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Do you see what I see? Identification of child protection concerns by hospital staff and general dental practitioners

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Abstract:

An exploration of the threshold that dentists, doctors, and nurses recognise for dental and child protection (CP) actions in sample clinical cases, and any differences between these professional groups.

A cross sectional survey of dentists, doctors and nurses (50 each), who regularly examine children, utilised 5 fictitious vignettes, combining an oral examination image and clinical history reflecting dental and CP issues. Demographics were collected, and each participant gave their likely action for the cases presented.

Dentists were significantly better at answering the dental element than the doctors and nurses, ($P < 0.0001$) with no significant difference between these two; only 8% of the latter had undergone any training in assessment of dental health. Although 90.6% of all professionals had undergone CP training, dentists were significantly less accurate at identifying the CP component than doctors and nurses, ($P < 0.0001$) between whom there were no significant differences. Those with higher levels of CP training were most accurate at identifying correct CP actions.

CP training is effective at improving recognition of child maltreatment, although there remains a worrying lack of knowledge about thresholds for action among dentists.

Doctors and nurses have minimal training in, or knowledge of, dental health in children, thus precluding appropriate onward referrals.

Key words:

child abuse, neglect, dental neglect

Conflict of interest:

None

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Introduction:

Poor oral health negatively impacts on the daily activities and quality of life of children.¹ Untreated dental caries may cause pain², sleep deprivation², reduced nutrition³, functional limitations⁴, higher school absenteeism⁵.and reduced school performance.⁵

Unfortunately dental caries remains a major problem; the 2012 results from The National Dental Epidemiology Programme for England noted 27.9% of five year olds had experienced dental decay.⁶ This figure varied across the UK, from 21.2% in the South East region to 34.8% in the North West region, and a staggering 41.4% in Wales.^{6,7} Of particular concern is the continuing use of general anaesthesia for dental extractions (DGA). In 2013-14 around 46,500 children and young people under 19 years of age with dental caries were admitted to hospital in the UK for DGA.⁸ The cost of hospital based tooth extractions for children under 18 was £30 million in 2012-13.⁹ Some children require repeated DGAs.^{10,11} Within this population, there are undoubtedly children who are experiencing dental neglect.

Neglect is the most common form of child abuse¹², accounting for 49% of the children on the child protection register in the UK,¹³ but dental neglect is frequently overlooked by health or social care professionals. Dental neglect is defined as “the persistent failure to meet a child’s basic oral health needs, likely to result in the serious impairment of a child’s oral or general health and development”.¹⁴ There is currently no explicit threshold level for a diagnosis of dental neglect to be made.¹⁵ Indeed little international guidance exists to identify these children. A diagnosis of dental neglect requires consideration of a variety of factors¹⁵: children presenting repeatedly with pain, irregular dental attendance, non-completion of treatment, and a delay in seeking professional help.¹⁴⁻¹⁶

As with many forms of maltreatment, dental neglect is rarely present in isolation,¹⁷ but instead forms part of the more general neglect of a child or may co-exist with physical abuse.^{14,16,18} Early recognition of dental neglect by health care professionals may help prevent children from experiencing further harm.¹⁵ Loochtan *et al* present a case where a child who presented to a dental hygienist with extensive dental caries was later found to have been abused.¹⁹ It is recognised in other aspects of maltreatment that failing to recognise signs of maltreatment such as ‘sentinel injuries’ can be devastating. A recent case-control study found that sentinel injuries, (defined as a minor abusive injury occurring some time prior to serious abuse) occurred in 27% of children who were later abused, and were absent among the non-abused children.²⁰ Intra-oral injuries were the second most common sentinel injury, after bruising. In one instance a two-month old child presented unresponsive and limp with Abusive Head Trauma (AHT). The child had been seen two weeks earlier with a bruise on his cheek, but no action had been taken.²⁰

The General Dental Council (GDC) guidelines state that UK dentists have a responsibility to follow local child protection procedures.²¹ Given the prevalence of neglect within the community, dentists must encounter neglect cases regularly,¹⁵ they are therefore well placed to identify those children who need further assessment. Unfortunately, General Dental Practitioners (GDPs) appear reluctant to report abuse and neglect.^{22,26} There is less literature relating to hospital dentists, but some research conducted with dentists, approximately a third of whom worked in a hospital setting, also suggests that whilst many dentists may be recognising signs of abuse they are not acting upon this effectively.²³ Research notes that despite one third (37%) of dentists having suspected abuse, only 11% made an appropriate referral.²⁴ Reasons included: lack of 'certainty', lack of training, fear of violence against the child or dental team and the impact it may have on their practice .^{14,24}

General Practitioners have more contact with families than dentists²⁵ and it is therefore essential that they have adequate knowledge of oral health issues to recognise oral disease and dental neglect. The Department of Health ("Choosing Better Oral Health") states the responsibility of doctors to promote oral health and to have adequate knowledge to help recognise dental issues that require further attention.²⁶ Despite doctors agreeing that they should have active involvement in the oral health of young children, studies indicate that only a small number of doctors have received relevant training.²⁵ Even paediatric postgraduate specialty trainees in the UK have limited knowledge of oral health issues, with 61% rating their ability in assessing a child's oral health as below average, while 95% reported receiving no teaching on oral assessment during their training.²⁵

The lack of a clear clinical threshold for dental neglect, coupled with dentists rarely communicating their concerns, and doctors having limited oral health knowledge, creates the potential for dental neglect to be missed or poorly managed across the board, risking vulnerable children being exposed to on-going harm, without appropriate support or interventions.

This study aims to explore when dentists, doctors and nurses recognise a threshold to act with regard to suspected abuse/neglect, and the need for dental treatment. In addition, we wish to explore any differences between these professional groups when faced with identical scenarios.

Methods:

A cross-sectional survey of a convenience sample of Paediatric and Dental staff based in inpatient and outpatient settings, and general dental practices in Cardiff, UK, was undertaken.

The survey tool was derived using previous published evidence in combination with the knowledge of paediatricians and dentists. An agreed scoring system was derived

by consensus amongst an expert group, composed of two Consultant Paediatricians and two Consultants in Paediatric Dentistry (Appendix 1-5). The survey tool was piloted on five health professionals, which did not lead to any substantial changes. It utilised semi-structured face-to-face interviews, incorporating a series of five fictitious clinical vignettes, including a clinical image of the mouth and clinical details. The vignettes were as follows:

- Vignette one included a four year old girl who was appeared unkempt and had frequently not attended dental appointments. She had extensive dental caries.
- Vignette two included a six year old girl who was attending a dental check up which revealed she required one filling.
- Vignette three included a fourteen year old boy who was obese and being bullied. He had extensive dental caries and evidence of dental erosion.
- Vignette four included a four year old boy presenting with bottle caries. His two siblings had previously required dental extractions under general anaesthetic.

Vignette five included a four year old boy who was attending the dentist because he required a filling. He had a bruise on his ear.

Each vignette had a standardised optimal action: dental, child protection or both. If 'other' was selected, participants were invited to elaborate on this.

Hospital staff were approached on the wards seven days a week, between 8am and midnight. Dental practices were contacted by telephone on at least two occasions to arrange a visit. Purposive sampling technique, with the desired characteristic being professional group, was used in order to try and ascertain a representative sample. Demographic details relating to professional designation, gender, ethnicity, years since graduation, post-graduate training in dental examination of children, and level of child protection (CP) training were recorded. The responses were anonymised for the purposes of analysis.

Statistical Analysis

SPSS v.20. was used to analyse the influence of demographic features, and relevant training (dental, child protection) on arriving at a correct response. The number of years since graduation was dichotomised into 2 groups for the purpose of data analysis; 0-6 years and > 6 years. Statistical analysis utilised Logistic Regression, with summative statistics given as percentages and significance at the 5% level was used $p < 0.05$.

Qualitative component

Thematic analysis of participant's qualitative responses was undertaken. Themes were coded and collated by two assessors, following consensus decisions.

Consent and Ethics

Written consent was obtained for all of the clinical images used. No ethical approval was required for the survey, as this was a service development exploring attitudes and behaviour against national guidelines for Child Maltreatment using fictitious vignettes.

Results

Of the 171 health professionals approached, 150 participated (Figure 1), 50 from each discipline.

(Image 1)

Figure 1. Flowchart showing the details of the locations and participants approached. *ED= Emergency Department

The survey was performed from 23rd July- 13th October 2014. The demographics of the respondents are outlined in Table 1.

(Table 1)

Neither gender ($P=0.319$) nor ethnicity ($P=0.863$) were significant factors in participants identifying the optimal dental or CP actions.

Dental Action

Only 12 (8%) of non-dental professionals had received post-graduate training in the examination of a child's dental health (Table 1). There was no correlation between post-graduate dental training and years since graduation. While many doctors and nurses with postgraduate dental examination training selected the correct dental action in 4/5 cases, this was not statistically significant ($P=0.115$), contributed to by small numbers with such training. Regardless of professional designation, years since graduation did not significantly influence the selection of the correct dental action ($P=0.769$). The selection of the correct dental action by profession for each case can be found in Figure 2.

Figure 2. A bar chart showing the percentages and confidence intervals by profession who selected the optimal dental action for cases 1-5. A dental action was required in all of the cases.

(Image 2)

Legend:

Extensive Caries: 4 year old with extensive caries

Filling: 6 year old requiring one filling

Extensive Caries: 14 year old with extensive caries & evidence of erosion

Bottle Caries: 4 year old with bottle caries

Filling: 4 year old requiring a filling

(Appendix 1-5)

Whilst dental professionals were significantly better at answering the dental element than the doctors and nurses, ($P < 0.0001$) there was no significant difference between doctors and nurses ($P = 0.165$).

Child protection actions

The majority, 136 (90.6%) of participants had received CP training (Table 1). The proportion with CP training was not influenced by years since graduation, although doctors & nurses had higher training if they had been qualified longer; no association for dentists. The percentage of correct answers to the CP elements of each case are in Figure 3.

Figure 3. A bar chart showing the percentages and confidence intervals by profession who selected the optimal child protection (CP) action for cases 1-5. There was no CP action for case 2.

(Image 3)

Legend:

Unkempt, non attender: 4 year old who has attended on 3rd calling for dental check up and is unkempt

None: 6 year old child attending routine dental check up, no CP concerns.

Obese & Bullied: An obese 14 year old who rarely exercises and is being bullied

Multiple Extractions under General Anaesthetic: 4 year old who drinks a bottle of juice at night and whose two sisters have previously required dental extractions

Concerning injury: 4 year old with bruised ear

(Appendix 1-5)

Dentists were significantly less accurate at identifying the CP component than Doctors or Nurses, ($P < 0.0001$) between whom there were no significant differences ($P = 0.62$). Dentists had the lowest percentage of correct answers in 3 of 4 CP cases. All but one professional identified the absence of CP actions in case 2. For Case 4, which consisted of a child requiring DGA, whose two siblings had also required DGA, only 58% nurses and 56% of and doctors recognised and appropriately actioned the CP issue; while only 26% of dentists pursued the correct course of action. In Case 5,

a 4 year old presenting with ear bruising, a concerning injury (rarely accidental), 86% of doctors and 78% nurses would refer for safeguarding assessment but only 44% of dentists.

(Table 2)

CP training was an influential factor for identifying the correct CP action. Those without CP Training were less accurate at identifying the optimal CP action ($P=0.21$). The strongest correlation for CP training and selecting the correct CP action was Level 3²⁷ training ($P=0.003$). This suggests that Level 3 training is the optimal level for those regularly encountering children in their practice.

Thematic Analysis of Qualitative Data:

When considering the dental element of each case, emerging themes highlighted that doctors lacked confidence in selecting a preferred dental action, despite being encouraged to do so, and many chose simply to refer the child to a dentist. Some doctors would have referred all five children in the vignettes to a dentist, while no nurses suggested a dental referral.

Among factors influencing a professional's choice of CP actions, doctors and nurses utilised community support, health visitors and school nurses more frequently than dentists. Dentists preferred to offer advice and assess further compliance themselves.

For the concerning injury (case 5), 56% of dentists would not refer for safeguarding (CP) action; rather dentists indicated that they would seek information regarding the bruise's aetiology, or wait and see if further bruises occurred, prior to making a referral.

Of the 136 professionals who had received CP training, 90 (66.2%) said that they would like more CP training and 13/14 (92.9%) respondents who hadn't received CP training would like to receive it.

The survey was received differently between the professionals. Whilst nurses frequently commented on how pleased they were that dental neglect was being researched, doctors frequently focused on how frustrating they found the survey's dental elements due to their lack of knowledge of the subject. Worrying comments on the CP aspect of the fictitious vignettes included;

"I know it is kind of neglect but I wouldn't report it"

(Nurse, Case: Obese & Bullied)

For the concerning injury case with ear bruising concerning responses were:

“Review at next check up for further bruising”

(Dentist, Case: Concerning Injury)

“Red flag for further observation as a bruised (sic) could/could not be neglect or accident”

(Dentist, Case: Concerning Injury)

Positive comments by dentists and doctors included liaison with other individuals and good dental practice.

“Involve GP, health visitor and school nurse”

(Dentist, Case: Concerning Injury)

“Discuss with GP/Health Visitor about home” (Doctor, Case: Concerning Injury)

“Acclimatise and assess compliance with dental care, give fluoride varnish application.

(Dentist, Case: Concerning Injury)

Dentists were interested in the study and the results, but expressed concerns such as:

“It may be neglect but if I reported it every time I saw a child like this, particularly from areas such as (low income neighbourhoods) I’d be reporting every patient I saw”

(Dentist, Case: Multiple GA Extractions)

Discussion

This survey explored the actions that would be taken by dentists, doctors and nurses

when presented with fictitious cases involving dental and child protection issues (CP). The study is unique in presenting the same clinical scenarios to three different groups of professionals who routinely see and examine children. It is revealing that both paediatric and emergency care doctors lack postgraduate training in dental examination of children, and clearly have difficulty in identifying when a child needs dental care. Likewise, nurses lacked dental training and struggled to identify paediatric dental issues. In contrast, unsurprisingly, dental professionals were confident in identifying appropriate dental actions, but were less able to identify the required CP actions. Nurses and doctors were consistently better at correctly identifying and responding to the child protection issues.

There were a number of influential variables relating to correctly identifying the dental and CP actions. For dental actions, a greater proportion of the professionals who had received post-graduate training in the dental examination of children selected the correct action. CP training, and the level of that training, were influential in identifying correct CP actions. This reiterates the need for all professionals to undergo CP training, and it was disappointing to note that 24.6% of professionals in this study had received no CP training beyond undergraduate/ Level 1. It is currently mandatory in the UK for all staff working in health care settings to have Level 1 CP training, and Level 2 is the minimum level of training required for health care staff in contact with children.²⁷

Worryingly, less than half of the dentists were able to recognise a child's bruised ear as a need to refer for possible abuse, despite the rarity of this injury from unintentional causes.²⁸ Dentists did not avail of health visitors and school nurses as much as doctors and nurses. Harris *et al.*²⁴ made a similar observation when they found that 84% of the dental respondents in their study felt more comfortable discussing their concerns with another dental colleague before referring to another service. We did not explore the reasons for dentists failure to act on the CP issues presented, however, it is evident that future training in our area may be more effectively provided if medical and dental staff are trained together, thus ensuring that each professional group learns from one another.

Previous literature has found that whilst dentists regularly treat neglected children and are capable of recognising and suspecting child abuse, only a small proportion communicate their concerns to the appropriate authorities.^{15,24,29,30,31} Other studies utilising vignettes that were suggestive of abuse, also found that dentists perceived the vignettes as serious but only a minority indicated that they would refer the cases.^{31,32} Our findings are consistent with this, particularly for the concerning injury case with a bruised ear, where the comments made by dentists tended to indicate that they were often suspicious, but would not refer on. Possibly due to the lack of certainty and information regarding the case.^{29,30} Dentists would benefit from further training on how to recognise *and report* suspected abuse.³⁰ Needleman found that child abuse education programmes are effective in increasing awareness and improve the ability to detect possible child abuse and neglect. In America the P.A.N.D.A project (Prevent Abuse & Neglect through Dental Awareness) has been effective across multiple states.³³ The number of dentists reporting suspected child abuse in Illinois rose by 800% in the five years following PANDA's implementation.³⁴

Consistent with previous literature, we found CP training to positively influence recognition and actions relating to CP across all three professional groups.³⁰ Studies have found postgraduate CP training had a positive influence, with recent dental graduates reporting more child abuse cases than the dentists who graduated less recently. In 2006, 'Child Protection and the dental team' was sent to all UK dental practices, which led to a subsequent increase in awareness and training of CP in the dental profession.¹⁶ Such training has led to an increase in the number of dentists suspecting and referring child abuse.³⁵

The level of dental knowledge amongst doctors and nurses is understudied, but data suggest doctors and nurses have limited knowledge of dental issues.²⁵ We demonstrated that very few non-dental professionals had received training on dental examination. Those who had undergone such training identified the appropriate dental actions more frequently. Non-dental health care professionals are hesitant to assess a child's oral health¹⁵ and their limited knowledge and lack of dental familiarity are the most influential barriers.²⁵ We found that doctors frequently wrote that they would refer to a dentist as opposed to trying to answer the dental element of the case. Our findings in nurses were similar to Bradbury-Jones *et al.*¹⁷; they expressed their interest in dental issues but struggle to assess oral health.

All dentists should have child protection training whose content ensures they recognise concerning injuries and the importance of reporting them. Doctors and nurses need to receive training in examination of the mouth, including signs of dental neglect. All healthcare professionals must be provided with clear signposting on how to refer, and be aware of the importance of sharing, child protection concerns with child protective agencies. We suggest that all healthcare professionals receive training in paediatric dental examination, sufficient to know when pathology exists that warrants referral to dental practitioners. In addition, it is clear that both groups of professionals would benefit from interprofessional training, whereby each professional group can learn from one another about the context in which CP issues may emerge and appropriate action that should be taken.

This study has several limitations. Although the vignettes were based on typical clinical cases, we do not know whether the professionals would take their stated action in practice or not. Although we made strenuous efforts to engage with GPs, we struggled to engage a large number, leading to a predominance of hospital based practitioners among the respondents, this may influence the generalizability of the results. It is possible that those who participated are more motivated about CP issues, and thus may give an over optimistic impression of CP actions among this group. Our study cohort were predominantly white and female, consistent with the demographics of these professional groups in our area, thus the findings may not be generalizable to other groups of professionals. We chose to survey hospital based health professionals, ie doctors and nurses, thus these results are not generalizable to general practitioners or community nurses.

Future research aimed at deriving and validating a tool to assist in the identification of dental neglect would be of value to all professionals, potentially across the UK.

Conclusions:

When presented with identical cases requiring dental and child protection actions the different professions do not agree on the appropriate action. Hospital doctors and nurses need to receive training on the examination of a child's oral health, and the criteria for dental referral, while dentists require more training to recognise and take appropriate actions regarding CP issues including dental neglect. Clearly, the optimal situation would be for joint training between dentists and other paediatric staff, to enhance mutual understanding and referral pathways, to ensure that all children receive appropriate and timely care.

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References

1. Foster Page L A, Thomson W M, Jokovic A, Locker D. Validation of the Child Perceptions Questionnaire (CPQ11-14). *J Dent Res* 2005; 84: 649-52.
2. Goodwin M, Sanders C, Davies G, Walsh T, Pretty I A. Issues arising following a referral and subsequent wait for extraction under general anaesthetic: impact on children. *BMC Oral Health* 2015; 15: 3.
3. Clarke M, Locker D, Berall G, Pencharz P, Kenny D J, Judd P. Malnourishment in a population of young children with severe early childhood caries. *Pediatr Dent* 2006; 28: 254.
4. Bönecker M, J Abanto, G Tello, LB Oliveira. Impact of dental caries on preschool children's quality of life: an update. *Brazilian Oral Research* 2012; 26: 103-7.
5. Blumenshine S L, Vann W F, Gizlice Z, Lee J Y. Children's school performance: impact of general and oral health. *J Public Health Dent* 2008; 68: 82-7.
6. Public Health England. National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2012. A report on the prevalence and severity of dental decay. London: PHE 2013.
7. Morgan M, Monaghan N, Johnson I. Picture of oral health 2012: Dental epidemiological survey of 5 year olds 2011-12. Cardiff University/ Public Health Wales, 2013.
8. Royal College of Surgeons & Faculty of Dental Surgery. The state of children's oral health in England. 2015. Online information available at: <http://www.rcseng.ac.uk/fds/policy/documents>
9. Department of Health. *Reference costs 2012 to 2013*. London: DH; 2013.
10. Kakaounaki E, Tahmassebi J F, Fayle S A. Repeat general anaesthesia, a 6 year follow up. *Int J Paediatr Dent* 2011; 21: 126-31.
11. Harrison M, Nutting L. Repeat general anaesthesia for paediatric dentistry. *Br Dent J* 2000; 189: 379.

12. Department for Education. Statistical First Release. Characteristics of children in need in England, 2013-14. London: Department for Education; 2014.
13. Burgess C, Daniel B, Scott J, Mulley K, Dobbin H. The state of child neglect in the UK - An Annual Review by Action for Children in Partnership with the University of Stirling. Action for Children; 2013.
14. Harris J C, Balmer R C, Sidebotham P D. British Society of Paediatric Dentistry: a policy document on dental neglect in children. *Int J Paediatr Dent* 2009; 207: 215.
15. Bhatia S, Maguire S, Chadwick B, Hunter M, Harris J, Tempest V, Mann M, Kemp A. Characteristics of child dental neglect: A systematic review. *J Dent* 2014; 42: 229-239.
16. Harris J, Sidebotham P, Welbury R *et al*. Child protection and the dental team. An introduction to safeguarding children in dental practice. Sheffield: Committee of Postgraduate Dental Deans and Directors; 2006.
17. Bradbury-Jones, C, N Innes, D Evans, F Ballantyne, and J Taylor. Dental Neglect As a Marker of Broader Neglect: a Qualitative Investigation of Public Health Nurses' Assessments of Oral Health in Preschool Children. *BMC Public Health* 2013; 13: 370.
18. National Institute for Health and Care Excellence (NICE). When to suspect maltreatment in under 16s. Nice guidelines [CG89]. 2009.
19. Loochtan R M, Bross D C, Domoto P K. Dental neglect in children: definition, legal aspects, and challenges. *Pediatr Dent* 1986; 8: 113-6.
20. Sheets L K, Leach M E, Koszewski I J, Lessmeier A M, Nugent M, Simpson P. Sentinel Injuries in Infants Evaluated for Child Physical Abuse. *Pediatr* 2013; 131: 701-7.
21. General Dental Council. Standards for Dental Professionals. 2005.
22. Welbury R R, MacAskill S G, Murphy J M *et al*. General dental practitioners' perception of their role within child protection: a qualitative study. *Eur J of Paediatr Dent* 2003; 4: 89-95.
23. Harris J C, Elcock C, Sidebotham P D, Welbury R R. Child protection training, experience and practice of dental professionals with an interest in paediatric dentistry. *Paediatr Dent* 2009; 206: 409-414.

24. Harris C M, Welbury R, Cairns A M. The Scottish dental practitioner's role in managing child abuse and neglect. *Br Dent J* 2013; 214: 454-455.

25. Kalkani M, Ashley P. The role of paediatricians in oral health of preschool children in the United Kingdom: a national survey of paediatric postgraduate specialty trainees. *Eur Arch Paediatr Dent* 2013; 14: 319-24.

26. Department of Health (2005) Choosing better oral health: an oral health plan for England, Dental and Ophthalmic Services Division.

27. Royal College of Paediatrics and Child Health. Safeguarding children and young people: roles and competences for health care staff. Intercollegiate document. Third edition. London: RCPCH, 2014.

28. Maguire S, Mann M, Sibert J, Kemp A. Are there patterns of bruising in childhood which are diagnostic or suggestive of abuse? A systematic review. *Arch Dis Child* 2005; 90: 182-186.

29. Owais A I N, Qudeimat M A, Qodceih S. Dentists' involvement in identification and reporting of child physical abuse: Jordan as a case study. *Int J Paediatr Dent* 2009; 19: 291–296.
30. Bsoul S A, Flint D J, Dove S B, Senn D R, Alder M E. Reporting of child abuse: a follow-up survey of Texas dentists. *Pediatr Dent* 2003; 25: 541-5.

31. Adair S M, Yasrebi S, Wray I A, Hanes C M, Sams D R, Russell C M. Demographic, Educational, and Experiential Factors Associated with Dentists' Decisions to Report Hypothetical Cases of Child Maltreatment. *Pediatr Dent* 1997; 19: 466-9.

32. Brodersen G, Dooley R, Fadavi S, Punwani I. Child dental neglect reporting by pediatric and general dentists. *Pediatr Dent* 1996; 18: 167.
4

33. Delta Dental of New Mexico. P.A.N.D.A. 2015. Online information available at: <http://www.deltadentalnm.com/Dentists/Dental-Office-Resources/P-A-N-D-A-.aspx>

34. DeLong L. Introduction to General and Oral Pathology. In DeLong L, Burkhart N W (eds) *General and Oral Pathology for the Dental Hygienist*. 2nd ed. pp.2-28. Baltimore, MD: Lippincott Williams & Wilkins, 2008.

35. Harris J C, Bradbury J, Porritt J, Nilchian F, Franklin C D. NHS dental professionals' evaluation of a child protection learning resource. *Br Dent J* 2011; 210: 75-9.

Appendix 1:

Vignette 1

Shannon is a 4-year-old girl with 4 other siblings.

She last attended for a dental check up at age 2 and has come on the 3rd calling for a routine dental check.

She is slightly unkempt but appears otherwise “well”.

(Image 4) (Image 5)

Shannon, 4 yrs old. Would you:

- A) Advise on importance of check ups?
- B) Provide dietary and oral hygiene advice?
- C) Offer routine care?
- D) Refer for extractions under GA?
- E) Refer to a community paediatrician re neglect?
- F) Refer to social services re neglect?
- G) Refer to social services as “Child in Need”?
- H) Other?

Optimal Dental Actions	Optimal Child Protection Actions
<ul style="list-style-type: none">- Minimum of B and C- <i>Instant fail if D</i>	<ul style="list-style-type: none">- Minimum of E, G or H where H is requesting help or a referral.- <i>Instant fail if F</i>

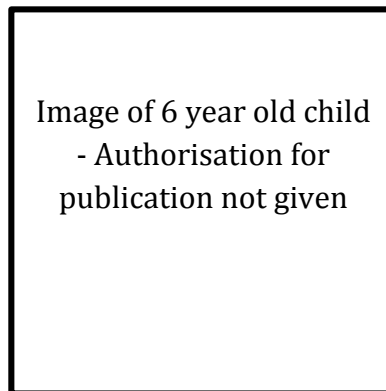
Appendix 2:

Vignette 2:

Gemma is a 6 year old girl who attended clinic today for a routine dental check up.

The check up revealed she requires one filling.

(Image 6)



Gemma, 6 yr old needing one filling.

Would you:

- A) Advise on importance of check ups?
- B) Provide dietary and oral hygiene advice?
- C) Offer routine care?
- D) Refer for extractions under GA?
- E) Refer to a community paediatrician re neglect?
- F) Refer to social services re neglect?
- G) Refer to social services as “Child in Need”?
- H) Other?

Optimal Dental Actions	Optimal Child Protection Actions
<ul style="list-style-type: none">- Minimum of B and C- <i>Instant fail if D</i>	<ul style="list-style-type: none">- <i>Instant fail if any child protection actions are taken</i>

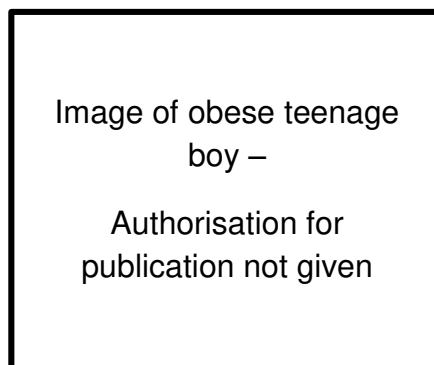
Appendix 3:

Vignette 3:

Cameron is 14 years old. He rarely exercises and is being bullied.

He has multiple carious cavities requiring treatment and evidence of dental erosion.

(Image 7)



**Cameron a 14 yr old boy with caries and erosions who is being bullied.
Would you:**

- A) Advise on importance of check ups?
- B) Provide dietary and oral hygiene advice?
- C) Offer routine care?
- D) Refer for extractions under GA?
- E) Refer to a community paediatrician re neglect?
- F) Refer to social services re neglect?
- G) Refer to social services as “Child in Need”?
- H) Other?

Optimal Dental Actions	Optimal Child Protection Actions
<ul style="list-style-type: none">- Minimum of B and C- <i>Instant fail if D</i>	<ul style="list-style-type: none">- Minimum of E or H if H includes referring to the school nurse, a doctor or an obesity scheme e.g. MEND scheme- <i>Instant fail if F or G</i>

Appendix 4:

Vignette 4:

Robert is a four year old boy who is described by his parents as a 'fussy eater'.

He has a bottle of juice at night.

His two sisters have previously required dental extractions under GA.

(Image 8)



Robert, 4 yrs old. His 2 sisters have required extractions under GA previously.

Would you:

- A) Advise on importance of check ups?
- B) Provide dietary and oral hygiene advice?
- C) Offer routine care?
- D) Refer for extractions under GA?
- E) Refer to a community paediatrician re neglect?
- F) Refer to social services re neglect?
- G) Refer to social services as "Child in Need"?
- H) Other?

Optimal Dental Actions	Optimal Child Protection Actions
- Minimum of B and D	- Minimum of E or F or G - Or an appropriate H

Appendix 5:

Vignette 5:

Joseph is a 4 year old boy attending clinic with his mother for a filling.

As you inspect his mouth you notice that his ear is bruised.

He appears generally well cared for and is not anxious.

(Image 9) (Image 10)

Joseph 4 yr old boy with bruising around his ear.

Would you:

- A) Advise on importance of check ups?
- B) Provide dietary and oral hygiene advice?
- C) Offer routine care?
- D) Refer for extractions under GA?
- E) Refer to a community paediatrician re neglect?
- F) Refer to social services re neglect?
- G) Refer to social services as "Child in Need"?
- H) Other?

Optimal Dental Actions	Optimal Child Protection Actions
<ul style="list-style-type: none">- Minimum of B and C- <i>Instant fail if D</i>	<ul style="list-style-type: none">- Minimum of E or F or G- Or H where a referral is being made.