Consent Form	Version 0.3 – 29 th April 2009	29 th April 2009
Appendix 6 – Letter	Version 0.0 – 15 th March 2009	29 th April 2009
Childcare Providers Interview Information Sheet	Version 0.3 – 4 th June 2009	4 th June 2009
Consent Form – Childcare Providers Interviews	Version 0.3 – 24 th April 2009	29 th April 2009
Interview Schedule	Version 0.0 – 24 th February 2009	29 th April 2009
Table of Symptoms	Version 0.1 – 29 th April 2009	29 th April 2009
Letter to Parents	Version 0.0 – 15 th March 2009	29 th April 2009
Parents Interview Information Sheets	Version 0.3 – 4 th June 2009	4 th June 2009
Consent Form	Version 0.3 – 24 th April 2009	29 th April 2009
Interview Schedule – Parents	Version 0.0 – 24 th February 2009	29 th April 2009
Parent Guardian Details	Version 0.1 – 29 th April 2009	29 th April 2009

Document Type:	Version	Date Received
Invoice	16 th June 2009	16 th June 2009

With best wishes for the success of your study.

Yours sincerely
Prof I.G. Chestnutt
Chair
Medical/Dental School Research Ethics Committee

Copy Prof Chris Butler

Appendix 1.2 Ethical Considerations and Researcher Safety

Ethical Considerations

Questionnaire Phase

a. Informed Consent and Participant Information

The details of the study, and reasons for conducting the research, were presented in the participant information sheets at least two weeks prior to receiving a reminder. Part of the consent form stated that participants would have read the information sheets before agreeing to take part- this statement was initialled, and the form signed. The consent forms were returned with the completed questionnaires.

It was vital that DCPs understood the purpose behind the questionnaire, particularly because they were required to divulge information about their working methods. One of the most important considerations of the questionnaire phase was the impressions respondents might have about the purpose of the study. The information sheets and covering letter made it clear that there was no intention of testing or judging DCPs' practices, or questioning their professionalism.

b. Incentive to Take Part

All DCPs who return the questionnaire received a £20 reimbursement. An invoice sheet was included with the questionnaire, which was completed and returned by DCPs. This gesture of appreciation was thought to increase the response rate, as indicated by previous research. It also acted as compensation for the professional DCPs' time.

c. Participant Anxiety and Right to Withdraw

The tone of the questionnaire was casual, asking for opinions, rather than 'correct' answers. As explained above, it was important that participants did not feel tested. This was considered during the design of the questionnaire. DCPs were informed, (in the letter, information sheets, and consent form), that they were not under any obligation to participate, or respond to questions they were uncomfortable with. If participants decided to return the questionnaire, they were still able to exclude themselves from the interview phase, by ticking the relevant boxes on the questionnaire cover sheet, and omitting their initials on the relevant clause on the consent form.

d. Confidentiality and Anonymity

Participants were assured that their data would not be used for any purposes beyond this study. Any reported results were strictly anonymous. No names were written on the questionnaire responses. Instead, participants were assigned unique codes, which were written on the questionnaire. The DCPs chosen for interview needed to be notified once selected. Therefore, a cover sheet was included with the questionnaire, asking for names and contact details, but still displaying participants' codes. This sheet was detached from the completed questionnaires. The covering sheets and questionnaire responses were only matched up once the potential interviewees had been selected. Contact details were stored in a password-protected spreadsheet that was only accessible by myself. I was the only person that viewed and had access to cover sheets, which were stored in a separate locked filing cabinet to actual questionnaire responses. Data from questionnaires were coded into a computer program, but participant codes rather than names were used. Anonymised data was discussed in the wider research team.

e. Follow up Information for Participants

Contact information of the main researcher was included in the covering letter and participant information sheets for questions/comments at any point before, during, or after the study. Participants were informed that they were free to request summaries of the findings once the study was complete. The participant information sheets explained that the project would be written up in the form of a thesis, and might result in other published papers or academic presentations at conferences.

Interview Phase

a. Discomfort and Anxiety

If any discomfort was perceived at the mention of a particular topic/issue, I took control of the situation by re-phrasing, or putting the questions across in a different manner. I sometimes reassured the participant of their anonymity and the confidentiality of results. If it was clear that a participant did not wish to continue a topic, I was prepared to move the interview on. Open-ended questioning and the conversation-like style of the interview ensured that the participants had the chance to speak freely, without feeling interrogated in any way.

Every effort was made to ensure that participants did not feel they were being tested or judged, in their careers, or as parents/guardians. My tone was usually inquisitive, showing a keenness to learn about the participant's opinions/perspectives.

In the unlikely event of a participant becoming emotional or distressed, protocol dictated that I would attempt to comfort and reassure. I have had previous experience of interviewing members of the public, dealing with delicate health-

related subjects. Plans were in place to stop recording, end the interview early, and/or rearranging to meet at another time, if deemed appropriate.

b. Informed Consent and Participant Information

DCPs were given the opportunity to express any wishes to not be interviewed when they filled out their questionnaires. In addition, a second consent form, specific to phase two, was presented to participants on the day of interview. The information sheets for interviews were posted to DCPs at least one week prior to the interview.

Recruitment of parents was opportunistic. The decision to respond to the recruitment letter was voluntary. The same consent procedures used for DCPs applied to parents, who also received information sheets via post at least one week prior to their interview (information sheets were sent in the recruitment pack that parents initially received, and no interview were booked within a week of dispatch). Parents provided their contact information after they had initiated contact to express interest in participating.

c. Payment

All interview participants were paid £30 for an interview that lasted up to an hour. Any travel expenses were reimbursed. The £30 payment needed to be in place to cover the time and effort set aside by the participants. This was especially important in the case of DCPs, as the interviews were likely to be taking place during their working hours.

d. Withdrawal

Participants were assured of their right to withdraw from the interview at any point, and were free to avoid responding to certain topics or questions. They did not have to provide a reason for withdrawing. Plans were in place to destroy any data already collected up until the point of withdrawal, and participants were made aware of this in the information sheets.

e. Confidentiality and Anonymity

The information sheets clearly stated that the interviews were to be recorded, and that none of the audio recordings or transcripts would be labelled with the person's/day care setting's name. Instead, they would be labelled with participant codes. These codes were the same as those allocated to childminders/nursery managers in the questionnaire phase. Parents had newly assigned codes. Any information that might have jeopardised participants' anonymity was omitted from any dissemination of findings.

All contact information was stored in a password-protected computer document, and hard copies were locked in a filing cabinet. Only I had access to this information, although contact information of interviewees were passed on to a

responsible contact when performing interviews offsite. The details remained in a sealed envelope, unless they were needed in an emergency. The envelope was destroyed after the interview.

The transcripts and field notes were only listened to/viewed by the research team, but these were anonymised with participant codes, and identifiable information removed. Transcripts, field notes and digital audio recordings were password-protected, and/or locked in a filing cabinet on the university premises.

f. Follow up Information for Participants

The same procedures in place during phase one were repeated for phases two and three.

Researcher Safety

a. Personal safety

Safety during off-site interviews was discussed in a meeting with two of the project supervisors (LBH and CB) (January 27th, 2009). These issues are summarised below.

Procedures were planned for me to nominate a responsible contact to communicate with while doing field work. The responsible contact in this study was informed of the proposed start and ending times for each interview, as well as the time required for travelling to and from the interview site.

I had a charged mobile phone at all times. This was used to contact the responsible contact. In the event of poor signal, I was to find alternative means of contact (e.g. public telephone, or working telephone at the interview setting).

An itinerary of the planned travel arrangements and interview location was sealed in an envelope and given to the responsible contact before each interview. This envelope also contained details of the name, address and telephone number of the interviewees. If unopened, the envelope was returned to me within five working days, and destroyed. Participants were informed of this procedure prior to signing the consent forms.

b. Interview Settings

The interviews took place at the day care setting whenever possible. This refers to registered nurseries and childminders' homes (they are CRB checked). In the case of parents/guardians, interviews took place in their homes, or a mutually convenient public setting that would allow for good quality recording, and a confidential discussion. Interviewing parents posed a greater risk than interviewing DCPs, as there was limited information that was legally (and ethically) accessible about parent interviewees. There was therefore a greater risk of being placed in a compromising situation, and greater risk of threatened or actual physical/psychological abuse. Informing participants that their contact

details were held by the responsible contact helped to reduce these threats. Opportunities for debriefing, by speaking with supervisors, were also available.

c. Researcher Discomfort

If I felt uncomfortable or threatened, to the point where the interview could not continue, the protocol dictated that I should stop recording, and end the interview early if needed. If this was to happen, the responsible contact was to be informed immediately.

Appendix 2.1 Search Terms and Hits

Database selected: Medline (1947-present).

No search filters applied, to keep initial searches as broad as possible.

No explicit exclusion criteria were applied

Final papers consulted depended on the search results that emerged from combining main search queries.

Main Search Terms used in Medline

<u>Antibiotics searches</u>	<i>Hits</i>
1. Keyword search: antibiotic\$	218,630
2. MESH term 'anti-bacterial agents'	215,200
1 OR 2	342,554

<u>Antibiotic resistance reviews (all years)</u>	<i>Hits</i>
1. MESH term 'drug resistance, bacterial'	19,361
2. Keyword search: (antibiotic\$ OR antimicrobial\$ OR antibac\$) AND (resistan\$)	78,424
1 OR 2	85,813
Limited to English Language	71,250
Limited to Reviews	10,874

<u>Day care searches</u>	<i>Hits</i>
1. MESH term 'child day care centres'	3,981
2. MESH 'child care'	4,540
3. MESH Nurseries	490
4. Keyword search: Daycare OR Childcare OR "child care" OR "day care" OR Day-care OR nurser\$ or childmind\$ or child mind\$ OR creche\$ OR kindergarden\$ OR "family day care home\$" or "day care home\$" or "family care home\$"	27,059
1 OR 2 OR 3 OR 4	27,059
Limited to English Language	21,102

<u>Infection searches</u>	Hits
1. MESH infection	29,395
2. MESH Cross infection	41,469
3. Keyword search: Infection\$ OR communicable OR infectious\$ OR contagi\$ OR ill\$ OR sick\$	1,861,807
1 OR 2 OR 3	1,861,807
Limited to English Language	1,560,540

<u>Staff</u>	Hits
Keyword search: staff OR worker\$ OR provider\$	324,103

<u>Primary care consultation searches</u>	Hits
1. MESH term 'Referral and Consultation'	17,298
2. MESH terms 'Physicians, Family or Family Practice'	45,520
3. MESH 'Primary Health Care'	30,320
4. Title search: "(GP or (General and practic\$) or (primary and care) or consult\$ or doctor\$ or clinician\$)"	100,933
1 OR 2 OR 3 OR 4	151,020
Limited to English Language	128,217

Main search terms used in Medline: specific childhood infection typologies

Respiratory tract infections **Hits**

1. MESH Respiratory tract Infection	29003
2. Keyword search: Respiratory AND infect\$	83453
1 OR 2	83453
Limited to English Language	65739

Gastrointestinal infections **Hits**

1. MESH Gastrointestinal disease	29205
2. Keyword search: Diarrhoea\$ OR Vomit\$	69184
1 OR 2	97132
Limited to English Language	75387

Conjunctivitis **Hits**

1. MESH Conjunctivitis	5293
2. Keyword search: Conjunctivitis keyword	12827

1 OR 2	12827
Limited to English Language	9569

Streptococcus pneumonia **Hits**

1. MESH Streptococcus Pneumoniae	16812
2. Keyword search: "streptococcus pneumoniae" or "pneumococcc\$" or "S pneumoniae"	34317
1 OR 2	34317
Limited to English Language	28494

Staphylococcus aureus **Hits**

1. MESH <i>Staphylococcus aureus</i>	40170
2. Keyword search: " <i>Staphylococcus aureus</i> " or " <i>S aureus</i> "	72301
1 OR 2	72301
Limited to English Language	62053

Haemophilus influenza **Hits**

1. MESH Haemophilus influenzae	11074
2. Keyword search: " <i>Haemophilus influenza</i> " OR " <i>H influenzae</i> "	18313
1 OR 2	18313
Limited to English Language	15506

Hand foot and Mouth **Hits**

1. MESH Hand foot and Mouth	0
2. Keyword search: "hand foot and mouth" OR "Hand, foot and mouth"	633
1 OR 2	633
Limited to English Language	443

Slapped cheek syndrome **Hits**

1. MESH Erythema Infectiosum/ or Parvovirus B19, Human/ or Erythema/	11296
2. Keyword search: "slapped cheek " or "Fifth disease" or "Erythema"	26441
1 OR 2	27964
Limited to English Language	21726

Impetigo **Hits**

1. MESH impetigo	1059
2. Keyword search: impetigo	1525
1 OR 2	1525
Limited to English Language	1053

Otitis media **Hits**

1. MESH otitis media	14953
2. Keyword search: otitis or "Ear infection\$"	27437
1 OR 2	27437
Limited to English Language	19212

Web of Knowledge Search Query (Antibiotic Resistance Reviews Only)

<u>Antibiotic resistance reviews (all years)</u>	<u>Hits</u>
Topic search: antibiotic* OR antimicrobial* OR antibac*) AND (resistan*)	375,581
Limited to Reviews	18,531
Limited to English Language	16,381
Filtered by categories: INFECTIOUS DISEASES OR RESPIRATORY SYSTEM OR PUBLIC ENVIRONMENTAL OCCUPATIONAL HEALTH OR HEALTH CARE SCIENCES SERVICES OR SOCIOLOGY OR PSYCHOLOGY OR EVOLUTIONARY BIOLOGY OR ANTHROPOLOGY OR COMMUNICATION OR SOCIAL ISSUES OR MEDICAL ETHICS OR PHILOSOPHY OR GEOGRAPHY OR URBAN STUDIES	8,411

Hits were arranged in descending order of ‘number of times cited’. The first 500 papers’ titles were scanned, with those of specific drug/infection/technical nature excluded. My intention was to gain a general overview of how antibiotic resistance worked, and the most likely factors that encouraged this phenomenon. Therefore, reviews articles of general medical or public health relevance were selected. This selection criterion yielded 19 papers, each of which was read (but not necessarily cited within the literature review). Papers that had cited these articles, and those cited within articles, were also obtained if they satisfied the same criteria to the above. Comprehensibility of papers was a particularly important factor that informed selection, given that I had no specialist microbiological or pharmacological knowledge.

The articles cited within the literature review were those that I deemed to be ‘well-cited’ within the literature. This included how frequently I came across the study (in a qualitative, rather than quantitative sense), and the journal of publication. High impact factor journals of general health relevance were prioritised over those tailored to more specific/specialist audiences. In addition to these criteria, I also attempted to showcase the range of conclusion/ideas I came

across in the literature- a somewhat cruder selection criterion, which would be followed by the selection criteria discussed above.

Combining Main Search Queries

Results of the main search queries (i.e. all those excluding the broad topic of 'antibiotic resistance') were combined in Medline. The number of hits achieved by combining searches are shown below:

Antibiotics results and Day care results= 878 hits

Antibiotic resistance results (prior to filtering for reviews) AND Day care results= 379 hits

Day care results AND Infection results= 5287 hits

Day care results AND Staff results= 2684 hits

Day care results AND Primary care consultation results= 493 hits

Day care results AND Respiratory tract infections results= 634 hits

Day care results AND Gastrointestinal infection results= 320 hits

Day care results AND Conjunctivitis results= 49 hits

Day care results AND *Streptococcus pneumoniae* results= 341 hits

Day care results AND *Staphylococcus aureus* results= 206 hits

Day care results AND *Haemophilus influenza* results= 224 hits

Day care results AND Hand, foot and mouth results= 11 hits

Day care results AND Slapped cheek syndrome results= 31 hits

Day care results AND Impetigo results= 22 hits

Day care results AND Otitis media results= 372 hits

All 'hits' were read at the level of title or abstract, depending on how relevant they were to my study. For example, titles were sometimes immediately excluded if it was clear that the study was related to other forms of day care (e.g. elderly people's nursing homes, hospital care, etc.). Full versions of the papers were obtained through Google Scholar, and citing papers/paper cited within articles selected on a similar basis to the original papers. All papers relevant to the review were saved in Thompson Endnote.

The reported papers in the literature review represented a range of conclusions/views expressed by authors of previous studies. When an idea/conclusion/theory was prevalent, this received greater attention, although divergent views were also showcased in the literature reviews. When a given conclusion had wide support, I attempted to include a range of studies that differed in their methodological approaches or study setting.

Appendix 3.1 Details of Discussions with DCPs in Preparatory Phase

The questionnaire content

All six DCP managers had completed a draft questionnaire prior to the meeting. This was not for data collection purposes, but solely to focus on their experiences of completing the questionnaire. The format and content of the questionnaire was one of the main issues discussed. The managers expressed opinions regarding the general layout, reacting positively to the tick box format of the table of infections. Most of the comments put forward were concerned with the specific items on the questionnaire. Changes were made in light of some, but not all, of these comments. For example, one nursery manager believed that asking about specific rashes should be abandoned in favour of using the term 'rashes' in general. This would not have generated the level of detail required, as rashes are symptoms associated with a broad range of infections, with different aetiologies, symptoms, and severities. On the other hand, major changes were made in the light of other advice. For example, one of the original questions asked DCPs how they would react to various infection symptoms. However, no names of infections were used – only the symptoms were listed. One DCP pointed out that this exercise tested their knowledge of diagnosing, and required considerable information processing – possibly too much for a non-obligatory questionnaire. She suggested that the feeling of being 'tested' about knowledge came through quite strongly, implying that there were right and wrong answers that DCPs should know. The 'exam-like' feeling evoked in participants could have had adverse effects on their decision to continue with the questionnaire. This point was considered, and appropriate changes were made. Actual diagnoses or names of infections were used instead, where participants were simply required to tick whether or not they had an exclusion policy relating to that infection. DCPs' abilities to identify the symptoms of infections would be discussed in the interviews, where the interviewer had greater control of the situation. Questions could be delivered in a non-threatening manner, reducing any anxiety of being 'tested'. The questionnaire was therefore refined, according to comments that were relevant and did not detract from the aims of the study.

In particular, these meetings were useful for checking if the infections featured in the questionnaire were relevant to day care settings, and were actually 'common'. DCPs had heard of all infections, although some were more commonly experienced than others. I ensured that all of the 'common' infections DCPs referred to were featured in the final questionnaire, as well as those which DCPs felt were important to know about (e.g. whooping cough, measles, rubella).

Most DCPs agreed that due to the nature of their work, a shorter questionnaire was more likely to be completed. Related to this point, comments regarding the suitability of some of the questions helped to stream-line the questionnaire.

Recruitment

Other areas highlighted in the meetings were recruitment options, and likely response rates. As expected, the length and complexity of questions was the main issue that most felt would deter participation. Financial incentives were seen as particularly important: all DCPs said they would prefer a smaller, definite incentive over a prize draw scenario, where a larger gift/financial reward would be on offer for one person. When asked what they felt the minimum cash incentive should be, estimates ranged between £5- £20. Some believed that shopping vouchers would be appropriate, especially for shops specialising in childcare products and toys. These suggestions were noted, and considered during the application for ethical approval.

Appendix 3.2 Questionnaire Recruitment

Letter to DCPs

Dear [Childminder/Nursery manager],

I am a PhD student at Cardiff University's department of Primary Care and Public Health, doing a project based on common infections in day care settings. I have enclosed a quick questionnaire, based on the topic described below, which I would appreciate you filling out. This should take 5-10 minutes of your time. If you decide to complete the questionnaire, you will receive £20 reimbursement, which will be sent to your day care setting after you have returned the questionnaire. You will need to select your preferred method of payment on the invoice sheet provided. The questionnaire and invoice can be returned in the pre-paid postal envelope.

As you might be aware, there are no official policies available for day care providers when it comes to dealing with unwell children (i.e. whether to send them home or not). Deciding what infection the child can determine whether they are sent home or permitted to remain in the day care setting. I recognise that this decision can be very pressurising, as it requires a balance between avoiding an infection spreading, and the practicalities of excluding (e.g. from working parents' points of view).

In light of these issues, I am beginning a project that focuses on staff and parents' attitudes about the management of everyday childhood infections (e.g. rashes, respiratory infections, stomach bugs etc). I am asking childminders and nurseries in [insert unitary authority] to fill out a quick questionnaire, and return it in the pre-paid envelope, alongside your completed consent form and invoice sheet. The questionnaire aims to find out what sort of policies you have when it comes to dealing with unwell children, and how you feel about the support and guidance available to you when it comes to identifying common infections. There are no 'right' or 'wrong' answers. I appreciate that different people take different courses of action when dealing with mild infections- especially when there are no standard guidelines for all to follow.

Finally, I will be contacting a few respondents to request a short interview with them. We will pay for your time and effort (£30). Please let me know if you are happy to be considered for interview, or not, by ticking the appropriate box on the covering sheet of the questionnaire, and either placing your initial (or omitting them) in the relevant box on the consent form.

Thank you for your time and effort. This research is designed to ultimately benefit day care providers, as well as the parents and children they serve.

Best wishes,
Leila Rooshenas
[date]

Appendix 3.3 Participant Information Sheet (for Questionnaire)

Questionnaire Information Sheet

Study title: Managing common infections in day care settings: the beliefs around, and consequences of exclusion policies for children, parents and staff

You are being invited to take part in the research study above by taking a few minutes to complete the enclosed questionnaire, and returning it in the pre-paid postage envelope. Before you decide, I would like to tell you a little about why the research is being done, and how you can help. Please take time to read the information below carefully, and discuss it with others if you wish. Do not hesitate to contact me if you have any questions. My contact information can be found at the end of this information. As a token of appreciation, you will receive a £20 gift for your time and efforts. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?

We are trying to find out if more guidance and support is needed for day care providers and parents, with regards to dealing with common childhood infections. There is very little official guidance available at the moment. This could mean that children are kept home from day care, advised to see their GP unnecessarily, or given medicines when they are not needed. On the other hand, it could cause the opposite problem, where serious infections are left untreated. This could cause delayed recovery or the spread of infection to others.

It is normal for preschool children to catch bugs, and children who attend day care are at greater risk of picking up infections. Day care providers are often faced with decisions about whether to keep children away from day care when they are ill. Both day care providers and parents are involved in making these decisions. There has been little research focusing on how these decisions are made. This needs to be explored.

Firstly, we need to understand how nursery managers/childminders deal with ill children, and how they make those difficult decisions. We need to know what kinds of policies/guidelines day care providers have at the moment, as well as how helpful these are.

I would like to start answering these questions by administering a questionnaire across South-East Wales, followed by more detailed interviews later on.

How long does the study last?

The overall project has to be completed within three years. The first two years are set aside for gathering information, and the final year is usually spent writing up the final report, in the form of a thesis.

There is a second stage to this study, taking place in a few months time. This involves a paid interview with selected day care providers who return their questionnaire. Separate information will be sent to these people at the time. If you do not wish to be considered for interview, you will have an opportunity to express this on the covering sheet of the questionnaire, and on the enclosed consent form.

Why have you been chosen?

You have been selected because you are a registered childminder, or run a registered day care setting in [Cardiff/ Monmouthshire/Merthyr Tydfil]. The questionnaire has been sent to nurseries and a random selection of childminders in [Cardiff/Monmouthshire/Merthyr Tydfil]. I obtained your information from the Care and Social Services Inspectorate Wales website.

Do you have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, please keep this information sheet. You will be asked to sign the consent form included with the questionnaire.

What do you have to do?

We kindly request you to fill out and return the questionnaire as soon as you can. If possible, it will be helpful if you could include a copy of your exclusion policy for unwell children too. A pre-paid postal envelope has been included for you. The questionnaire is concerned with day care providers' sickness policies for children. It aims to find out if these policies exist, what they say, and how helpful they are. The questionnaire also asks about the support/guidance available to you, when it comes to deciding what infection a child. This may be different to your sickness policy, which might only be useful in helping you decide what should be done when you already know which infection you are dealing with.

Please ensure that you fill out your consent form and return it your questionnaire.

What will happen to the results of the research study, and is my information confidential?

All of the returned questionnaires will be read by the main researcher. Other members of the research team may become aware of questionnaire information, but your names will not be known. As you might notice, there is a cover sheet on the questionnaire, which is the only place that asks for your name and contact information. Your questionnaire responses will only be identified with a study number. The cover sheet with your name/contact information will be removed

when the main researcher receives your questionnaire. Names and contact details are required if we wish to contact you about an interview later. Your contact details will be locked in a filing cabinet, and stored in a password protected file if the main researcher has any information on the computer. Only the main researcher will have access to these. The cover sheets and questionnaires will be stored in separate locked filing cabinets, which only the main researcher can access.

The results of the questionnaire will form part of the main researcher's thesis. There may also be other publications or presentations that stem from this. No day care professionals or their day care settings will be made identifiable in these. You are welcome to ask for a summary of the results once the study has been completed.

Who is organising and funding the research?

This research is funded by the Clinical Epidemiology Interdisciplinary Research Group of Cardiff University. The research is a project based in the department of Primary Care and Public Health, at the Heath Park campus of Cardiff University.

Contact for Further Information

The researcher: Miss Leila Rooshenas

E-mail: RooshenasL@cardiff.ac.uk

Telephone: 02920687133

Postal Address: Department of Primary Care and Public Health, 3rd Floor Neuadd Meirionydd, Heath Park, Cardiff, CF14 4YS.

If you have any ethical questions or comments relating to this project, you may contact:

Prof I.G. Chestnutt

Department of Dental Health and Biological Sciences

Dental School

Tel 029 2074 6680

E mail chestnuttig@cardiff.ac.uk

Appendix 3.4 Consent form for DCP Questionnaires

[Participant Code]

CONSENT FORM for QUESTIONNAIRE

Title of Project: Managing common infections in day care settings: the beliefs around, and consequences of, exclusion policies for children, parents and staff.

Name of investigators: Leila Rooshenas (PhD student), Fiona Wood, Meirion Evans, Lucy Brookes-howell, Chris Butler.

Please write your
initials in box

1. I confirm that I have read and understood the information sheet (version x, dated xx/xx/xxxx) for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am not obliged to complete and return the questionnaire.
3. I confirm that I am willing to take part in a short face-to-face interview about common childhood infections and childcare infection control policies, if selected by the research team.
4. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
5. I agree to take part in the above study.

Name (Participant)

Date

Signature

Name (Researcher)

Date

Signature

Appendix 3.5 Questionnaires (with Cover Sheets) for Childminders and Nursery Managers

Participant Code

Questionnaire Cover Sheet for Childminders and Nursery Managers

This information sheet is needed so we can contact you in the future. However, it will be detached and kept separate from your answers provided on the questionnaire. Your name will not appear anywhere on the questionnaire.

Name of day care setting:

Years of experience in childcare: years

Please tell us your preferred contact method, and the details we need (in case you are chosen for interview, should you consent to do so). You do not necessarily need to fill all the options out!

Note: You may wish to not be considered for interview, in which case we will respect your wishes.

E-mail.....

Telephone.....

Address.....
.....
.....

I am happy to be contacted if I am selected for interview Yes No

Signature

Date

Participant Code

Childminder Questionnaire

Section 1: Characteristics of Day Care Setting

1. When is your day care setting open? Please tick AM or PM.

	Mon ✓	Tues ✓	Wed ✓	Thurs ✓	Fri ✓	Sat ✓	Sun ✓
AM							
PM							

2. Please write approximately how many children you care for, in each age group:

Under 12 months	1-2 years	3-5 years	Over 5 years

Section 2: Exclusion Policies for Unwell Children

3. Do you have a policy that describes when unwell children who may be suffering from an infection may or may not attend your care setting ('exclusion policy for unwell children')?

Yes No

- If YES, go to next question, if NO go to question 12.

4. Is the exclusion policy in writing?

Yes No

5. Did you produce the exclusion policy?

Yes No Not sure

If NO, who produced it?

.....

6. When was the exclusion policy last reviewed (or when was it first written if never reviewed)?

Year: Not sure

7. Were any of the following resources used to help produce the exclusion policy? Tick all that apply. Please give names of sources if you can.

Not sure Internet Books Posters Leaflets / Booklets

DVDs/Videos Journals Magazines Television/ radio Other

Name /title/ web address etc:

.....

8. Approximately how many times do you refer to your sickness exclusion policy, in a typical winter month?

Never Once a month Once a fortnight Once a week

More than once a week

9. Do parents ever influence your decision to exclude or take in a child (due to work, lack of alternative care, etc.)?

Often Sometimes Rarely Never

10. Does your exclusion policy for unwell children give advice on any of the following:

Guidance on HOW LONG a child should be excluded?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
Guidance on HOW LONG a child should be excluded.....	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child has taken ANTIBIOTICS?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child has taken OTHER TREATMENT?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child is taking ANTIBIOTICS?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child is on OTHER TREATMENT?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
Guidance on circumstances in which the child should see a GP?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>

11. Please place a single tick ✓ if any of these infections are mentioned in your exclusion policy. Please tick if a specific exclusion *period* is mentioned. Finally, tick the third box if you feel you could benefit from more information for each infection.

	Mentioned ✓	Period of exclusion described ✓	I would like more information and guidance ✓
Rashes in general			
Details on specific rashes such as:			
Cold sores (Herpes simplex)			
Impetigo			
Slapped cheek syndrome			
Hand, foot and mouth			
Chickenpox			
Measles			
German measles (Rubella)			
Eye infection (Conjunctivitis)			
Ear infection (Otitis Media)			
Common cold			
Tonsillitis			
Whooping cough			
Flu			
Bronchitis			
Diarrhoea			
Vomiting			
Head lice			
Scabies			

Section 3: Support and Advice

12. Do you have any formal symptom guidelines/information, to help identify specific infections based on symptoms ('symptoms guidelines')?

Yes No If 'Yes', go to next question. If 'No' go to question 13.

- Are these 'symptom guidelines' part of the children's sickness policy itself (i.e. the same document)?

Yes No

- Are these 'symptoms guidelines':

- Clear, and easy to understand?

Yes No

- Extensive enough (do they cover most symptoms you come across)?

Yes No

- Where are the 'symptoms guidelines' from, or who were they written by?

.....

13. Do you use any of the following for recognising the symptoms of infections?

Personal judgment Internet Books Posters Leaflets / Booklets

DVDs/Videos Journals Magazines Television/ radio

Other.....

14. If you need further advice, which of the following have you used?

Practice nurse or GP at a local surgery

NHS direct

Health visitor

Internet

Environmental health department (Council)

Health protection team (National Public Health Service)

Education department (Council)

Other

15. When speaking to parents about ill children, do you ever:

Offer advice that might help the child recover	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Advise the child sees a GP	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Suggest the child might need antibiotics	Yes <input type="checkbox"/>	No <input type="checkbox"/>

16. Do parents ever challenge your decision to exclude or take in a child (due to work, etc.)?

Often

Sometimes

Rarely

Never

17. Would it be better to have standard exclusion policies/guidelines for all day care providers to use (written by health professionals), rather than asking providers to write their own?

Yes

No

IF YOU HAVE AN 'EXCLUSION POLICY' FOR UNWELL CHILDREN PLEASE CAN YOU INCLUDE A COPY WITH YOUR RETURNED QUESTIONNAIRE

Thank you for your time and effort

Extra space for any written answers/further comments (may continue overleaf, if you wish).

Participant Code

Nursery Manager Questionnaire

Section 1: Characteristics of Day Care Setting

1. What type of day care setting is this? (please tick all that apply)

- Council Private (independent) Private (chain)
- Other

2. When is your day care setting open? Please tick AM or PM.

	Mon ✓	Tues ✓	Wed ✓	Thurs ✓	Fri ✓	Sat ✓	Sun ✓
AM							
PM							

3. Please write approximately how many children you care for, in each age group:

Under 12 months	1-2 years	3-5 years	Over 5 years

4. How many staff are on duty for an average session?members of staff

Section 2: Exclusion Policies for Unwell Children

5. Does your day care setting have a policy that describes when unwell children who may be suffering from an infection may or may not attend your care facility ('exclusion policy for unwell children')?

- Yes No

- If YES, go to next question, if NO go to question 14.

6. Is the exclusion policy in writing?

- Yes No

7. Did your day care facility produce the exclusion policy?

Yes No Not sure

If NO, who produced it?

.....

8. When was the exclusion policy last reviewed (or when was it first written if never reviewed)?

Year: Not sure

9. Were any of the following resources used to help produce the exclusion policy? Tick all that apply. Please give names of sources, if you can.

Not sure Internet Books Posters Leaflets / Booklets

DVDs/Videos Journals Magazines Television/ radio Other

Name /title/ web address etc:

.....

10. Approximately how many times do you refer to your sickness exclusion policy, in a typical winter month?

Never once a month Once a fortnight Once a week

More than once a week

11. Do parents ever influence your decision to exclude or take in a child (due to work, lack of alternative care, etc.)?

Often Sometimes Rarely Never

12. Does your exclusion policy for unwell children give advice on any of the following:

Guidance on HOW LONG a child should be excluded?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
Guidance on HOW LONG a child should be excluded.....	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child has taken ANTIBIOTICS?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child has taken OTHER TREATMENT?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child is taking ANTIBIOTICS?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
- If the child is on OTHER TREATMENT?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
Guidance on circumstances in which the child should see a GP?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>

13. Please place a single tick ✓ if any of these infections are mentioned in your exclusion policy. Please tick if a specific exclusion *period* is mentioned. Finally, tick the third box if you feel you could benefit from more information for each infection.

	Mentioned ✓	Period of exclusion described ✓	I would like more information and guidance ✓
Rashes in general			
Details on specific rashes such as:			
Cold sores (Herpes simplex)			
Impetigo			
Slapped cheek syndrome			
Hand, foot and mouth			
Chickenpox			
Measles			
German measles (Rubella)			
Eye infection (Conjunctivitis)			
Ear infection (Otitis Media)			
Common cold			
Tonsillitis			
Whooping cough			
Flu			
Bronchitis			
Diarrhoea			
Vomiting			
Head lice			
Scabies			

Section 3: Support and Advice

14. Do you have any formal symptom guidelines/information, to help identify specific infections based on symptoms ('symptoms guidelines')?

Yes No If 'Yes', go to next question. If 'No' go to question 15.

- Are these 'symptom guidelines' part of the children's sickness policy itself (i.e. the same document)?

Yes No

- Are these 'symptoms guidelines':

- Clear, and easy to understand?

Yes No

- Extensive enough (do they cover most symptoms you come across)?

Yes No

- Where are the 'symptoms guidelines' from, or who were they written by?

.....

15. Do you use any of the following for recognising the symptoms of infections?

Personal judgment Internet Books Posters Leaflets / Booklets

DVDs/Videos Journals Magazines Television/ radio

Other.....

16. If you need further advice, which of the following have you used?

- Practice nurse or GP at a local surgery
- NHS direct
- Health visitor
- Internet
- Environmental health department (Council)
- Health protection team (National Public Health Service)
- Education department (Council)

Other

17. When speaking to parents about ill children, do you ever:

Offer advice that might help the child recover	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Advise the child sees a GP	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Suggest the child might need antibiotics	Yes <input type="checkbox"/>	No <input type="checkbox"/>

18. Do parents ever challenge your decision to exclude or take in a child (due to work, etc.)?

Often Sometimes Rarely Never

19. Would it be better to have standard exclusion policies/guidelines for all day care providers to use (written by health professionals), rather than asking providers to write their own?

Yes No

IF YOU HAVE AN 'EXCLUSION POLICY' FOR UNWELL CHILDREN PLEASE CAN YOU INCLUDE A COPY WITH YOUR RETURNED QUESTIONNAIRE

Thank you for your time and effort

Extra space for any written answers or further comments (continue overleaf, if you wish!):

Appendix 4.1 Number of Nursery and Childminder Policies with Various Re- admittance Requirements for Different Infections

Nursery Policies

Infection	Number of nursery policies with re-admittance requirement (out of 44)
Chickenpox	
Just mentions exclusion (no periods)	1
5 Days from the onset of rash, and when all the spots have crusted over	4
10 Days from onset of rash	1
7 Days from onset of rash	12
6 days from onset of rash	11
Until the spots have scabbed over	3
Completely recovered	5
7 days, or until all the spots have scabbed over	1
Chest Infection	
24 hours after antibiotic treatment	1
48 hours after antibiotic treatment	1
25 hours	1
48 hours	1
Cold Sores	
Until recovered	2
None	1
Common cold	
None, if the child can cope	1
Just mentions exclusion	2
Conjunctivitis	
Must see doctor for treatment. Return when there are signs of improvement, typically after 24-48 hrs	1
48 hours or when symptom free	1
2 days, and the eyes are no longer weeping	5
Drops are required, then must stay away 48 hours from starting treatment	1
Until no longer inflamed	1
Minimum of 1 day, then until eyes have stopped weeping	2
48 hours after medical treatment from doctor	1

24 hours, or as long as treatment is being given	1
Needs treatment. Consult GP for exclusion period	1
48 hours, but depends on manager's discretion	1
48 hours after receiving antibiotic treatment	2
Until clear	2
Until condition improves	1
Must be completely clear. If on antibiotics, 48 hours exclusion.	1
A minimum of 24 hours, or until improvement begins with medication from the GP	1
No exclusion necessary	2
24 hours	1
Until the eyes have stopped running	3
48 hours	3
Diarrhoea	
24 Hours	1
At least 24 hours	1
48 hours	2
48 hours from the last bout of diarrhoea	15
Must be clear for 24 hours/24 hours since last out of diarrhoea	8
48 hours after first normal stool	8
Completely recovered	2
Ear Infection	
48 hours, or until symptom free	2
48 hours	3
48 hours, but depends on manager's discretion	1
48 hours after receiving antibiotic treatment	2
48 hours if antibiotic prescribed	1
24 hours, if antibiotic prescribed	1
Flu	
7 days	3
Until recovered	2
Gastroenteritis	
72 hours	1
After 48 hours, or 2 normal stools	2
72 hours, or until symptom free	2
48 hours	1
48 hours from the end of symptoms	1
Until well or 48 hours symptom free	4
Until recovered completely	2
At least 48 hours, and then depends on advice from doctor	1
Until declared clear by the doctor	5
Hand foot and Mouth	
Until scabbed over	1
48 hours	1
Until recovered	10
Stay away for the 4/6 day incubation period	1

None	2
Headlice	
Until treated	18
24 hours after treatment	1
Treatment and exclusion decision from GP	1
Until recovered completely/Symptom free	4
Advice and treatment from GP, then when completely recovered	1
No exclusion needed, though treatment is required	1
Impetigo	
24 hours after starting antibiotic treatment	1
Until antibiotic treatment is commenced	4
Until spots heal. No exclusion if spots can be covered.	9
Until sores crusted or healed	6
Until recovered completely	12
Until lesions are dry and healing, or 48 hours after antibiotics	1
Measles	
7 days	2
4 days from appearance of rash	5
7-10 days from onset of rash.	1
Just mentions exclusion	1
7 days from onset of rash	15
10 days from onset of rash	1
Until recovered	7
Mumps	
10 days	3
5-7 days after swelling appears	1
9 days from onset of swelling	1
5 days from onset of swollen gland	2
10 days or until swelling has subsided	1
7 days from onset	1
Just mentions exclusion	1
Until swelling has disappeared	9
Until recovered completely	6
Minimum of 7 days	2
Until swelling subsided, and 7 days from onset	5
Rashes	
Require Medical attention	3
Rubella	
5 days from onset	3
Just mentions exclusion	1
Until recovered	8
7 days from onset	1
4 days from onset	16
Scabies	
Advice and treatment from GP, then when completely recovered	1
Minimum of 72 hours after treatment	1

Until recovered completely	6
48 hours after treatment from doctor	2
Until treated	19
Slapped Cheek Syndrome	
Manager's Discretion	1
Until recovered	9
No exclusion necessary	2
Temperature	
12 hours from when normal temperature is regained	1
Cannot attend for 24 hours after temperature was present	6
Until temperature (38.3 c) returns to normal	1
Tonsillitis	
24 hours after antibiotic treatment	1
No exclusion required	1
24 hours	1
24 hours after antibiotics, or when symptom free	1
Until recovered completely	4
Until well, or 48 hours after antibiotics	1
48 hours	2
Whooping cough	
7-10 days from onset of cough	1
Until recovered	11
21 days from onset of cough	14
14 days after coughing has ceased	1
6 weeks, or 5 days if taking antibiotics	1
5 days from commencing antibiotics	2

Childminder Policies

Infection	Number of childminder policies with re-admittance requirement (out of 95)
Bronchitis	
Until appropriate treatment has been given and child has recovered	1
Just mentions exclusion	1
Chickenpox	
1 week	1
5 days from onset of spots	2
Until infectious period has passed	1
12 days from onset of rash	1
5 days from onset of rash, or until all spots have scabbed over	1
Just mentions exclusion	10
15 days	1
5 days from onset of rash, and all the spots must have crusted over	2
2 weeks	1
7 days from onset of rash	3

Minimum of 6 days. After this, when spots have scabbed	1
6 days from onset of rash	8
Until spots have scabbed over	13
2 weeks (once spots have cleared up and no longer weeping)	1
Chest Infection	
Full course of antibiotic needs to be taken before child can return	1
Cold Sores	
Until recovered	1
No exclusion necessary	3
Common cold	
None	3
None if child can cope	2
48 hours clear of symptoms if cold severe	1
None if minor	1
Conjunctivitis	
Until no longer infectious- normally a few days after treatment	1
To be cleared with antibiotic eye drops or cream from doctor	1
Until treatment has started and symptoms ease	1
4 days, and until eyes are no longer weeping	1
Just mentions exclusion	6
2 days. Eyes must be no longer weeping	1
48 hours after medical treatment from doctor	2
48 hours after antibiotic	1
Until clear	3
No exclusion necessary	1
24 hours after treatment	2
Until the eyes have stopped running	6
Must see doctor. Can come when show signs of improving, usually 24-48 hrs after treatment commence	1
Diarrhoea	
24-48 hours after last bout	1
Just mentions exclusion	11
Until symptom free	2
36 hours from last bout	1
24 hours from end of symptoms	11
24 hours	4
48 hours	1
48 hours from last bout	18
2 days after well	2
Until recovered completely	3
Ear Infection	
Full course of antibiotics needs to be taken before child can return	1
Exclusion if the ear is weeping	1
Just mentions exclude	2
When no discharge is coming from the ear, child well	1
Flu	

5 days	1
7 days	3
None	2
Until recovered	1
Gastroenteritis	
48 hours from last episode of illness	2
Until declared clear by doctor	4
Hand foot and Mouth	
Just mentions exclusion	1
Until recovered	1
After 7 days	2
Exclude if child feels unwell	3
No exclusion necessary	1
Head Lice	
Until treated	4
Until treated and completely clear	2
Completely recovered	2
3 days and treatment needed	1
None	2
Impetigo	
Until no longer contagious- usually a few days after treatment	1
48 hours after antibiotic treatment, unless lesion covered	1
No exclusion necessary	1
Until scabs dropped off	1
Just mentions exclusion	2
Until antibiotic treatment commenced	1
Until spots have healed, unless they can be covered	1
48 hours clear of symptoms	1
Until sores crusted or healed	5
Until recovered completely	2
Measles	
Up to 21 days	2
12 days from onset	1
Until infectious period has passed	1
2 weeks	2
Once fit and well	1
5 days after rash has disappeared	2
At least 4 days from onset	3
4 days from onset of rash	1
5 days from appearance of rash	9
Just mentions exclusion	6
7 days from onset of rash	7
15 days	1
Mumps	
Once fit and well	1
Until infectious period has passed	1

10 days	3
12 days and after the swelling has gone	1
Up to 10 days	2
2 weeks	1
14-21 days	1
5 days after the onset of swelling	4
Up to 10 days from onset of swelling	1
Just mentions exclusion	5
Until disappearance of swelling	6
Until feels better	1
Until swelling subsides and 7 days from onset	3
Rashes	
Just mentions exclusion	5
Seek advise from doctor for exclusion periods	3
24 hours after symptoms have cleared	1
Keep home for 24 hours, to see if the symptoms develop	1
Rubella	
5 days onset	6
12 days from onset	1
14-21 days	1
2 weeks	1
5 days from onset or until rash disappears	1
Until infectious period passed	1
Up to 21 days	2
Once fit and well	3
Just mentions exclusion	4
7 days onset	5
4 days from onset of rash	8
Scabies	
24 hours after treatment	1
48 hours after treatment commenced	2
3 days, and treatment needed	1
Until treatment is complete (usually 24 hours)	1
Until treated	6
Slapped Cheek Syndrome	
Exclude if unwell	1
Just mentions exclusion	1
3 days from onset of rash	1
Until recovered	2
No exclusion necessary	2
Temperature	
Free from symptoms for 24 hours	1
Just mentions exclusion	4
until temperature has been normal for 48 hours	1
Cannot attend the day after	4
24 hours	3

Tonsillitis	
Mentions needs antibiotics to clear	1
Until appropriate treatment has been given, and recovered	1
2-5 days. Child is excluded until medicine completed	1
Just mentions exclusion	1
No exclusion necessary	2
Until recovered	1
Whooping cough	
8 weeks from onset of cough, or until pronounced fit, or 7 days after commencing antibiotic treatment	1
2 weeks	2
Just mentions exclusion	3
22 days from onset of cough	1
6 weeks from onset of cough	2
7-10 Days	1
Until recovered	2
21 days from onset of cough, or 5 days from commencing antibiotics	3
21 days from onset	6
Up to 8 weeks	1
6 weeks, or 5 days if on antibiotics	1
6 weeks onset, unless antibiotic is taken	1
5 days from commencing antibiotics	3

Appendix 4.2 Description of Re-admittance Requirements for Various Infections

Other gastrointestinal infections

HPA guidance states that gastroenteritis requires 48 hours exclusion from the last bout of symptoms. It was common for DCPs to require the child to consult the doctor for advice regarding exclusion periods; this was the most popular policy for nurseries (31.6%) and childminders (66.7%). Some nurseries (21.05%) stated that the child could return when 'symptom free', or 'well', potentially enabling children to return before the HPA's recommended exclusion period. One of the requirements held by nurseries was particularly confusing, stating that children can return "*Until well, or 48 hours symptoms free.*" This could be interpreted as meaning that children can return during the 48 hour symptom free period (they are technically 'well'), in which case the second part of the statement becomes superfluous. This is an example where common phrases associated with this category of illnesses have been presented in different contexts, giving rise to important differences in meaning.

Other Rashes

Measles

Similar to chickenpox, exclusion periods for measles were often much longer than the period advised by the HPA (four days from onset of rash). Some nurseries required up to 10 days' exclusion from the onset of rash (6.2%)- almost a week longer than the HPA's guidance. Seven days' exclusion was the most popular policy for nurseries (53.1%). The most popular exclusion period for childminders ranged from five to seven days (50%), though some excluded for 12-15 days (11.1%), or even "*Up to 21 days*" (5.6%).

Rubella

The HPA recommends a six day exclusion period from the onset of Rubella. Most childminders excluded for four to seven days from the onset of symptoms (57.6%). As before, a few excluded for longer periods (18.2%) (up to 21 days exclusion). Most nurseries excluded children for four days (48.3%)- two days less than the HPA guidance.

Hand, foot and mouth and Slapped cheek syndrome

Hand, foot and mouth and slapped cheek syndrome do not require exclusion (according to the HPA), but the vast majority of nurseries excluded for these infections until the child was symptom free (86.7% for hand foot and mouth, and 83.3% for slapped cheek syndrome). Only a handful of childminders mentioned

these infections in their policies. Of those who did, 62.5 % and 50.0% excluded for hand, foot and mouth and slapped cheek syndrome, until resolution of symptoms.

Impetigo

The HPA advises that children with impetigo should be excluded *“Until the lesions have crusted or healed, or until 48 hours have passed following antibiotic treatment.”* Only one nursery (4.5%) had this policy in place. Here, it seems that parents have the option to wait for the condition to improve, rather than seek antibiotics. No other nurseries or childminders gave this option. It was common for DCPs to just mention antibiotic treatment, or only state that exclusion was necessary until symptoms had resolved. 27.3% of nursery policies and 12.5% of childminder policies specified that the child would be re-admitted if lesions could be covered.

Other RTIs and ear infections

Ear infections

Ear infections are not included in the HPA’s guidance, but most DCPs excluded for these. Two nurseries (20%) specified that 24 or 48 hours exclusion applies *“If the child is taking antibiotics.”* This could suggest that antibiotic treatment is not a requirement, and the exclusion period is a consequence of the treatment, rather than the infection. Unlike these, two nurseries (20%) stated that 48 hours of exclusion were required after antibiotic treatment (absence of the word ‘If’). All other nurseries excluded children, specifying 48 hours, sometimes with additional comments (i.e. *“Depending on manager’s discretion,” “Or until symptom free,”* etc.) (60%). One childminder required the full course of antibiotics to be taken before re-admittance to day care (20%). In contrast to this, another childminder only required children to be ‘well’ and discharge-fee for re-admittance (20%). One childminder only excluded a child if there was discharge (20%).

Tonsillitis

Some day care policies directly suggested antibiotics for tonsillitis (27.3% of nurseries and 14.3% of childminders). Of these, two nurseries specified that the child would be allowed back *“When symptom free, or 24/48 hours after antibiotic treatment”* (18.2%). This could imply that children are permitted to return to day care following 24/48 hours of antibiotic treatment, even if they have not yet fully recovered. Nurseries who did not mention antibiotics still specified a 24 or 48 hour period of exclusion, or stated that the child would be excluded *“until recovered completely”* (63.6%). Two childminders used the word *“treatment”* rather than specifying antibiotics (28.6%). One childminder stated that the child should be fully recovered before re-admittance (14.3%). According to HPA guidelines, exclusion is not necessary for tonsillitis. One nursery (9.1%) and two childminders (28.6%) complied with this.

Chest infections

Chest infections are not covered in the HPA's guidance, and were not commonly mentioned in the written policies analysed. Of those who mentioned this infection, two nurseries (50.0%) and one childminder (100.0%) mentioned antibiotic treatment. One of the nurseries excluded for 48 hours after the commencement of antibiotic treatment, while the other excluded for 24 hours after commencing antibiotics. The childminder stated that the full course of antibiotics needed to be taken before re-admittance.

Whooping cough

The HPA advises that whooping cough should result in three weeks' exclusion, but antibiotic treatment will reduce this to five days. Whooping cough was described by a number of DCPs as requiring six weeks' exclusion (3.3% of nurseries, 14.8% of childminders); 3.3% of nurseries and 7.4% of childminders stated that the period is reduced with antibiotic treatment (3.3% of nurseries and 3.7% of childminders specified five days). The most popular exclusion policy amongst nurseries and childminders required exclusion for three weeks (no antibiotic treatment mentioned) (46.7% of nurseries, 22.2% of childminders). There was a great deal of variation amongst childminder policies. Periods of exclusion ranged from seven days to "*Up to eight weeks*". Not all DCPs mentioned an exclusion period with and without antibiotic treatment, usually focusing on one scenario, or the other.

Appendix 5.1 Reflections on Interview Experiences

1. Challenges experienced during interviews

The interview experiences with DCPs and parents were similar, although DCP interviews were much more structured, and could be planned to a greater degree than parent interviews. This was largely owing to the information already obtained from the questionnaires, in addition to the 'standard' policy-related questions that were applicable to all DCPs. Parent interviews, on the other hand, were more personal, and somewhat unpredictable. Nevertheless, similar challenges and issues were encountered in the two interview phases. Some of the more prominent challenges and how they were overcome have been outlined here.

a. Covering the interview schedule

As mentioned in the main thesis, the interview schedule functioned as a guiding document. At times, some topics were omitted from interview. Some of the reasons behind this have been outlined below.

i. Participants naturally raising topics

Certain topics would often naturally arise through the conversations. If participants used specific examples, I would extrapolate from the example, by asking if that was always the case, or whether there were any exceptions to what they had just said. In some interviews, the participant's beliefs or opinions came through strongly. For example, if a DCP had expressed concerns about parent honesty without directly mentioning this, it would make it inappropriate to ask "*Have you ever questioned parents' honesty?*" Asking the question again at a later point could have been detrimental to the rapport built with the participant, as it might have given the impression that I was not being attentive. Furthermore, in a natural conversation, one would not ask questions that they already knew the answers to. It was essential that participants experienced the natural flow of conversation, directed by the interviewer's natural line of enquiry, rather than a schedule.

ii. Timing

Some topics could have benefitted from further probing in some interviews, but this was sometimes sacrificed in order to cover important areas I had not yet addressed. Conversely, when a participant's experiences generated in depth discussion, I chose to prioritise this over covering the entire schedule. In cases where there was a time limitation, this was known before the interview commenced, allowing for the interview to be conducted in a manner where certain topics were prioritised, and the level of detail sought was controlled.

b. Limited Data

Depth and quality of the data very much depended on the richness of experiences the participant had to offer, and/or the manner in which they offered information. For many participants, information emerged naturally through conversation, during which multiple themes were covered. In some cases, participants would look to me to direct the questions, and give rather short, prompt answers. The latter of the two presented a greater challenge, both in terms of building a rapport, and building in-depth data. In these situations, I would change the order of the interview schedule. Many of the questions based on participants' experiences were asked towards the beginning of the interview. However, in situations where participants were being rather short with their responses, opinion-based questions were asked at a much earlier stage than planned. This had the effect of the participant offering longer responses, helping them to relax and become less conscious of the interview scenario.

The limited depth and breadth of information offered in some interviews could sometimes be attributed to a lack of relevant experiences. These situations could not be avoided, although they occurred infrequently. A number of solutions were developed in response to this. Firstly, open-ended questions, when yielding little response, would be re-approached in a more specific manner. For example, when parents were questioned about which infections their child(ren) had encountered, they would sometimes find it difficult to accurately recall this information. I found that reading out a list of infections not only triggered parents' memories, but also enabled me to set out a provisional structure for the interview.

Having vignettes in the interview schedule helped a great deal in cases where DCPs were not able to recall many instances of exclusion. Some DCPs would respond according to actual past experiences, while others responded on the basis of how they believed they would react, or how they normally reacted. A similar strategy was used for parent interviews, where they were asked to consider hypothetical situations, if they had no relevant experiences. All interviews were valuable in terms of the contributions they made to the project, though some were richer in information than others.

c. Reassuring participants

Another problem encountered during the interviews was the way in which participants seemed to monitor and censor their comments. Parents in particular sometimes needed confirmation that they would be anonymous, and that no information would be fed back to DCPs. Participants would in some cases begin sentences with "*I know I shouldn't say this, but...*", or culminate a sentence with "*I shouldn't have said that, actually*". In these few cases, participants were reminded of the confidential nature of interviews. It was also important to reduce participants' anxiety after sharing information they might have felt was not socially desirable. In these cases, I would reassure the participant that I understood their circumstances, and was sympathetic to their case.

d. Relevance

The issue of topic relevance is a basic criticism of the semi-structured approach, where much of the information offered is unrelated to the research questions. However, topics were usually loosely related to the research area. I consistently re-directed the conversation to topics of interest, while attempting to balance this with showing an interest in what the participants were offering. The most effective way to manoeuvre the conversation was to pick up on a point they had made, and relate it to one of the themes on the schedule. During the initial interviews, I was quick to redirect the discussion to desired topics, but with experience, it became apparent that gems of information often unexpectedly emerged from seemingly irrelevant topics.

2. Immediate impressions and reflections from each interview (typed from hand-written notes taken after interviews).

MTN21

The nursery itself was managed by a younger woman, who was attending university once a week, has children of her own, and has strong views that doctors overprescribe antibiotics for coughs.

The most striking thing that came out from the interview was the fact that 12 of the children there were on antibiotics, for flu-like symptoms. Maybe this is why the manager was particularly of the view that too many antibiotics are given these days. Having to remember to administer the correct dosages, for probably 12 different dosage schedules, would likely put the issue of 'high prescribing rates' at the forefront of her mind.

The manager seemed to have the business side of the nursery central to her attitudes to excluding. It's the first interview, but the number of children on antibiotics at that time seemed quite high. The manager seemed to have no hesitation in asking parents to take children to the doctors- this was her solution to dealing with children that she thought were unwell. Her main reasons for this were diagnosis confirmation, and treatment/management of infections. It was clear that notes from doctors were commonly sought from parents. I wonder if parents would interpret this as an obligation to produce evidence that they'd seen a doctor, whether it was a written slip, or perhaps even an antibiotic prescription?

I initially got the impression that I was intruding. She seemed to want to just answer the questions and get it over with, rather than have a conversation. Maybe I wasn't following up after her responses. Going on to the next question might give a sense of a structured interview. Maybe she thought she couldn't talk in between questions, or go off on tangents? I may need to act less like an interviewer, and more like a person who's genuinely interested in what the DCPs are going through.

CC17

This interview was interesting in the sense that the woman had a lot of experience, and had found a way to get around conflict with parents, by simply

refusing them entry if they had to have their child on any medication at all. The woman was reflective on her less experienced days, mentioning she used to feel pressure to please parents, due to her fear that they would stop using her services. I suppose, she could be considered to be in greater demand now, due to her experience. This could give her the confidence to exercise and to implement her views and rules. Then again, having a clear cut policy does leave little opportunity for any discussion about exclusion, thereby avoiding cases where she has to directly face having difficult conversations with the parents. I wonder if parents know she has made up that rule herself? She can always use other parents' children as a way of justifying her rather strict policy (i.e. her duty of care to others).

There were many interruptions during this interview, which couldn't really be helped. The DCP did have a habit of not listening to my questions, and her answers often failed to address the question. It's still all relevant, but there were a lot of contradictions. When trying to clarify points, I still got the impression that she wasn't registering what I was saying- just absently agreeing. I'll have to be more careful in the future, and try to stand my ground. Maybe ask more open ended questions, so there is a minimal danger of them just saying "yes", and continuing down a different alley of thought. Is it possible that childminders and nursery managers exaggerate how strict they are when it comes to excluding for infections? At a glance, it would appear that I'm supporting the idea of infections being contained, purely because they'll remember I'm from public health. There's a possibility there...maybe I should confirm to see if they understand what my project is about?

MN4

The nursery manager was very warm. The questionnaire wasn't filled out properly though. There were mistakes that misled me into choosing this nursery, but it still satisfied other criteria. I'd chosen this nursery because they had no information on any infections, and didn't show the need to have any information. However, this wasn't the case. They had laminates on the wall, and an exclusion policy which the nursery manager couldn't show me (she had lost it at the time of interview). She seemed to know areas of it vaguely. She had a very relaxed approach to managing infections, although she was quite strict about which infections definitely weren't allowed. Nevertheless, there were always areas of uncertainty, and she personally believed in allowing children to get ill (to build up defences).

There were a number of interruptions, but it didn't have much impact on the interview. We managed to continue from where we paused quite easily. I'm getting the impression that there is a lot of 'manager's discretion', when it comes to making exclusion decisions, and it's very hard to ask what this discretion is in each of the infections. It really does seem to depend on the manager's thoughts at the time, the parents, the children's ages, whether they've been to the doctor, their past history, whether they've taken any medication, whether they're taking medication, whether their symptoms are spontaneous or developing over time, whether they show any improvements etc.

CN11

This nursery was specifically aimed at students with children. The nursery had an extremely thorough exclusion policy, with symptoms carefully researched. This was one of the few day care settings that made use of public health services, possibly due to their location, and affiliation with Cardiff University.

Overall, I got the impression that this nursery manager had struggled with parents trying to bring their children in when, in her opinion, they should be at home.

Maybe this is because the day care centre is used by university staff- extremely professional- or students, who might also be desperate for day care (more than other parents?). There was a lot of mistrust expressed- especially when it came to knowing how long a child had taken antibiotics for.

CN25

The first Welsh-dominant speaking nursery. Apparently they have some parent doctors. The interview was quite difficult to time correctly, due to interruptions and incomplete questionnaire answers. There was a general feeling of unease on the whole. This might have been due to the lack of clarity surrounding the exclusion policy, which came to light over conjunctivitis, where the manager's view was that conjunctivitis would not be tolerated until it was completely clear.

Contrary to this, the policy says they may return after 2 days of antibiotic treatment. The policy itself mentioned antibiotics, but didn't make clear which infections it was relevant for. It had asterixes next to some of the infections mentioned, alongside columns entitled '24 hours', '48 hours', '72 hours', 'completely recovered', 'symptom free', etc. Asterixes (sometimes two, sometimes three) were then placed under the appropriate column by each symptom/infection. I found this confusing, because at the bottom of the page, it stated that the asterixes denote how long a child needs to be away for if on antibiotics, OR, the end of symptoms. However, I was unsure as to why different numbers of asterixes were used.

Overall, the policy seems to be quite extensive, although the final decision is made by the manager. There was a lot of emphasis on 'how the child feels', highlighting that exclusion isn't just based on limiting the spread of infection. An ill child will require more attention and 'attention' paid to individual children is somewhat of a commodity in large nurseries. Their required ratios of carer to children need to be met- there is simply no practical solution to how a poorly child can be accommodated into such a tightly run system.

There were constant reminders that parents try to get around the nursery's antibiotic policy by being dishonest, when it comes to reporting how many days the child has been on antibiotics. This was due to the stringent guidelines that a child needs to be away for 48 hours if starting a course of antibiotics, after which they may continue being administered the course at nursery.

CN72

The interviewee seemed very experienced. She seemed very conscious of the recording, though she eased into the discussion as we progressed. There was a lot

of talk about whether or not the child feels poorly, and subjectively unwell. What was slightly awkward was the way the manager brandished all the parents as 'shoplifters'- purely on the grounds that she served deprived families (I think they pay £1.00 per session). I wasn't quite sure how to react when she said this- I actually felt quite angry that she would make such a generalisation, and really felt uncomfortable that she would stigmatise her clients like this. She did provide examples of parents that had gone to prison, so I suppose these powerful memories/experiences have left a lasting impression. She was also nearing retirement- maybe her age or generation have less qualms about making politically incorrect statements.

MTN26

The nursery manager was extremely inexperienced. She had very little to say about infections, and hadn't even heard of some. She didn't seem to be able to explain the policy. I got the impression that she was being defensive about the hygiene practices of the nursery, because of the topics we were discussing. I tried to reassure her. There was often a lot of confusion in this interview, and the answers did not always make sense. On further questioning, one particular point she had made about temperature was altered, once I pointed out (in a polite way) that there was absolutely no way of knowing a child was feverish if they were running around happily, without showing behavioural signs (I was trying to understand what would prompt her to even check a child's temperature if they seemed happy). Finally, she explained that she might notice that a child feels hot if she happened to make contact with them.

One noteworthy thing about this nursery was the funding, and the potentially more relaxed ways in which the service would be used, in comparison to other private nurseries.

The interview was very stunted, and the answers she provided often contradicted examples given. I think this may have been due to her uncertainty of why I was there, and what the interview was about- I got the impression she hadn't read the info sheet. I tried to focus on her experiences, rather than ask for her opinions- thought this might ease her into the interview better. Although the interview improved, the manager was not able to give specific examples, and continued to stress that if children were ill, they didn't come in. Probing was challenging, and often met with one word answers. This was one of the managers that didn't advise antibiotics verbally- but they were suggested on her written policy. I got the impression that the main reason she wouldn't advise antibiotics was that she wouldn't be confident in her advice.

CC12

I met this childminder in a busy coffee shop, and had a few issues with power, and the recorder stopping. The DCP said something really interesting about antibiotics being needed for coloured discharge, but the recorder had run out of batteries at this point. When resumed recording, she failed to mention this again. I had to probe. I found this interview particularly interesting, because the childminder had very extreme written policies that explicitly stated the need for antibiotic treatment- she didn't have a policy on the day, but is going to post me one.

CC91

Met in the childminder's house. There was a little girl present, asleep. The DCP seemed to have a very flexible approach to care. She would accept children who were suffering from certain infections a lot more readily than previously interviewed childminders. She seemed to rely on child behaviour when making exclusion decisions. She didn't seem too concerned with issues of infection transmission...seemed to be aware of the fact that it's to be expected (infections). This DCP was slightly different to the rest, because a lot of her care was administered before or after school/nursery. So, part of her duties included taking the children to and from nursery. This would impact the interview, because she is providing less care for some children. Furthermore, there may be a tendency to be less cautious with exclusion if another DCP or school has rendered them ok. However, the need to pick other children up sometimes made it difficult to care for a child that was too unwell to accompany in the car to pick the others up. This had caused some issues in the past, but she was able to ask her older children to look after the minded child while she left the house. Technically, this isn't allowed, and breaks childminding regulations, but her informal relationship with the parents allowed her to break these rules when necessary. She knew they would understand, particularly as they knew her older children. The interview overran, but the childminder didn't seem to want to rush- she didn't seem particularly busy, as she only had one child that day.

CC5

A very experienced childminder. Two children were present, and there were numerous interruptions. The childminder had a very casual take on dealing with infections, treating them on a case by case basis. She seemed to put more emphasis on how the child felt, and based her decisions on this. The interview was quite long due to the interruptions and it was difficult to maintain flow, especially as the children required attention. One of the parents came to collect their child. Perhaps organising interviews when the parents aren't likely to be collecting would be better. This childminder didn't seem conscious of the interview scenario- seemed to speak freely. Interestingly, she was one of the few that no longer excluded for conjunctivitis, having been updated by her childminding group.

CC15

This childminder was extremely inexperienced. She had very little to discuss in terms of exclusion- didn't have many experiences of children in her care catching infections. She seemed to think that I was an expert that would be able to provide her with more information on how to deal with infections. This in itself was interesting, as it highlighted the lack of guidance childminders have. Knowledge seems to come with experience.

CC60

The interview was with a couple, both registered to care as childminders. Their experiences of childminding were different to others interviewed up until now as they had the option to EASILY accommodate young children who weren't feeling well. Even those they suspected to be contagious were accommodated, as there were two people- one could provide care for the ill child, while the other took care of the others. I got a strong sense of them genuinely caring for the children they looked after- almost like grandparents. Both were retired, lived in a nice area, and appeared to enjoy their work. Their tone was slightly 'complains' at times, when discussing desperate parents. They seemed to understand parents' situations, but understood the issues surrounding contagion. Even though they fundamentally felt a contagious child should not be in their care, maintaining a good relationship with parents seemed more important. Maybe this is because, unlike other childminders, there's two of them- so separating children is feasible. The interview overran- taxi turned up before I had a chance to wrap up. Didn't get a chance to summarise and discuss some of the topics I wanted to return to.

MTC5

The area the childminder was based in seemed more deprived than others interviewed thus far, but this may be because other interviewees were in particularly middle/upper middle class areas. The interview was conducted at the childminder's house in Merthyr. The house was busy, with people coming in and out, and there seemed to be a number of minded children there. The childminder seemed organised, but had a very matter of fact way of speaking. As long as a child wasn't infectious, she was happy to have them, but didn't have many specific experiences to draw on. She spoke about other mothers she knew at length- about how she disagreed that their children were constantly taking antibiotics for ear infections. She gave very few examples of her own experiences as a childminder.

The circumstances were not ideal for an interview- the childminder continued with her cooking as I tried to interview her, and seemed to be in a rush to get through the questions. It was hardly a conversation at the beginning of the interview. I felt extremely uncomfortable, and offered to come back another day- (even if it was all the way in Merthyr). She wanted to continue though, so I didn't really feel I had a choice. The interview seemed to improve as we went along, but still not conducive to getting into any in-depth discussions.

MTC12

This childminder was extremely experienced, and relied on her personal experiences to manage children's health. She had very specific routines that were adopted every day with the children- this also applied to how she dealt with infections. She kept referring to her filefax, which had recommended exclusion advice. She kept children with chickenpox, as long as other mothers were happy for their children to catch it while young. She focused on hygiene and cleanliness a lot- seemed very conscious of emphasising how her home was clean, and her practices were tailored towards limiting infection transmission.

MC22

This was a very short interview, with a childminder who lived in an affluent area of Monmouthshire. She had very positive relationships with parents- had grown to be friends over the years. She had never experienced excluding a child, as parents always told her when children were too unwell/infectious to come in. She even offered emergency care now and again, and talked about how she would write parents mini letters after each session, to communicate what had happened during the day. She would sometimes send photos throughout the day. Parents had never caused her any problems.

CN5

This was a chain nursery. Unlike other nurseries, there was a tendency for the nursery manager to act a little detached from the policy. Probably because it was a standard table handed to her from those in charge of the franchise. It seemed like there was a little more flexibility than other nurseries- more emphasis on giving parents options, and letting them decide what should be done. Interestingly, she spoke of the difference between symptoms that were 'visibly infectious' as being more problematic, as the discharge could spread to objects/carers/other children. Not a problem with ear infections, if discharge was contained.

CN3

This was the second nursery from a franchise yesterday's nursery belonged to. This nursery manager had worked in childcare her whole life, moving up the ranks. Not much more to add about the policy- followed standard policy of the company. Unlike the other nursery manager from the franchise, she talked more about giving personal advice as to when children would benefit from antibiotics. One thing that I did notice- it felt very 'interview-like'- she sat behind a desk, and acted very professional (still friendly). This made me wonder how conscious she might be of the answers she was giving. There was a lot of emphasis of trying to help parents by offering advice. She was mindful that the doctor and parent decisions need to be respected. Not sure if this is what she felt she should be saying. Didn't get this impression with the other branch nursery manager.

MTN18

Interview had to be rushed- the person in charge claimed she hadn't written the policy. Had to end early- nursery was busy with parents picking children up. I offered to come back when it was less busy, but she said it would be fine. Once the nursery had calmed down, we were able to settle into a discussion, but the manager could not give many examples or experiences of exclusion. I think this was because she was newly appointed- not very experienced, and seemed to run everything by the main manager that had moved to another branch. This was one of the nurseries I had recruited in order to explore day care settings in more deprived areas.

MN40

This manager didn't seem to follow a policy- dealt with children on a case by case basis. When she suspected a child to be unwell or contagious, parents were contacted. No advice was given, and no exclusion periods were applied for antibiotic treatment.

MN2

The manager was in charge of a semi-rural or town-based nursery. The strongest idea that came through was the importance of ensuring parents take their children to the doctor's when ill. She had extremely strong expectations for antibiotics for certain infections- conjunctivitis. Lots of emphasis on steps taken for infection control- even discussed food preparation. I got the impression that she felt the interview was a means of judging the nursery's practices- how regimented they were with health and hygiene promotion.

MN8

A small, town-based nursery. This interview was extremely difficult to control- the manager gave very rare opportunities for me to ask questions. It really was difficult to ask the questions I needed to ask. The woman had strong views on how to raise children in general, and clearly wanted to express these, regardless of the questions. She had a strong ethos of how to treat children, what to feed them, how to handle parents, etc. Lots of examples given, but often unfocused- unrelated to the interview topics I raised. I actually found myself allowing the woman to talk about some of these unrelated issues once I found out that her own child had long term health conditions. If she felt she wanted to discuss these with me, or use the interview as an opportunity to express her thoughts, that was fine. Letting her speak about these issues was fine, but it did eat into the interview time- a problem as she needed to end the interview at a prompt time. Overall, I got the impression that this manager is not scared of advising parents on how to manage their children- and this extended to their health. She had no qualms in advising antibiotics or GP appointments.

PCN25.1

Note that this woman had experience of working as a GP, and could therefore have given a biased view. I was still interesting to hear her perspective. The interview actually highlights the potential value in interviewing GPs as the third stakeholder group. It struck me that this woman said she doesn't rush to pick children up for temperatures. Feels nursery wants her to though. Shows that parents aren't always worried when nurseries call about their children. She's a GP, who knows the HPA guidelines, and she will keep her child home when she's actually got conjunctivitis. Doesn't seem like it's for her benefit, but because she knows the nursery definitely won't accept them. She drew comparisons between cleaning normal sticky eyes, and how it's not possible to clean actual

conjunctivitis- hence keeping them at home. Some important themes arose, relating to:

- definitions of conjunctivitis
- tonsillitis and ear infections should be treated like colds.
- No uniformity in policies between day care practices
- Belief that nursery expects antibiotic administration.
- Saw policy as being applicable for well children, because if unwell, children will be kept home anyway.

PCN25.2

This was a first time parent. She found the policy a little pointless, as it doesn't describe symptoms, so she had to rely on nursery's diagnosis, doctor's diagnosis, or her own judgment. This parent had her own opinions of when antibiotics were needed. The policy didn't have any relevance to her. However, she did feel that the nursery encourages her to visit the GP, when she normally wouldn't go for given infections. She felt that other parents would be discouraged from getting antibiotics due to exclusion times associated with treatment. This may have been a result of me over-stressing the points made on the written policy- I'm pretty sure it was impossible for her to answer the question without me doing this, as she had paid such little attention to the exclusion policy. If this idea isn't picked up in other interviews, don't use this quote.

PCN5.1

The child was present in the interview- slightly distracting, especially for the parent. The parent was clearly well-educated, professional, living affluent lifestyle. Had two older children- this is important, as I got the impression her past experiences have numbed her to the nursery's policies. There was a lot of emphasis on consulting GPs purely as a means of returning children to day care sooner, by receiving a note, or antibiotics. I lost the thread at certain points during the interview, as I wasn't sure if she actually believed the antibiotics were helping. Later, she clarified that her GP explained they weren't beneficial.

PCN5.2

This parent was a first-time mother. She seemed quite career-orientated, and commented that her job was quite far from the nursery. She felt quite annoyed at the nursery's low threshold for calling her, as it was a long way to go, and often, the child had been 'well' (not in distress). The main points from this interview were:

- The nursery excluded when the child has a cold, which she disagreed with, as her child was well, and happy when arrived home.
- Hand foot and mouth resulted in nursery advising a GP consultation. The child was excluded until cleared, but the parent strongly felt that her child was well.
- The nursery also advised her to go and see the GP for suspected ear infection.
- Reading the policy, the parent felt it indicated that antibiotics were needed. She couldn't report on previous experiences, as the doctor automatically prescribed for the suspected ear infection.

PCC60

This was the first childminder user to be interviewed. Her son used the childminder full time, and was an only child. She seemed concerned over what the childminder's take would be on each symptom her son experienced. I got a strong sense that she cared about what the childminder thought. In one comment, she seemed upset that the childminder had to pick her son up when unwell on one occasion, because she was at work. She seemed to suggest that she had felt a mixture of guilt and embarrassment in front of the childminder (not me). Seemed relatively at ease discussing these topics.

She was only aware that the childminder won't take children when generally unwell. She has never experienced exclusion from her childminder- always opted to keep her son home herself when poorly.

PCN22.1

First time parent, male. Interviewed at office at university. Seemed to be a brief interview, mainly because he had only experienced chickenpox and sickness and diarrhoea. He gave the impression that he appreciates advice from the nursery, and values their opinion. He made references to NHS Direct being useless, as they're a glorified telephone directory, and the advice they offered was on the website anyway.

PCN11.7

My immediate impression was that this parent was taking part in the research due to academic interests, being a lecturer at Cardiff University herself. I noticed how she did a lot of the deeper level interpretation of her experiences and thought aloud. She felt like she was failing as a parent because of the way nursery treated her. She also felt that nursery had experience of childcare, but not medical care. She expressed embarrassment about going the GP, and therefore now holds back. I wasn't sure if this was a true account of her experiences, or whether she was jazzing things up for the interview. Hard to tell, because she took a theoretical interest in the study.

She mentioned how she holds back from telling the nursery when her child is unwell for fear that they would be extra sensitive to picking up on the slightest point, and excluding for it. She seemed to forget about the interview scenario, and 'went into herself' when saying this. I noticed this as it was quite blatant that she was discussing personal experience. She didn't understand the policies- unclear what the 48 hours applies to (post symptom resolution or last bout) in reference to sickness and diarrhoea. She didn't know why 48 hours' exclusion is enforced after the child is well after having experienced a temperature.

PCN11.4

First time parent, interviewed in a busy canteen. There was a substantial gap in the middle of the discussion, where the parent made an interesting comment about unnecessary exclusion, and her GP's angry response. She couldn't

remember the infection. I may have pressed too hard- spent too much time trying to prompt her to remember. Maybe the specific infection doesn't matter- should have focused on the situation and wider scenario, and asked her to describe this in more detail.

This parent gave the impression that the doctor getting angry didn't discourage her from future consulting. She felt she was just doing what was asked of her. The doctor was angry at nursery- not her. Her child's health was more important than the social awkwardness of going back to the doctor for future consultations.

CN11.6

This parent seemed young, and had recently been a student herself. She spoke to me as a peer, and was relaxed from the start of the interview. Most of the interview was about conjunctivitis- a recurrent issue for the parent's child. I preferred this style of interview, where the interviewee did most of the talking. I didn't manage to capture a breadth of info, but good depth in one area. I was conscious of the fact that she might have read the information sheet, anticipated the study aims, and altered her answers accordingly. On reflection, I'm not sure why I felt this way. It could be because her experiences seemed to perfectly match what I knew this study was trying to unravel. Looking back though, the information she gave has to be reliable, unless she completely invented parts of her story. I don't feel she did this- the interview was too fluid, and she seemed genuinely passionate about the topic of conjunctivitis management, as it had caused so many issues.

PCN11.5

An experienced parent, who knew a great deal about antibiotic resistance. She was able to discuss the societal consequences of resistance. She had a lot of mistrust of the policies. My impression was that she had medical training, but this wasn't so. The main points were:

-She withheld from seeing her GP for a suspected chest infection, as she wanted to delay exclusion due to antibiotics until she was off. She wasn't genuinely worried though. Her concern about exclusion was born from her reading the exclusion policy, which mentioned antibiotics in relation to chest infection, with an added exclusion period post antibiotic treatment.

-I noticed how the parent justified a 48 hours exclusion period for ear infections because it takes 48 hours for the antibiotic to kick in. So, she must have assumed that antibiotics would be prescribed. Could the written policy have influenced this view?

-She abides by nursery policies because of discipline- seemed controlled, does thing according to rules, regulations. I'm not sure if she would have admitted to sending her children back to nursery before the recommended exclusion period was up.

- Similar to other interviews, the same issues with conjunctivitis arose. She used the same nursery as the parent who had experienced ongoing issues with conjunctivitis policies.

PCN11.3

-Issues with rashes

It was interesting that there were no issues with conjunctivitis. The parent felt she would take her child to the doctor anyway, and antibiotics were needed to clear it up faster. She believed antibiotics were needed for conjunctivitis, which was associated with unsightly and unpleasant symptoms.

She gave the impression that her DCP didn't explicitly advise antibiotics, and didn't mention GP visits in policy. However, the policies force you to work out how to 'con' DCPs. There was a sense of constant struggle with DCPs regarding exclusion. She mentioned sending her children in when they weren't perfectly healthy, because she felt she needed to save her 'time off from work' for when the nursery actually enforced exclusion. This could suggest that day care settings are impacting on her parenting. She didn't feel she could make the decision to keep her child home if they felt slightly under the weather.

She commented that DCPs don't look at periods of contagiousness. I wonder whether her biomedical line of work has made her more interested in this research. She said she had gone and researched periods of infectiousness for hand, foot and mouth, for example. She felt the nursery doesn't look at risks of infection either. Child is going to get it anyway, so what's the point in excluding? There was a sense that they just need to have a policy for the sake of a policy. Need to have something written down. This, I suppose, is technically true in that nurseries have to have a written policy in place, but this nursery actually practiced what is written.

PCN72.2

Met in a public library. This parent was seemingly from a deprived socio-demographic background, but was actually well educated. She had come from a developing country, and mentioned that her husband was a doctor. Language issues were a major barrier to comprehension in this interview. The parent's English wasn't fluent. I understood her, but not sure if she was fully able to express all she wanted to say. It made it very difficult to explore beneath the surface, and raise abstract ideas. Despite comprehension issues, I got a strong impression that this parent has experienced difficulties with her nursery. She seemed quite angry, but expressed this in a controlled way- maybe because of the language issues. Even though her children hadn't been excluded, she felt upset at DCPs' insistence that her child wasn't well enough to be there. Could it be interpreted as DCPs' implying she isn't perceptive enough to notice her child's behaviour? Not caring enough? Any parent would be angered by these accusations, even if they are implicit.

PCN72.2

Same language issues as the previous interview applied. This parent was a friend of the former's, and came along to the library to be interviewed in the same slot. The interview was cut short because the parent had few experiences. Even the infections her children had experienced were not explored in depth- language

limitations. Still, I gleaned that the nursery had excluded her daughter for an allergic rash. The nursery's constant insistence that the parent should take her child to the doctor led to the parent keeping her child home when she had the slightest of symptoms- even for sniffles. There was expressed annoyance at the nursery's constant exclusion of children they describe as 'not seeming to be themselves'. The parent quoted this a number of times, with frustration. On one occasion, the manager had suggested her child had chickenpox, and ignored her insistence that her child had already contracted this. She felt powerless, but had the option to keep her child at home, as she was not in full time employment.

PMTN23.1

The parent's second child was at nursery. Met in a semi-busy coffee shop in Merthyr. The Parent seemed very open and eager to chat. She didn't need prompting too often, so I was able to steer rather than lead. The parent seemed to give an honest account of how she managed her child- even admitted to sending him to day care before the recommended exclusion period was up for diarrhoea. Her child had constantly caught infections over the previous 3 months. Her daughter went to a different nursery, but I still said we'd come back to her if we had time. I felt it was important not to give the impression that I didn't care about her other children, just because they weren't registered with the nursery I was looking at (or didn't fit with my inclusion criteria). I did not want to seem detached, only conducting research for academic purposes. Interviews needed to benefit parents too- if they wanted to discuss other children, I couldn't dismiss this. Talking about it may give insight into the parents' take on infections, or may explain their behaviours in more depth.

She mentioned child had antibiotics for bronchitis, but these were automatically prescribed by GP, and not suggested by nursery.

There were problems with Calpol administration for teething. The nursery wanted a prescription for this. The parent asked the doctor for this, but was refused, as doctors apparently do not prescribe for Calpol. The doctor advised the parent that the nursery could telephone call if they needed to double check it was ok to give Calpol- the nursery wasn't happy, and didn't give treatment.

This parent discussed the impact of having had children attend nursery in the past. She felt she was able to confidently attempt to get away with more now, as she knew deep down inside that her child was rarely in danger, and the infections are not really serious.

On one occasion, she didn't tell the nursery that her child was on antibiotics. Dose was for three times a day, but she would miss the second dose. She was worried the nursery would exclude him for being unwell- but she knew he wasn't contagious, and thought it was fine.

PMTN18.1

This was my second interview with a male parent. I felt a little uncomfortable with this, as I was told I would be speaking to the mother. He seemed a little unsure about what his wife had agreed to. He also had a tendency to keep relating topics back to his work as a police-officer. As it seemed important to him, I allowed this

to continue, as there was a chance we could explore topics in greater depth, if within a framework that suited him.

The parent claimed he would ask for antibiotics if his child was not well. However, what he meant was, he would ask for something to ease the child's pain if not well. Be sure to make this clear in reports and transcribing. He felt the exclusion policy for chickenpox was too long, but hadn't considered issues of contagion. Was purely talking about the practicality of the child being home for that long.

PMN2.1

This parent had a 16 month old child, and was her first child. I met her in a coffee shop in Bristol. Her child had caught a lot in the first few months of attending nursery. Temperatures particularly worried her. It seemed like she was worried about her child catching anything initially. She was aware of the importance of building up the immune system, but the idea of her child being poorly- even with a cold- was upsetting for her, to the point where it over-rid the benefits of contracting minor infections. I thought it a little strange that the parent suddenly remembered her daughter had conjunctivitis. The story kept changing, so there are reliability issues here. Recall problems perhaps? She made it clear that she consulted the GP, but didn't go specifically for antibiotics. Nursery didn't exclude the child- she phoned up and asked. Nursery said could come back when it's cleared. The parent had no problem administering antibiotics- preferred child to have it, if it will help them. She did however point out that she goes to the GP for advice and help- not specifically antibiotics.

PMTN21.1

Met at parent's home in Merthyr Tydfil. This interview was difficult at times, because the child kept interfering with the recording device and notes. This certainly influenced the flow of the interview. This was a first-time parent. Her child had recurrent tonsillitis, causing her to opt to keep him out of day care. She would ask the GP for antibiotics, mainly for something to help him recover. It seems that she had come to expect treatment for her child's tonsillitis, due to her previous experiences of being able to acquire them. She had asked for antibiotics in the past, after the doctor had denied her these. She was especially aware of doctor's varied prescribing habits, and made reference to it on a number of occasions. The fact that she felt it depended on what doctor she saw on the day, combined with her feeling that those who did not prescribe did not really care about her child, raises issues about patients' perceptions of GPs denying them treatment, and how this needs to be done in a manner in which patients feel supported- not dismissed.

Appendix 5.2 Interview Recruitment Letter to DCPs

Dear [Nursery Manager's/Childminder's name],

I am writing to thank you for returning the questionnaire, and to ask if you would consider meeting with me for a paid follow up interview. As a reminder, I am a PhD student at Cardiff University's department of Primary Care and Public Health, doing a study based on common infections in day care settings. Your questionnaire responses were a great help, and I would like to meet with you for a more in-depth chat about some of the topics covered.

The questionnaire, as you might remember, was sent to all day care providers in Cardiff, Monmouthshire and Merthyr Tydfil, and was concerned with sickness exclusion policies for children. However, there was very little chance for you to express your opinions, concerns, and experiences. This is why I have chosen to invite a number of day care providers who returned their questionnaire for a follow-up interview. You will be paid £30 for your time and effort, plus travel expenses if you choose to travel to the interview (I can come to you though!).

It is possible that different people will have different views on how common childhood infections should be dealt with. This not only concerns whether or not the child should be excluded from day care, but also what should be done to help the child recover. I am interested in finding out about your thoughts around this subject.

If you would like to take part, or have any questions, please contact me on [insert mobile number/02920687133], or send an e-mail to RooshenasL@cardiff.ac.uk. Alternative contact options are written on the information sheets I have enclosed. I would appreciate it if you could read through these, as they explain the details you need to know. Thank you for taking the time to read this.

Best wishes,
Leila Rooshenas
[date]

Appendix 5.3 Participant Information Sheet (for interviewing DCPs)

Day Care Providers' Interview Information Sheets

Study title: Managing common infections in day care settings: the beliefs around, and consequences of exclusion policies for children, parents and staff

Thank you very much for your questionnaire responses. You have been chosen to participate in the next stage of the above study, involving a short face to face interview with the main researcher. We will pay £30 for your time and effort. Please read the sections that follow, which will tell you all you need to know about taking part in the interview. Do not hesitate to contact me if you have any questions. My contact information can be found at the end of this information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?

This study is aiming to find out whether additional guidance and support is needed for day care providers and parents, when it comes to managing common childhood infections. There is very little official guidance available for day care providers/parents at the moment. This could possibly lead to unnecessary exclusion of children from day care, unnecessary GP consultations, and unnecessary medication. On the other hand, a lack of guidance and support could cause the opposite problem, where serious infections are left untreated, leading to a worsening of symptoms, delayed recovery, possible complications, and the spread of infection to others.

Please rest assured that this study has no intention of testing your knowledge or working methods. The study has an aim to improve the support available to day care professionals and parents, if it is necessary. Therefore, your opinions are very important to us. There are no 'right' or 'wrong' answers.

We would now like to carry out informal interviews with selected day care providers to discuss your experiences of dealing with common infections in your day care setting. The interviews will give the research team a deeper understanding of how common childhood infections are dealt with by day care providers and parents, and whether better support and information is needed.

How long does the study last?

The overall study has to be completed within three years. The first two years are set aside for gathering information, and the final year is usually spent writing up the final report, in the form of a thesis. This is the second stage of the study, where we plan to interview around 20-30 selected day care providers across

South-East Wales. The third stage will involve interviewing a few parents that use the day care providers we interview. We will provide you with a letter to pass on to selected parents at a later stage, if you are happy to do so.

Why have you been chosen?

You may have been selected because the research team was interested in having an informal chat with you, after reading your responses in the questionnaire. In some cases, day care providers have been selected because of certain features of their day care setting (e.g. size, location). The main goal was to include a good mix of questionnaire respondents in the interview phase.

Do you have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, we ask you to retain this information sheet, and sign a consent form on the day of the interview. If you decide to take part, you are still free to withdraw at any time, and do not have to give a reason. Your decision will be respected, and any information collected up until that point will be destroyed.

What do you have to do?

We kindly request you to contact the researcher named at the end of this information by any of the means listed. The researcher will arrange a time and place to meet with you. The interview setting can be discussed when you first express interest, as it will have to be practical, and easily accessible. We will compensate for travel expenses should the need arise.

The informal interview will be very casual, and last up to one hour. The topics of interview will be based on the questionnaire responses, but there will be more emphasis on your thoughts and opinions. We will also look at common childhood infections and their symptoms more closely, discussing what you are likely to do in various scenarios, and where you feel day care professionals need more support. Please could you bring along a copy of your exclusion policy for unwell children, if possible (unless you have already sent a copy with your questionnaire). If you agree, the interviewer will audio record the interview, so she can type up what was said (word for word) afterwards.

Please feel free to think of any particular concerns or experiences you might have, related to the topic, and bring these thoughts into the interview.

As we hope to also interview parents/guardians, we would be grateful if you could assist us by passing on interview invitations on our behalf. We cannot contact parents ourselves until they volunteer their contact information.

What will happen to the results of the research study, and is my information confidential?

The main researcher will listen to the interviews and write these out, careful to remove any information that might identify any individuals or day care settings.

Other members of the research team may listen to the audio recording if needed, but this is unlikely. As you might recall, you were assigned a study code in the questionnaire phase. This code will be used in any discussions the research team make, and/or any notes or written out interviews. All information you provide, including contact details (that aren't publicly available), will be password protected and/or locked in a filing cabinet which only the main researcher has access to. The written out interviews and notes will be stored in a separate location to a sheet that identifies who the codes apply to. Only the main researcher will have access to this sheet.

The main researcher will express the thoughts, feelings and opinions that came through in the interviews in the final thesis. Extracts of interviews might be paraphrased, or written directly, but they will give no clues as to who they are from.

Besides the thesis, there may be other publications or academic presentations that stem from this project. No participants, or day care settings, will be made identifiable. You are welcome to ask for a summary of the findings once the study is over.

Confidentiality and data protection

Any contact information or names of interviewees will be solely accessed by the main researcher. The wider research team may also listen to recorded interviews. In addition to this, before your interview, the researcher must provide a 'responsible contact' with the address of the interview location, and contact details of the interviewee. This is due to health and safety issues. Your contact information will be sealed in an envelope, and will only be opened in the event of an emergency (e.g. if the responsible contact cannot get in touch with the researcher). Once the researcher returns from the interview, they will retrieve and destroy the unopened envelope within five working days.

Who is organising and funding the research?

This research is funded by the Clinical Epidemiology Interdisciplinary Research Group of Cardiff University. The research is a project based in the department of Primary Care and Public Health, at the Heath park campus of Cardiff University.

Contact Information

Contact details:

The researcher: Miss Leila Rooshenas

E-mail: RooshenasL@cardiff.ac.uk

Telephone: 02920687133

**Postal Address: Department of Primary Care and Public Health, 3rd Floor
Neuadd Meirionydd, Heath Park, Cardiff, CF14 4YS.**

If you have any ethical questions or comments relating to this project, you may contact:

Prof I.G. Chestnutt
Department of Dental Health and Biological Sciences
Dental School
Tel 029 2074 6680
E mail chestnuttig@cardiff.ac.uk

Appendix 5.4 Consent Form for DCP and Parent Interviews

[Participant Code]

CONSENT FORM for INTERVIEWS

Title of Project: Managing common infections in day care settings: the beliefs around, and consequences of, sickness exclusion policies for children, parents and staff.

Name of investigators: Leila Rooshenas (Phd student), Fiona Wood, Meirion Evans, Lucy Brookes-howell, Chris Butler.

Please write
your initials in
each box

1. I confirm that I have read and understood the information sheets (version x, dated xx/xx/xxxx) for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, or decline to answer a question, without the need to give a reason.
3. I confirm that I am willing to take part in a short face-to-face interview about common childhood infections and childcare infection control.
4. I give permission for the interview to be audio-recorded. I understand that the recording will be treated with the strictest of confidentiality and will only be listened to by the research team.
5. I agree to take part in the above study.

Name (Interviewee)

Date

Signature

Name (Researcher)

Date

Signature

Appendix 5.5 Interview Topic Guides for DCPs and Parents

MOST RECENT DCP TOPIC GUIDE

Introduction and preamble: *Thank participant for returning the questionnaire. Remind participant that the interview will be audio recorded, recording will be confidential, and only used in this particular study. Remind participants that the objective of carrying out interviews is to find out about their true feelings and opinions, which is key to ultimately providing the right level of support for DCPs and parents (if required).*

The day care setting

- a. What kind of nursery is this? *[Allow participants to describe in own words]*
Prompt: independent or chain, type of funding, hours of care offered, ages catered for.
- b. Can you describe the types of parents that use this nursery? *Probe: Working/unemployed (and types of professions, is appropriate), affluent/socially deprived/middle class.*

The sickness exclusion policy

- a. Who put this policy together?
- i. *[If formed by participant]* How did you go about putting this policy together? *Probe: What resources were used for information (if any)? Ask for specific details such as names of books, websites, internet searches, etc.*
 - ii. *[If external organisation named]* Was the policy copied directly from [the/a] source, or adapted? *If adapted, probe for how this was done.*
- b. Does the policy get updated? *[If yes]* How often?
- c. Do parents see/have a copy of this policy?
- d. Is this policy ever used? *[If yes]* Can you give me some examples of how you use this policy? *Encourage participants to describe previous experiences or typical examples of how policy is used.*

Exclusion policies and practices for specific infections/discussing vignettes

- a. What does your exclusion policy say about *[name of infection]*? *Repeat for all infections reportedly covered in exclusion policy, or a selection of those of interest/deemed relevant. As participants are responding, probe for:*
- i. Whether exclusion is necessary.
 - ii. Exclusion periods, and requirements for re-admittance to day care.
 - iii. Whether anything can be done to speed up return to day care, or avoid exclusion.
- b. *In addition to the above, present pre-prepared vignette(s) for specific infection(s). Ask DCPs to talk through how they would deal with the scenarios presented.*
- c. What do you do when a child has an infection that is not described in the policy? *Use examples, according to their questionnaire responses.*

Guidance and advice
<p>a. Have you ever experienced difficulties in interpreting what a child's symptoms mean? <i>Encourage examples.</i></p> <p>b. Do you use anything to help you decide what a child's symptoms could indicate? <i>Probe for details, including where the resource is from, how accessible it is, etc.</i></p> <p>c. <i>Using examples or scenarios of infections discussed, probe for DCPs' approaches to diagnosing. Do they diagnose? Do they share diagnoses with parents? This may also have been covered when presenting vignettes.</i></p>
Relationship with parents
<p>a. Have you ever experienced difficulties when excluding children? <i>Encourage examples.</i></p> <p>b. <i>[If not yet raised in participants' accounts of past experiences]</i> Do circumstances of parents ever impact your decisions? How? Does this happen regularly?</p> <p>c. <i>[If not yet raised in participants' accounts of past experiences]</i> Do parents ever protest against your decision to exclude? Are you aware of any ways they attempt to get around your decision? <i>Encourage examples.</i></p> <p>d. <i>[If not yet raised in participants' accounts of past experiences]</i> Do parents ever try to bring their child(ren) back to day care before the required exclusion period? <i>[If yes]</i> On what grounds do they try to do this? How do you respond to these situations? <i>Encourage examples.</i></p> <p>e. <i>[If not yet raised in participants' accounts of past experiences]</i> Do parents ever try to re-admit children to day care on the grounds of GP advice/notes? How do you respond to this? Has GPs' advice ever gone against your policy? <i>[Explore what happened as a result]</i> <i>[If never happened]</i> What would you do if GPs' advice went against your policy?</p>
Advising parents [these topics may be explored earlier during participants' stories/account of past experiences. If not, ask now, or ask for verification]
<p>a. Do you ever offer parents advice when excluding a child? <i>Explore, encourage examples.</i></p> <p>b. Do you ever advise parents to visit the GP? <i>Encourage examples, and probe for reasons for offering this advice.</i></p> <p>c. Do you ever recommend antibiotics to parents (i.e. requesting them from a GP)? <i>Encourage examples- important.</i></p> <p>d. <i>[If so]</i> What kinds of symptoms would you generally suggest antibiotics for?</p> <p>e. Why would you advise antibiotics? <i>Probe for their views on how antibiotics are beneficial.</i></p>
Wider antibiotic prescribing issues [Only if appropriate]

- a. How do you feel about children taking antibiotics? *Explore. Probe for them to talk about own children, if appropriate.*
- b. Have you heard of antibiotic resistance? *Probe for their understanding of phenomenon*
- c. *[If yes]- where/who did you hear about this from?*
- d. Do you ever worry about resistance?
- e. *[If appropriate]* How do you think we can improve on the problem of unnecessary antibiotic use?

Future improvements

- a. Are there any changes you would like to see in terms of the guidance and support available to day care professionals? *Allow participants to answer, but if necessary, specify 'for the management of common infections'.*
- b. How would you feel about day care providers receiving standard sickness exclusion policies, written by professionals, and distributed to all day care providers?

Thank them, summarise main points discussed (and verify), ask if there is anything they would like to discuss, or if they have any questions.

TOPIC GUIDE USED IN FIRST DCP INTERVIEW

Interview Schedule For Childminders and Nursery Managers

FOR INTERVIEWER'S USE ONLY

A copy of the exclusion policy for ill children would be helpful, to refer to. Participants will be asked to bring a copy before the interview takes place.

- 1. Introduction:** reminder of why this research is being undertaken. Thank participant for returning the questionnaire. Remind participant that the interview will be audio recorded, though their interview will be confidential, and only used in this particular project. Remind participants that the objective of carrying out interviews is to find out about their true feelings and opinions, which is key to ultimately providing the right level of support for DCPs and parents (if required).
- 2. Characteristics of Day Care Setting**
 - a. *Cover size, number of children, opening times, funding, etc.*
- 3. Exclusion Policies:**
 - a. *Ask them to elaborate on the policies, and what they are based on.*
- 4. Specific Infection Management:**
 - a. What does your exclusion policy say about (name of infection)? *(Repeat for infections of interest, reported in exclusion policy).*
 - i. Is exclusion necessary?
 - ii. After how long can the child return, and under what conditions?
 - iii. Can anything be done that might permit the child to return sooner?

- b. *Present vignettes for certain infections, instead of asking the above questions.*
- c. What do you do when a child has an infection that is not described in the policy? (*Use examples, according to their questionnaire response*).
- d. What infection(s) do you feel need(s) elaboration in your exclusion policy, if any? Why?

5. Guidance for Identifying Infections:

- a. Do you find it difficult in deciding what infection the child might have?
- b. *Talk about the participant's responses regarding what level and types of support/information they have, for identifying infections.*
- c. Are there any particular types of symptoms which are hard to make decisions about?
- d. Can you think of any support you would like to have, to help you decide which infections you are likely to be dealing with?
- e. How do you think this will benefit you and/or others?

6. Advising Parents:

- a. *Base this on the table of infections from questionnaire- and cover the following in relation to specific infections, if appropriate:*
 - i. Whether exclusion is necessary for symptoms.
 - ii. If so, how long for?
 - iii. Under what conditions can the child return to nursery?
 - iv. Any recommended medications or treatments?
 - v. Is a primary care consultation ever advised?
- b. Do you tell parents what's wrong with their child and what to do?
- c. Do you ever recommend seeing a GP? When, generally, do you recommend seeing a GP?
- d. Do you advise parents when their child can come back, or what they must do in order to return their child to day care? If so, can you give examples?
- e. Do parents ever bring in a) GP notes, or b) evidence that the child is on/has taken medication, in hope that you will re-admit them?

7. Relationships with Parents:

- a. Do you feel any pressure to exclude a child, or keep a child in nursery, because of parents' views or demands?
- b. Do circumstances of parents ever impact your decisions? How? Does this happen regularly?
- c. Do parents ever protest against your decision to exclude? Are you aware of any ways they attempt to get around your decision?
- d. Do you think parents understand the difficult decisions you make, and why or how you reach decisions about exclusion?
- e. Would it help if parents and day care professionals had the same guidelines and recommendations about childhood infections, or would this not make a difference? Is communication between parents and day care professionals a potential issue that needs to be addressed?

8. Antibiotics:

- a. Do you ever recommend antibiotics to the parents (i.e. requesting them from a GP)?
- b. If so, why? What kinds of symptoms would you suggest antibiotics for?
- c. Was this based on your own knowledge, or somebody else's recommendations? Who?

9. Wider Issues Surrounding Antibiotic Prescribing:

- a. Do you think we have a problem with prescribing antibiotics to children?
- b. If yes: what?
- c. If no: how about resistance? Have you heard about this at all?
- d. If yes: where from?
- e. Do you ever worry about resistance?
- f. Overall, how do you think we can improve on the problem of unnecessary referral rates, and unnecessary antibiotic use?

10. Changes in Guidance:

- a. What changes, if any, would you like to see in terms of the guidance available to day care professionals, when it comes to dealing with common infections?
- b. Do you think it would be a good idea to have standardised sickness exclusion policies for all day care providers?

11. Thank them. Summarise Interview. Remind them of how their interview will be used. Ask if any questions. Give contact information.

MOST RECENT PARENT TOPIC GUIDE

Introduction and Preamble: Thank participant for returning the questionnaire. Remind participant that the interview will be audio recorded, recording will be confidential, and only used in this particular project. Remind participants that the objective of carrying out interviews is to find out about their true feelings and opinions, which is key to ultimately providing the right level of support for DCPs and parents (if required).

Background Information

- a. How many children do you have at home? What ages?
- b. [If relevant] How many of them go to day care? How many days a week? What hours?
- c. Why do you use day care? Explore how 'necessary' day care is.
- d. Has your child ever been ill, and unable to go to/stay in day care? If so, how did you cope?

Experiences of Infections and Exclusion

- a. How many times has your child been excluded from day care (or unable to go to day care) on the grounds of illness?
- b. What were these illnesses? Make list to guide in-depth discussion. Read out a pre-prepared list of infections to the parent, to aid recall of previous infections experienced by their children.
- c. [For each infection experienced] Can you talk me through what happened when your child had [name of infection]? Allow the parents to speak freely. May need to probe for the following:
 - i. At what point did you realise your child was unwell? How did you find out?
 - ii. Was your child excluded? Was he/she refused admittance, or sent home during the day? Did you not take him/her to day care in the first place?

- iii. What did the nursery manager/childminder say to you? Did they mention any infection/illness names or symptoms [i.e. did they diagnose]? Did they mention when your child could return to day care?
- iv. Did the nursery manager/childminder offer any advice?
- v. How did you cope with exclusion? Did you take time off from work?

If parents do not describe consulting GPs/seeking medical advice, ask if this happened at all. If they did consult or seek medical advice, ensure the following are covered:

- vi. Whether medical advice was sought (Professionals or lay: GPs, pharmacists, A and E, NHS Direct, relatives, friends)?
- vii. Explore how long the parent waited before consultation, and reasons for consultation.
- viii. What did the medical professional do/say? *Probe for how the parent felt about this, and whether they followed the medical professional's advice?*
- ix. Whether exclusion from day care, or parent's inability to work, were mentioned to health professional.
- x. Was any treatment offered? *Explore what the treatment was, how it was to be taken, whether parent expected treatment, and why.*
- xi. Did you ask for treatment? *If yes, explore why.*
- xii. Did you mention any treatment? *Explore how mentioned, whether parent expected treatment, why mentioned.*

[REPEAT THIS SECTION FOR EVERY INFECTION EXPERIENCED BY PARENT]

Views on Exclusion

- a. Do you know of any exclusion policies used by your nursery/childminder? *[If yes]* Do you have a copy? Are they clear and easy to understand? *[If No]* How do you think your nursery manager/childminder decides when to exclude a child?
- b. *[If parent aware of policy]* Do you think the policy is fair? *Explore.*
- c. Have you ever disagreed with your nursery manager/childminder's decision to exclude? *[If yes, explore what happened, and why parent disagreed]*
- d. *[If yes]* Did you voice your opinions, or do anything to get around exclusion....did it work?
- e. *[If relevant, based on above]* In general, do you ever try to get around exclusion policies? What do you do, and does this work?

Advice from DCPs [Only relevant if these topics have not been raised earlier]

- a. Does your nursery manager/childminder ever offer you advice when your child is ill? *Encourage examples*
- b. Does your nursery manager/childminder ever advise you to visit the GP? *Encourage examples, ask for:*
 - i. How they felt about this
 - ii. Whether they listened
- c. Does your nursery manager/childminder ever advise treatment? *Encourage examples, and explore:*
 - i. How they feel about this
 - ii. Whether they listen
 - iii. How they obtain treatment [e.g. go to pharmacy, consult, home

remedies, etc.].
Normal Management of Childhood Infections
<p>a. At what point would you normally decide to consult the GP?</p> <p>b. How do you feel about giving your child antibiotics? <i>Explore their feelings, including what the advantages and disadvantages of treatment are.</i></p>
Wider Issues of Antibiotic Prescribing [only if appropriate]
<p>c. How do you feel about children taking antibiotics? <i>Explore. Probe for them to talk about own children, if appropriate.</i></p> <p>d. Have you heard of antibiotic resistance? <i>Probe for their understanding of phenomenon.</i></p> <p>e. <i>[If yes]</i> Where/who did you hear about this from?</p> <p>f. <i>[If yes to questions 'd']</i> Do you ever worry about resistance? <i>[If appropriate based on previous responses, and participant is engaging with topic]</i> How do you think we can improve on the problem of unnecessary antibiotic use?</p>
Future Improvements
<p>Would you like to see any changes with the way your child's illnesses [infections] are handled by day care providers? <i>Encourage examples, and engage in discussion about feasibility.</i></p>
<p><i>Thank them, summarise main points discussed (and verify), ask if there is anything they would like to discuss, or if they have any questions.</i></p>

TOPIC GUIDE USED IN FIRST PARENT INTERVIEW

Interview Schedule For Parents

FOR INTERVIEWER USE ONLY

1. **Introduction:** reminder of why you are doing this work.
2. **Their children:**
 - a. How many children do you have at home? What ages?
 - b. How many of them go to day care? How many days? What hours?
 - c. How reliant are you on day care? Why?
 - d. Has your child ever been ill, and unable to go to/stay in day care?
 - e. What happened in this situation? What would happen in this situation?
3. **Circumstances when child is ill:**
 - a. When your child's ill, what do you do?
 - b. Do you have alternative childcare, or do you look after your child yourself?
 - c. Do you feel any pressure for your child to get better faster? Of course everybody wants their child to be healthy as quickly as possible, but how important is this for you, in terms of practicalities?
4. **Exclusion Policies:**
 - a. Do you know of any exclusion policies used by your nursery/childminder?

- b. If yes, do you have a copy? Are they clear and easy to understand?
 - c. What do you think of them- would you agree with them? Are they too strict or too lenient?
- 5. Relationship with day care professionals:**
- a. Have you ever disagreed with a nursery/childminder's decision to exclude?
 - b. Do you voice your opinions, or do anything to get around exclusion?
 - c. Did it work?
- 6. Advice and action:**
- a. Does your day care provider ever tell you what's wrong with your child and what to do?
 - b. Do they ever give you any advice? Can you give some examples?
 - c. Do they recommend seeing a GP, or is there anything they do that gives the impression you should consult a GP?
 - d. Do you know when your child can return?
 - e. Does your day care provider tell you when the child can come back, or what you must do in order for the child to return?
 - i. When they don't tell you, do you make assumptions? What are these assumptions based on (e.g. things you have read, past experiences, friends, etc.).
- 7. GP consulting/antibiotic-seeking:**
- a. Would you go to the GP whenever your child has an infection?
 - b. What sorts of symptoms do you consult for? Which types of symptoms don't need consultation?
 - c. What are your main reasons for consulting a GP? (Peace of mind, diagnosis, treatment?)
 - d. Have you ever asked the GP for a note? Why?
 - e. What kinds of medication have you been given?
 - f. Have you ever mentioned the possibility of antibiotics to your doctor? How did that happen? Would you ever mention antibiotics to your doctor?
 - g. (If relevant) What symptoms have you mentioned antibiotics for? What symptoms would you mention antibiotics for? Why?
 - h. Was/is this based on your personal views, or somebody else's recommendations? Whose?
 - i. Does your day care provider ever say, or hint, that your child needs antibiotics? If so, what is the purpose of the antibiotics? Do they tell you why they advise antibiotics? How do you feel about this?
- 8. Making changes: suggestions**
- a. Do you think there are any problems of communication between parents, nurseries/childminders and primary care professionals, in regards to managing common childhood infections?
 - b. If so, how could we improve upon this?
- 9. Thank them. Remind parents of how their interview will be used. Any questions? Give contact information.**

Appendix 5.6 Interview Recruitment Letter to Parents, and Recruitment Poster

Dear Parent/Guardian,

I am a PhD student at Cardiff University's department of Primary Care and Public Health, doing a study based on common infections in day care settings. The [nursery/childminder] you are registered with has taken part in this study, which involved filling out a questionnaire and meeting with me for an informal interview. I am writing to ask if you would also like to be interviewed, for an informal chat based on the topic described below. The only eligibility criterion is that you must have experience of your child being unable to attend day care (or being sent home from day care), as a result of an infection (with exception to chickenpox). If you are unsure if you are eligible, we can discuss on the phone or via e-mail (contact details are at the end of this letter). The interview location will be discussed with you, to find out where would be most convenient. **You will be paid £30 for your time, and any travel expenses will be reimbursed (if you prefer to come to me).**

I have recently sent out questionnaires to children's day care settings in South-East Wales to find out about their policies for excluding children with common infections. This is an important topic, because there are no official guidelines or policies for day care providers when it comes to deciding if the child should be sent home or not. As I am sure you can appreciate, day care professionals have the responsibility of considering the health of all the children in their day care program. At the same time, there are possible practical issues and financial costs for parents when the child is sent home. The decision to send a child home, or allow them to stay in day care, is not an easy one.

It is possible that different people will have different views on how common childhood infections should be dealt with. I am interested in finding out about your thoughts related to these issues. The overall aim of doing this research is to see if we need to improve the services and information available to day care providers and parents, so there is a general level of agreement and understanding with regards to how common childhood infections are best managed.

If you would like to take part, or would like more information, please contact me on 07532006628 (any time) or 01179077444 (evenings), or send an e-mail to RooshenasL@cardiff.ac.uk. Alternative contact options are written on the attached information sheets. I would appreciate it if you would read through these sheets, as they explain the details you need to know. Thank you for taking the time to read this.

Best wishes,
Leila Rooshenas
[date]

Parents!

£30 to take part in a research study

I am hoping to conduct informal interviews with parents whose children have been unable to attend day care (or sent home from day care) as a result of an infection (other than chickenpox!).

If interested, please call Leila on 01179077444 (evenings) or 07532006628 (any time), or send an e-mail to RooshenasL@cardiff.ac.uk.

If you're unsure if your child has had an infection, please still get in touch if interested.

Thank you!

Leila
(Student from Cardiff University)

Appendix 5.7 Participant Information Sheet (for Interviewing Parents)

Parents' Interview Information Sheets

Study title: Managing common infections in day care settings: the beliefs around, and consequences of exclusion policies for children, parents and staff

You have been chosen to take part in the research study above. This will involve a short face to face interview with the main researcher. We will pay £30 for your time and effort, plus an travel expenses. Before you decide, I would like to tell you a little about why the research is being done, and how you can help. Please take time to read the information below carefully, and discuss it with others if you wish. Do not hesitate to contact me if you have any questions. My contact information is written at the end of this page. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?

This study is aiming to find if additional guidance and support is needed for day care providers and parents, when it comes to managing common childhood infections. There is very little official guidance or policies available for day care providers/parents at the moment. This could possibly lead to unnecessary exclusion of children from day care, unnecessary GP consultations, and unnecessary medication. On the other hand, a lack of guidance and support could cause the opposite problem, where serious infections are left untreated, leading to a worsening of symptoms, delayed recovery, possible complications, and the spread of infection to others.

Please rest assured that this study has no intention of testing your knowledge. The study has an aim to improve the support available to day care professionals and parents, if it is necessary. Therefore, your opinions are very important to us. There are no 'right' or 'wrong' answers.

As a parent, you might be aware that childhood infections are very common amongst children in day care. Even though these infections are usually not a cause for alarm, there are important decisions that need to be made regarding how the child should be dealt with. These decisions include whether or not to exclude a child from day care, and whether or not to consult a doctor. Both day care providers and parents are involved in making these decisions, and the opinions of one can affect the other.

We have already interviewed day care providers to find out about their attitudes and beliefs about common childhood infections, and when children should be excluded. We also discussed how day care providers feel about the amount of guidance available to them, when it comes to deciding on whether or not to

exclude children (and how long for). We are now interested in understanding parents' views on how childhood infections should be managed. We are particularly interested in your experiences of dealing with infections, and of your child not being able to attend day care (e.g. what impact it had on you, and how you managed). The interviews will give the research team a deeper understanding of how common childhood infections are dealt with by day care providers and parents, and whether better support and information is needed.

How long does the study last?

The overall project has to be completed within three years. The first two years are set aside for gathering information, and the final year is usually spent writing up the final thesis. The first stage of this project involved a questionnaire administered to around day care providers in South-East Wales. Some of the respondents were chosen for interview, which made up the second stage of the project. We are now interviewing parents who have registered children with day care providers.

Why have you been chosen?

You have received this invitation to participate in the study because you have at least one child, aged under five, who attends day care. Invitations have been sent to all parents that use the day care setting you are registered with.

Do you have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, we ask you to retain this information sheet, and sign a consent form on the day of the interview. If you decide to take part, you are still free to withdraw at any time, and do not have to give a reason. Your decision will be respected, and any information collected up until that point will be destroyed.

What do you have to do?

We kindly request you to contact the researcher by e-mail, post or telephone (details at end of this information). The researcher will arrange a time and place to meet with you. The interview setting can be discussed when you contact, as it will have to be practical, and easily accessible to you. Some possible locations include your day care setting, local community centres, schools, etc. We will compensate for travel expenses, although the researcher is likely to meet you in your area. The informal interview will be casual discussion, and last for no more than an hour. We will talk about your experiences of dealing with infections, and exclusion from day care.

You will be presented with a consent form on the day of interview. If you agree, the researcher will audio record the interview, so she can type up what was said (word for word) afterwards.

Please feel free to think of any particular concerns or experiences you might have had, related to the topic, and bring these thoughts into the interview.

What will happen to the results of the research study, and is my information confidential?

The main researcher will listen to the interviews and write these out, careful to remove any information that might identify any individuals or day care settings. Other members of the research team may listen to the audio recording if needed, but this is unlikely. As you might recall, you were assigned a study code in the questionnaire phase. This code will be used in any discussions the research team make, and/or any notes or written out interviews. All information you provide, including contact details (that aren't publicly available), will be password protected and/or locked in a filing cabinet which only the main researcher has access to. The written out interviews and notes will be stored in a separate location to a sheet that identifies who the codes apply to. Only the main researcher will have access to this sheet.

The main researcher will express the thoughts, feelings and opinions that came through in the interviews in the final thesis. Extracts of interviews might be paraphrased, or written directly, but they will give no clues as to who they are from.

Besides the thesis, there may be other publications or academic presentations that stem from this project. No participants, or day care settings, will be made identifiable. You are welcome to ask for a summary of the findings once the study is over.

Confidentiality and data protection

Any contact information or names of interviewees will be solely accessed by the main researcher. The wider research team may also listen to recorded interviews. In addition to this, before your interview, the researcher must provide a 'responsible contact' with the address of the interview location, and contact details of the interviewee. This is due to health and safety issues. Your contact information will be sealed in an envelope, and will only be opened in the event of an emergency (e.g. if the responsible contact cannot get in touch with the researcher). Once the researcher returns from the interview, they will retrieve and destroy the unopened envelope within five working days.

Who is organising and funding the research?

This research is funded by the Clinical Epidemiology Interdisciplinary Research Group of Cardiff University. The research is a project based in the department of Primary Care and Public Health, at the Heath Park campus of Cardiff University.

Contact details:

Miss Leila Rooshenas

E-mail: RooshenasL@cardiff.ac.uk

Telephone: 02920687133

**Postal Address: Department of Primary Care and Public Health, 3rd Floor
Neuadd Meirionydd, Heath Park, Cardiff, CF14 4YS.**

If you have any ethical questions or comments relating to this project, you may contact:

Prof I.G. Chestnutt

Department of Dental Health and Biological Sciences

Dental School

Tel 029 2074 6680

E mail chestnuttig@cardiff.ac.uk

Appendix 5.8 Parent Demographics Sheet

Parent/Guardian Details

Thank you for your participation in this project. Please could you give some final details below. You may omit any question(s) you do not wish to answer.

1. Date of birth: Day _____ Month _____ Year _____

2. Gender: Male Female

3. Relationship to child

4. Are you a single parent? Yes ↑ No ↑

5. How many children have you registered with day care in the past (not including the children you have currently registered)?

.....Children

6. What is your highest educational level? (Please tick one box)

University (completed)
University (uncompleted)
Professional training (completed)
Professional training (uncompleted)
High school (completed)
High school (uncompleted)
Never attended high school
Other

7. What is your current occupation? (Please tick one box):

High level executive, major professional

Administrative personnel, minor professional, owner of small business

Sales, technician, farmer

Skilled manual employee

Student

Homemaker

Unemployed

Retired

Other

8. Do you have any medical training that you feel helps you to understand and manage your child's infections?

Yes No

Appendix 5.9 Coding Framework Examples

Highest level nodes

DCP interviews

Tree Nodes			
	Name	Sources	References
+	DCP suggests GP visit	24	87
+	Infection Management	24	289
+	Antibiotics	24	150
+	DCP Relationship with parents	21	93
+	Identifying and interpreting symptoms of infection	20	119
+	Factors influencing decision to exclude	20	83
+	Medication Policy	20	37
+	Health Beliefs Model	20	91
+	Policy details and background	19	82
+	DCP views about contagion	16	44
+	DCP perception of parent situation	16	35
+	Standard policies yes or no	13	18
+	Understanding of terminology	12	23
+	Outbreaks	11	19
+	Bacterial or viral interpretation	9	18
+	Infection control	7	14
+	Knowledge of immune system (DCP)	6	8
+	DCP attitude towards GPs	5	5
+	DCP perception of parents' views	4	4

Parent Interviews

Tree Nodes			
	Name	Sources	References
+	Parents' experiences of childhood illnesses	28	176
+	Health Belief's Model	28	137
+	Antibiotics experiences	26	141
+	Identifying and interpreting symptoms of infection	25	52
+	Attitudes to exclusion	25	98
+	Consultation experiences	24	51
+	Coping with excusion	19	35
+	Parent keeps child away from day care	19	31
+	Perception of Policy	17	50
+	Views on contagion	16	36
+	Medication Policy	14	22
+	Parent attitude towards GP	13	22
+	Perception of DCP's requirements	13	21
+	DCP relationship with parents	12	32
+	Parents changing their parenting	11	18
+	Bacterial or viral interpretation	10	14
+	Factors influencing decision to exclude	9	11
+	Perspectives on outbreaks	7	7
+	Knowledge of immune system	5	9

Example of Expanded theme, opened at multiple levels (taken from DCP coding framework)

Tree Nodes

Name	Sources	References
DCP suggests GP visit	24	87
Infection Management	24	289
Specific infections	24	255
Respiratory tract infections	24	105
Chest	20	61
Exclusion period and return criteria	19	30
Management	19	39
Antibiotics	19	35
Views regarding contagiousness	7	7
Frequency	3	4
Tonsillitis	14	18

Tree Nodes

Name	Sources	References
Infection Management	24	289
Antibiotics	24	150
Q Are antibiotics directly suggested to parent	25	58
DCP understanding of antibiotics	20	75
Appropriacy	19	64
Assume antibiotics are appropriate	16	40
Past experiences	12	19
Are antibiotics for viruses	11	17
Suitable if generally unwell	7	7
Dependent on severity	4	6
Personal experience	3	3
Temperature	1	2
Aware must complete course	6	7

Appendix 6.1 Individual Participant Data

Table 1: Explanation of nursery characteristics

Area: refers to the area the day care setting is based in.

Full or sessional: refers to the number of hours the day care setting could offer care for (four hours or more for full, less than four hours for sessional).

Type: refers to the source of funding, and the private/chain status of the nursery.

Privately funded nurseries are funded through fees from parents.

Clientele: refers to the nursery manager's (interviewed) interpretation and description of their clientele.

Size: refers to size, based on the maximum number of children the nursery can accommodate at a time; 'S'=small (<24 children), 'M'=medium (24-48 children), 'L'=large (>48 children).

Babies: refers to whether the nursery cared for babies (aged under 1 year).

Experience: refers to the number of years of experience the nursery manager (experience in childcare).

Advise GP visits: refers to nursery manager's response on the questionnaire.

Advise antibiotics: refers to nursery manager's response on the questionnaire.

Table 5 Characteristics of nurseries run by nursery manager participants

Participant code	Area	Full or sessional?	Type	Clientele	Size of setting: small (S), medium 'M' or large 'L'	Babies?	Experience of manager (years)	Advise GP visits?	Advise antibiotics?
CN3	Cardiff	Full	Private, Chain	Professional, affluent	M	No	16	Yes	Yes
CN5	Cardiff	Full	Private, Chain	Professional, affluent	L	No	19	Yes	Yes
CN11	Cardiff	Full	Private, Independent (student discount)	Mixed (university staff/ students)	L	Yes	10	Yes	No
CN22	Cardiff	Full	Private, Independent	Professional, affluent	L	Yes	7	Yes	Yes
CN25	Cardiff	Full	Private, Independent	Professional, affluent	M	Yes	10	Yes	No
CN35	Cardiff	Full	Private, Independent	Mixed	L	Yes	3	Yes	Yes
CN72	Cardiff	Sessional	Council funded	Deprived, unemployed	S	No	25	Yes	No

MTN21	Merthyr Tydfil	Full	Private, Independent	Professional, affluent	M	No	8	Yes	No
MTN23	Merthyr Tydfil	Full	Council and charity funded, branch	Deprived, lower-middle class	S	Yes	24	Yes	Yes
MTN26	Merthyr Tydfil	Full	Private, Independent (student discount)	Mixed (college staff/students)	M	Yes	14	Yes	No
MTN18	Merthyr Tydfil	Full	Private, Independent	Middle class	M	Yes	n/a	Yes	No
MN2	Monmouthshire	Full	Private, Independent	Mixed	M	Yes	3	Yes	Yes
MN4	Monmouthshire	Full	Private, Independent	Professional, affluent	M	Yes	20	Yes	Yes
MN8	Monmouthshire	Full	Private, Chain	Mixed	S	No	6	Yes	No
MN40	Monmouthshire	Full	Private, Independent	Professional, affluent	M	Yes	n/a	Yes	No

Table 2: Explanation of childminder characteristics

Area: refers to the area the day care setting (childminder's home) is based in.

Domestic area: refers to the area category offered by ACORN, based on childminder's postcode.

Experience: refers to the number of year of experience the childminder has had (in childcare).

Care for own children: refers to whether or not the childminder has their own pre-school aged child(ren) under their care.

Advise GP visits: refers to childminder's response on the questionnaire.

Advise antibiotics: refers to childminder's response on the questionnaire.

Table 6 Characteristics of childminders that participated in interviews

Participant code	Area	Domestic Area	Experience (years)	Care for own child(ren)?	Advise GP visits?	Advise antibiotics?
CC5	Cardiff	Comfortably off	17	No	Yes	Yes
CC15	Cardiff	Comfortably off	3	Yes	Yes	No
CC12	Cardiff	Wealthy achievers	3	Yes	Yes	Yes
CC17	Cardiff	Comfortably off	15	No	Yes	Yes
CC60	Cardiff	Wealthy achievers	22	No	Yes	Yes
CC91	Cardiff	Wealthy achievers	20	No	Yes	No
MTC5	Merthyr Tydfil	Hard pressed	4	No	No	No

MTC12	Merthyr Tydfil	Moderate means	24	No	Yes	No answer
MC22	Monmouthshire	Comfortably off	3	No	Yes	No

Table 3: Explanation of parent characteristics

DCP used: refers to which DCP interview participant the parent was recruited from.

Area: refers to parent's area of residence

Nursery or Childminder user: refers to type of day care setting the parent was recruited from.

Age: Age at time of interview, shown in years

Gender: Male or female.

Single parent: refers to whether the parent lives with any other adults that can help care for their child(ren).

Education: refers to the highest education level reached by parent.

Occupation: refers to current occupational status of parent.

Medical training: refers to whether the parent has received any formal medical training in the past.

Number of children previously attended day care: this figure excludes children currently in day care.

Table 7 Characteristics of parents participating in interviews

Parent code	Area of day care setting	Nursery (N) or Childminder (C) user	Full time or part-time day care user?	Age (Years)	Single parent? (Yes or No)	Education Level	Occupational status	Medical training? (Yes or No)	Number of children previously attended day care
PCC60.1	Cardiff	C	Full	35	No	University completed	Minor professional	No	0
PMC8.1	Monmouthshire	C	Full	34	No	Professional training completed	Minor professional	No	0
PCN11.1	Cardiff	N	Full	34	No	University completed	Technician	No	0
PCN11.2	Cardiff	N	Full	32	No	University completed	Major professional	No	0
PCN11.3	Cardiff	N	Full	40	No	Secondary school completed	Technician	No	2
PCN11.4	Cardiff	N	Part	38	No	University completed	Minor professional	No	0
PCN11.5	Cardiff	N	Part	41	No	University completed	Major professional	No	1
PCN11.6	Cardiff	N	Part	35	No	University completed	Technician	No	0
PCN11.7	Cardiff	N	Full	33	No	University completed	Major professional	No	0
PCN22.1	Cardiff	N	Part	43	No	University completed	Major	No	0

							professional		
PCN25.1	Cardiff	N	Full	46	No	University completed	Major professional	Yes	0
PCN25.2	Cardiff	N	Part	32	No	University completed	Minor professional	No	0
PCN3.1	Cardiff	N	Part	40	No	University completed	Major professional	No	2
PCN35.1	Cardiff	N	Full	46	Yes	Secondary school completed	Minor professional	No	0
PCN35.2	Cardiff	N	Part	29	No	Secondary school completed	Administrator	No	0
PCN5.1	Cardiff	N	Part	36	No	University completed	Major professional	Yes	1
PCN5.2	Cardiff	N	Part	38	No	University completed	Minor professional	No	0
PCN72.1	Cardiff	N	Part	38	No	University uncompleted	Home maker	Yes	6
PCN72.2	Cardiff	N	Part	n/a	No	Secondary school completed	Home maker	No	1
PMN2.1	Monmouthshire	N	Part	35	No	University completed	Major professional	No	0
PMN4.1	Monmouthshire	N	Part	38	No	University completed	Minor professional	No	0
PMN4.2	Monmouthshire	N	Part	40	No	University uncompleted	Minor professional	Yes	2
PMN40.1	Monmouthshire	N	Part	23	No	Professional training completed	Other	No	0
PMN40.2	Monmouthshire	N	Part	33	No	University completed	Minor	No	0

							professional		
PMN8.1	Monmouthshire	N	Part	43	No	Professional training completed	Minor professional	No	1
PMTN18.1	Merthyr Tydfil	N	Part	36	No	Professional training completed	Minor professional	No	1
PMTN21.1	Merthyr Tydfil	N	Part	34	No	Secondary school completed	Minor professional	No	0
PMTN21.2	Merthyr Tydfil	N	Full	38	Yes	Secondary school completed	Minor professional	No	1
PMTN23.1	Merthyr Tydfil	N	Part	35	No	University completed	Minor professional	No	1

Appendix 8.1 DCPs' and Parents' Views on Excessive Antibiotic Use

1. Why is excessive antibiotic use a problem?

As DCP and parent views on excessive antibiotic use were similar, their accounts will be considered together.

a. Resistant individual

DCPs and parents were asked why they felt excessive antibiotic use was an issue. None of the participants spoke of resistance in terms of the 'superbugs' portrayed in the media. Instead, the idea of resistance was presented as a phenomenon which occurred within the individual:

I think there was a big thing on the news, where they were saying that doctors are being told not to prescribe it if it's not needed. Children were becoming, you know, they were just immune to it. It wasn't doing any good if they were having antibiotic after antibiotic.

[CN11, Nursery manager, Cardiff, 10 years]

The manager above felt that excessive antibiotic use would bring about immunity to the drugs, rendering those drugs ineffective within the individual. This idea of resistance was the most common view held by DCPs and parents. Parents commonly spoke of the antibiotics ceasing to have effect, if the child developed resistance towards them:

Um, and I tend not to...just, I feel that the more they have, the more they'll get immune to it, and then when they actually need it, it won't actually work for them. I don't know if that's right or wrong.

[PMN8.1, Parent, part-time nursery user, Monmouthshire, 43 years]

All parents, with the exception of three individuals who worked in scientific professions, and two doctors, shared this view that resistance was a process that occurs within the body.

b. Immune system

A second theme that emerged from interviews was the view that antibiotics suppressed the user's immune system:

They're going to catch colds, and no, I don't believe in giving them antibiotics just for simple colds. It's not going to do anything at all. It's going to weaken their immune system if anything.

[MTN21, Nursery manager, Merthyr Tydfil, 8 years]

The idea that the child's naturally immunity is compromised by excessive antibiotics was shared by other DCPs, and parents:

P: I think it's good when you need them but, having them a lot, I don't think it's good for the child.

I: No. Why do you think it's not good?

P: It kills their immune system, it doesn't help them to build and fight. That's what I think.

[PCN72.2, Parent, part-time nursery user, Cardiff, unknown age]

c. Lifestyle

One parent explained that if she had a choice, she would prefer her child not to have antibiotics. She attributed these personal views to her upbringing, where she had learnt to rely on her body's ability to 'cope'. Her reservations about antibiotics were a consequence of her general attitude to taking drugs:

I: You said that you'd rather he didn't have antibiotics?

P: It's just my personal, um- I think I get it from my mum...if I've got a headache in the evening, I go to bed because I think the body can.... it's not that I don't take anything....if I've got a bad headache, I'll take a Paracetamol and be done with it. I just think the body can often cope very well. I'm not a pill popper.

[PCN11.1, Parent, full-time nursery user, Cardiff, 34 years]

d. Side-effects

Only three parents spoke of side effects as a reason to avoid or delay antibiotic treatment. Only one parent described a previous experience where her daughter had experienced vomiting after having taken antibiotics for an ear infection. This experience had had a powerful impact on the parent, who felt she would hold back before seeking antibiotic treatment in the future. Nonetheless, she admitted that her position might change if she has to consider work-related responsibilities:

I: So, has her reaction to the antibiotics changed your view of antibiotics?

P: Yeah, it will make me question the GP a little bit more about whether antibiotics should be given. If they are, then, making sure the right ones are given as well....but then, I guess..... It's easy to sit here and say that, where, if I've got a big project on at work or something, and I need to get back to nursery, and antibiotics are the way forwards, then I might be under a different pressure at that time.

[PCN5.2, Parent, part-time nursery user, Cardiff, 38 years]

The other two parents to comment on side effects had slightly different perspectives. One of the parents had a child who was allergic to penicillin; her previous experience had been so unpleasant that she preferred to avoid antibiotics altogether. The second parent only mentioned the issue of side-effects amongst the other problems surrounding antibiotic therapy (i.e. resistance issues). For her, it was the combination of reasons that detracted her from seeking antibiotic treatment (although she had used and sought antibiotics for her children on numerous occasions).

2. Do Parents' Concerns Limit their Antibiotic-Seeking Behaviour?

All of the parents that expressed concern over taking antibiotics had experienced treating their children on at least one occasion; for the most part, parents had administered treatment on numerous occasions. One theme that emerged was parents' insistence that they did not see resistance as a problem, because their child was not a frequent user of antibiotics. Parents commonly distanced themselves from the issues surrounding over-consumption, or inappropriate consumption of antibiotics. The resistance issues they described would be applicable to other people, who perhaps used antibiotics more regularly:

I think, as well, if I had children that had recurrent infections, and I was having loads of antibiotics, then that would be a different sort of thing...but because it's such a rarity, I sort of think, if they get ill and they need something like that, then I'm keen to get that for them at least.

[PMN4.1, Parent, part-time nursery user, Monmouthshire, 38 years]

It was common for parents to describe their experiences of antibiotic treatment as 'a one off' or 'a rarity'. Nonetheless, these phrases were often used by parents who had only experienced a limited number of infections- types associated with antibiotics. For example, parents might have described numerous cases of sickness and diarrhoea or skin rashes, with only one case of conjunctivitis/chest infection/ear infection. When viewed in the context of all infections the child might contract, it is easy to see why parents would view themselves as occasional users of antibiotics. However, if every child receives antibiotics for these infections, it creates a different picture. It seems that the very infections that GPs are thought to needlessly prescribe for (chest infections, conjunctivitis, and ear infections), are the infections which parents felt warranted antibiotic treatment (see next section for reasons why). As their child(ren) had rarely experienced more than three of these infections, parents did not view themselves as regular antibiotic users.

Finally, antibiotic resistance was not always an issue, even for parents who viewed the phenomenon as a societal issue. One of these parents claimed that her child's health at the present time took priority over the consequences of resistance (i.e. impact for future generations, and the rest of society):

I'm aware of it [antibiotic resistance], but sometimes, if I think they're ill, then I will think "Well, actually, I'll put my child first, rather than...." I don't think about that. Yeah, that's a terrible response, but there you go. [Later] I think more than anything, it may mean that my children's children won't have....because by then things might not be as effective. So I do think about that, but then I've got my own child in front of me, and.....you know.

[PMN4.2, Parent, part-time nursery user, Monmouthshire, 40 years]

In fact, all parents interviewed did not see resistance as a personal problem- regardless of whether they viewed resistance as an individual or community level problem. None of the parents felt any responsibility over these issues- they felt

strongly that their children had a true and justifiable need for antibiotics on the occasions they had received treatment. This idea was usually expressed through phrases such as “I tend to only use them... if I really think they need it.”

Finally, one parent who viewed resistance as an individual problem, did not feel threatened by this issue, because she trusted that there are other solutions:

[On resistance within the child]: I: So is that a worry for you, or...

P: No. It's never been a concern.

I: So if he is getting recurrent infections, and, you do keep giving him antibiotics, if he became immune, what would happen then?

P: Not sure. There must be something else that they can give if they don't work.

[PMTN21.1, Parent, part-time nursery user, Merthyr Tydfil, 34]

The parent above assumed that there must be some kind of alternative treatment if antibiotics are rendered ineffective. This specific view did not emerge in any other interviews, although parents' trust in GPs was a common theme that arose when they were asked about their feelings on administering antibiotics. Parents who had communicated their ideas surrounding the need to limit consumption of antibiotics felt that they were able to trust their GPs' prescribing habits:

I: How do you feel about antibiotics in general, with giving them to your child? Are you ok with those?

P: Yeah, I am. If the doctor thinks they're necessary, then I'm happy with that.

[PCN11.2, Parent, full-time nursery user, 32 years]

A few parents did not have any particular views on antibiotic treatment, but generally accepted that their GP would take the most appropriate action:

I would say I'm neither for nor against. I'm always whatever the doctor thinks it should be- because that's what I put my trust in I suppose.

[PMN4.2, parent, part-time nursery user, 40 years]