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1 **Admission and discharge criteria for adolescents requiring inpatient or residential mental**
2 **health care: A scoping review**

3

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14

15 **Abstract**

16 **Objective**

17 This scoping review sought to locate and describe literature criteria relating to admission and
18 discharge to inpatient units for adolescents aged eleven to nineteen years.

19

20 **Introduction**

21 In the United Kingdom (UK) and internationally, it is estimated that one in ten children and
22 adolescents has a diagnosable mental health problem. Children and adolescents with the highest
23 levels of need are cared for in hospital but there is a high demand for beds and a general lack of
24 agreement regarding the criteria for admission to, and discharge from, such units.

25

26 **Inclusion criteria**

27 We considered research studies that focused on admission and discharge criteria to mental health
28 inpatient or residential care for adolescents aged 11-19 years. We included all quantitative and
29 qualitative research designs and text and opinion papers.

30

31 **Methods**

32 We searched MEDLINE, EMBASE, PsycINFO; CINAHL and ERIC, British Nursing Index, ASSIA,
33 ProQuest Dissertations & Thesis, the Cochrane Central Register of Controlled Trials, OpenGrey,
34 Ethos and websites of professional organizations for English language citations from 2009 to Feb
35 2018.

36

37 Potentially relevant citations were retrieved in full and their citation details imported into the Joanna
38 Briggs Institute's System for the Unified Management, Assessment and Review of Information (JBI
39 SUMARI; The Joanna Briggs Institute, Adelaide, Australia). Full text of selected citations were
40 assessed in detail against the inclusion criteria by two independent reviewers. Findings were
41 extracted directly into tables accompanied by a narrative summary relating to the review objectives

42

43 **Results**

44 Thirty five citations were included, quantitative (n=18), qualitative (n=1) research studies, textual and
45 opinion publications (n=16). Of the quantitative research studies sixteen used a retrospective cohort
46 design using case note reviews and two were prospective cohort studies. The qualitative study used
47 interviews. The research studies were conducted in nine different countries, the USA (n=7), the UK
48 (n=3) New Zealand (n=2), Israel (n=2) Canada (n=1), Norway (n=1) Ireland (n=1) Greece (n=1)
49 Turkey (n=1). The 16 textual and opinion publications included book chapters (n=3), reviews (n=3),
50 policy and guidance documents (n=3), reports (n=3), service specifications (n=4). The majority of
51 these were published in the UK (n=10) with the remainder published in Ireland (n=2), Australia (n=1),
52 USA (n=2) and New Zealand (n=1). Research was conducted across a wide variety of settings which
53 included child and adolescent mental health service inpatient and outpatient units, emergency
54 department and adult psychiatric units. Length of stay, where recorded, ranged from <1 day to 351

55 days. Several categories emerged from the data: type of admission process, referral or point of
56 access, reasons for admission to inpatient mental health care, assessment processes, criteria for
57 discharge and reasons for non-admission.

58

59 **Conclusion**

60 There is little evidence identifying which behavioral or symptomatic indicators suggest admission is
61 required, beyond retrospective identification of diagnoses attributed to adolescents who became
62 inpatients. The threshold of severity of risk or need is not currently articulated. No studies were
63 identified that drew on the perspectives of adolescents and their families or carers regarding criteria
64 warranting admission to inpatient mental health care, indicating an important area for future
65 investigation.

66

67 **Keywords:** Adolescents; mental health, admission, discharge

68

69 **Introduction**

70 This review scopes the literature relating to admission and discharge criteria for adolescents over
71 eleven and under nineteen years old that are admitted for inpatient or residential mental health care.
72 For ease of understanding the term 'adolescents' will be used but it is acknowledged that other terms,
73 'youth', 'young adults' 'teenagers' and 'young people' are used within the literature. An inpatient
74 service is defined as a unit with 'hospital beds' that provides 24-hour nursing care.¹ Residential
75 treatment centers usually house youths with significant psychiatric, psychological, behavioral, or
76 substance abuse problems for whom outpatient treatment has been unsuccessful.² The term
77 'inpatient mental health care' will be used in this review to represent these services.

78

79 It is estimated that one in ten children and adolescents (aged between five and sixteen) in the United
80 Kingdom (UK) has a diagnosable mental health problem³ and this is also an area of international
81 concern.⁴ Those with the highest levels of need are cared for in hospital but there is general lack of
82 agreement regarding the criteria for admission to such units. The demand for hospital beds is high
83 and continues to increase, for example, there were 720 admissions during 2013 into Mc-Master
84 Children's Hospital's child and adolescent psychiatry unit, Ontario, Canada.⁵ A study in New Zealand⁶
85 showed a 80% marked increase in admissions for children aged 4-17 following the Canterbury
86 earthquakes. A considerable difference was found in the provision of child and adolescent mental
87 health services across 28 European countries, with fewer than two beds per 100 000 adolescents in
88 Portugal and Sweden to more than 50 beds per 100 000 adolescents in Germany and the
89 Netherlands.⁷ In the UK limited bed capacity influences any decisions on who to admit to inpatient
90 child and adolescent mental health services (CAMHS). However perceptions of 'risk' are also taken
91 into consideration which can vary upon external triggering factors and context, for example suicidal
92 attempts take place. As a result negotiating access to inpatient beds for adolescents can be fraught
93 with difficulties⁸ and with the development of effective community based interventions for common
94 mental health presentations in adolescents, the focus and function of inpatient care is changing.⁹

95 Inpatient care is often currently selected because the round-the-clock availability of nursing staff
96 makes it possible to keep adolescents safe while assessments and interventions of their mental
97 health is addressed.

98

99 A guidance document that can advise on the scope and criteria which warrant admissions to
100 adolescent inpatient mental health units in the UK is currently being developed by the Royal College
101 of Psychiatrists. Given the challenges over access and demand for services are similar across
102 Canada, Australasia and Europe^{7,10} this will have international applicability. There are several sources
103 of good practice to which CAMHS inpatients can refer^{11,12} but there is an opportunity to ensure that
104 any further guidance documentation produced is supported by an underpinning robust evidence base.

105

106 In 2001 in the UK the Royal College of Psychiatrists introduced the Quality Network for Inpatient
107 CAMHS (QNIC) standards against which inpatient CAMHS units can elect to be audited and are
108 reviewed biannually.¹¹ One of the sections in this audit document covers access and admission.
109 Within this category, one statement specifies that senior clinical staff members make decisions over
110 the admission of an adolescent, this can be moderated if in their view safety or therapeutic activity will
111 be affected. A further statement notes that adolescents at severe risk can be admitted as
112 emergencies. Standards exist relating to process for exceeding bed capacity, for not admitting and for
113 effective discharge planning. Absent from the standards are specific criteria about which presenting
114 criteria determine whether admission is required. Similarly there is a lack of agreed criteria for when
115 discharge is indicated. More recently in 2014 the national mapping of the CAMHS inpatient units
116 across England¹² was highlighted that there was high demand and limited capacity to provide
117 inpatient mental health care for this population, suggesting as a solution for patient flow the
118 introduction of a pre-admission assessment.

119

120 Before starting the review an initial search on the topic area was conducted in order to identify any
121 other scoping and systematic reviews. The following databases were searched: Campbell
122 Collaboration Library of Systematic Reviews; Cochrane Database of Systematic Reviews, Evidence
123 for Policy and Practice Information Centre databases; JBI Database of Systematic Reviews and
124 Implementation Reports, International Prospective Register of Systematic Reviews (PROSPERO);
125 Social Care Institute for Excellence database; CINAHL and PsycINFO. Two reviews have been
126 registered on PROSPERO investigating characteristics of inpatient CAMHS and treatment
127 outcomes^{13,14} but neither considered admission criteria.

128

129 This scoping review therefore fills in the gap in the literature, while simultaneously providing the
130 evidence base for the Royal College of Psychiatrists guidance document. A protocol for this work has
131 previously been published by review authors.¹⁵

132

133 **Review Question/objectives**

134 The question guiding this review was:

135 What are the admission and discharge criteria for adolescents to mental health inpatient care?

136

137 The objectives of this scoping review were

- 138 • To identify criteria for admission to mental health inpatient care for adolescents
- 139 • To identify criteria for discharge from mental health inpatient care for adolescents
- 140 • To identify criteria for not admitting adolescents to mental health inpatient care

141

142 **Inclusion Criteria**

143 **Types of participants**

144 This scoping review considered all research studies that focus on adolescents between the ages of
145 eleven and nineteen years, presenting with mental health difficulties suggestive of meeting diagnostic
146 criteria, prior to, or on admission, to inpatient mental health care inclusive of psychosis, eating
147 disorders and mood disorders. Research studies that focus primarily on children (under the age of
148 eleven) or adults (over the age of nineteen) were excluded except where adolescents were part of a
149 larger sample and it was possible to accurately identify data related to adolescents between the age
150 of eleven and nineteen years separately.

151

152 **Concept**

153 This review considered all research studies that specifically addressed:

- 154 • Reason for admission to inpatient mental health care; for example severe self-harming
155 behavior.
- 156 • Reason for discharge from inpatient mental health care, for example no longer an immediate
157 risk to self.
- 158 • Reason for not admitting to inpatient mental health care, for example can be managed safely
159 at home.

160

161 Research studies that focused on alternatives to inpatient mental health care and services specifically
162 for learning disabilities only and forensic services have been excluded.

163

164 **Context**

165 This scoping review considered research studies conducted in any facility that provided mental health
166 inpatient care for adolescents. This included hospitals, independent health units and residential
167 treatment centers in any geographical setting.

168

169 **Types of studies**

170 This scoping review considered quantitative and qualitative studies and textual and opinion data

171

172

173 Quantitative

174 This scoping review considered both experimental and quasi-experimental study designs including
175 randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted
176 time-series studies. In addition, analytical observational studies including prospective and
177 retrospective cohort studies, case-control studies and analytical cross-sectional studies were
178 considered for inclusion. This review also considered descriptive observational study designs
179 including case series, individual case reports and descriptive cross-sectional studies for inclusion.

180

181 Qualitative

182 This scoping review considered studies that focused on qualitative data including, but not limited to,
183 designs such as phenomenology, grounded theory, ethnography, action research and feminist
184 research.

185

186 Textual and opinion

187 This scoping review considered standards for clinical care, consensus guidelines, narrative case
188 reports, and literature reviews including expert opinion, published discussion papers, government
189 policy reports or reports accessed from web pages of professional organizations.

190

191 Studies published in the English language were included. Studies published from 2009 to February
192 2018 were included. In 2009 Kurtz published a review for the UK Department of Health identifying the
193 'Evidence Base for Tier 4 CAMHS' (inpatient provision) drawing on the evidence available at that
194 point.¹⁶ In this review, Kurtz identified that the inpatient services were developing from not only
195 inpatient services, but to develop complex outpatient 'wrap around services' for adolescents, and that
196 inpatient services should be reserved for 'highly specialist assessment in a controlled environment
197 and away from the family'. The review recognized that although there may be benefits in this
198 approach, it would not necessarily be the best intervention for all adolescents and recommended a
199 comprehensive pre-admission evaluation of the child's suitability for treatment in a psychiatric
200 inpatient setting before admission.¹⁶ This scoping review will therefore consider studies published
201 since the publication of this 2009 report.

202

203 **Methods**

204 This scoping review was conducted in accordance with the Joanna Briggs Institute methodology for
205 scoping reviews.¹⁷

206

207 **Search Strategy**

208 The search strategy aimed to locate both published and unpublished studies. An initial limited search
209 of PsycINFO and CINAHL was undertaken followed by analysis of the text words contained in the
210 titles and abstract, and of index terms used to describe the articles. This informed the development of
211 a search strategy tailored for each information source. A full search strategy for all databases is
212 detailed in Appendix I. The search strategy, including all identified keywords and index terms was

213 adapted for each included information source. The reference list of all included studies selected were
214 screened for additional studies.

215

216 **Information Sources:**

217 The databases searched included:

218 On the OVID platform:

219 MEDLINE

220 EMBASE

221 PsycINFO

222

223 On the EBSCO platform:

224 CINAHL

225 ERIC

226

227 On the ProQuest platform

228 British Nursing index

229 ASSIA

230 ProQuest Dissertations & Thesis

231

232 The trial registers to be searched included:

233 Cochrane Central Register of Controlled Trials

234

235 The search for unpublished studies and other grey literature included:

236 OpenGrey

237 e-thesis online service for the British Library (Ethos)

238 Websites of professional organizations; for example Royal College of Psychiatrists, Royal College of

239 Nursing, International Society for Psychiatric Nursing, Headspace, Canadian Mental Health

240 Association.

241 Authors, experts and organizations active within the phenomenon of interest were contacted to

242 attempt to identify further published, un-published and ongoing studies.

243

244 **Study screening and selection**

245 Following the search, all identified citations were loaded into Endnote V7.7.1 (Clarivate Analytics, PA,

246 USA) and duplicates removed. Titles and abstracts were screened by two independent reviewers for

247 assessment against the inclusion criteria for the review. Potentially relevant studies were retrieved in

248 full and their citation details imported into the Joanna Briggs Institute's System for the Unified

249 Management, Assessment and Review of Information (JBI SUMARI; The Joanna Briggs Institute,

250 Adelaide, Australia). The full text of selected citations were assessed in detail against the inclusion

251 criteria by two independent reviewers. Any disagreements that arose between the reviewers at each

252 stage of the study selection process were resolved through discussion, or with a third reviewer.

253 **Data extraction**

254 The data extracted included specific details about the interventions, populations, study methods and
255 outcomes of significance to the review question and specific objectives. The JBI data extraction tool
256 was adapted to suit this scoping review.¹⁷. This is in line with charting the data as outlines in stage
257 four of Arksey and O'Malley's¹⁸ framework for conducting scoping reviews and updated by Levac et
258 al¹⁹. Any disagreements that arose between the reviewers were resolved through discussion or with a
259 third reviewer. Authors of papers were contacted to request missing or additional data where required.

260

261 **Presentation of results**

262 The review findings are discussed in a narrative form including tables. The approach described by
263 Arksey and O'Malley¹⁸ and Levac¹⁹ was followed and an overview of all included material is
264 summarized in a tables which maps the literature. Literature was tabulated using the following
265 headings: research design, geographical location, year of publication, characteristics of study
266 population and research outcomes. A narrative summary accompanied the tabulated results,¹⁸ and
267 described how the results related to the review objectives and question.¹⁷

268

269 **Study inclusion**

270 The database searches yielded a total of 3609 citations after duplicates were removed. The titles and
271 abstracts for these 3609 citations were screened and 72 citations considered for further detailed
272 assessment of the full paper yielding a total of 35 original citations for inclusion in this review.
273 Reasons for exclusion of full text studies that did not meet the inclusion criteria have been recorded
274 and reported Appendix II. The results of the search are reported in full and presented in a Preferred
275 Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram²⁰ see Figure 1.

276

277 *Insert Figure 1 here*

278

279 **Characteristics of the included studies**

280 ***Publication type***

281 The thirty five included citations included quantitative research studies (n=18), qualitative research
282 studies (n=1) and textual and opinion publications (n=16). Of the quantitative research studies
283 sixteen used a retrospective cohort design using case note reviews and 2 were prospective cohort
284 studies.^{21,22}. The study using a qualitative approach was conducted using interviews⁸. A summary
285 table mapping the included research material is presented in Appendix III. The sixteen textual and
286 opinion publications included book chapters (n=3), reviews (n=3), policy and guidance documents
287 (n=3), reports (n=3), service specifications (n=4). A summary table mapping the textual and opinion
288 publications is presented in table 1

289

290 *Insert table 1 here*

291

292

293 **Country of publication**

294 The 19 research studies were conducted in nine different countries. Seven were conducted in the
295 USA²³⁻²⁹ three in the UK,³⁰⁻³² two in New Zealand,^{8,33} two in Israel,^{22,34} one in Canada,³⁵ one in
296 Norway,²¹ one in Ireland,³⁶ one in Greece³⁷ and one in Turkey.³⁸ The majority of the textual and
297 opinion publications were published in the UK (n=10) with the remaining being published in Ireland
298 (n=2),^{39,40} Australia (n=1),⁴¹ USA (n=2)^{42,43} and New Zealand (n=1).⁴⁴

299
300 **Participant details**

301 The mean age of participants varied from 11 years²³ to 15 years²⁸. Bryson and Akin²³ included data
302 for children as young as 3-5 years, data was only extracted for participants' age 11-19 years. All
303 research studies included a mix of genders apart from one²⁵ where the participants were all male and
304 one further study³⁴ did not specify gender. The participants in the qualitative study were community
305 clinicians (n=48) from varying clinical backgrounds.⁸

306
307 **Sample size**

308 Sample size varied considerably related to the nature and type of the study, from 34 participants³¹ to
309 1,293 participants²³. This study, however the one included all those admitted for acute inpatient
310 psychiatric care one or more times during a one-year period within one Midwestern state and of
311 these. 66.2 % of these participants fell in the included age category (12-14: 29.4% and 15-17:
312 36.8%).²³ The qualitative study included 48 participants.⁸

313
314 **Period of data collection**

315 The time period over which data was collected for the retrospective cohort studies varied from six
316 months³⁶ to eight years³⁷. The other retrospective cohort studies collected data over a one
317 year,^{23,24,26,27,35} sixteen months,³⁸ eighteen months,²⁸ two year,^{25,30,32,34} three year,^{29,31} or five year³³
318 period. One of the prospective cohort studies collected data over three years²² whereas the data
319 collection period was not specified for a further two studies.^{8,21}

320
321 **Setting**

322 Research was conducted across a wide variety of different settings (see table 2) which included Child
323 and Adolescent Mental Health Service inpatient units (n=6)^{21,25,30,35,36,38} emergency departments
324 (n=4),^{24,27-29} adult acute psychiatric units (n=2), specialist eating disorder units (n=2),^{22,32} adolescent
325 units with a general psychiatric ward (n=2),^{31,37} inpatient pediatric unit (n=1)²⁶ services making
326 referrals into CAMHS units (n=2)^{8,34}

327
328 *Insert table 2 here*

329
330 **Length of stay**

331 The length of stay was recorded in 11 studies.^{21,23-26,28,30,33,35,37,38} Psychiatric boarding ranged from
332 <1day^{24,27} to 5 days or less.²⁶ For mental health units, the range was <30 days²³ to 351 days.²¹ It is

333 difficult to compare length of stay across research studies as a range of different types of provision
334 across different countries was reported.

335

336 **Review findings**

337 The summary is presented as three categories generated from the three objectives proposed for this
338 review: criteria for admission, criteria for discharge and reasons for not admitting.

339

340 **Criteria for admission**

341 Four sub categories which emerged from the data within criteria for admission: Type of admission
342 process, referral or point of access, reasons for admission to inpatient mental health care and
343 assessment processes.

344

345 **Type of admission process**

346 The type of admission process was reported within six textual and opinion publications^{39,45-48} and nine
347 research studies.^{21,23,26-28,30,31,33,37} It was evident that there are two separate processes for admission
348 to inpatient mental health care dependent upon whether the clinical presentation was deemed routine
349 or urgent/emergency admissions. Some of the research studies in their methods or discussion
350 sections described the type of service that the units offered, such as those that accept acute and
351 emergency admission around the clock seven days a week.^{21,30} Others did not describe the service
352 offered by the unit outside of the remit of the research study.^{26-28,31,33,37}

353

354 Some of the US literature used the term 'psychiatric boarding' a term used to describe when young
355 people who were medically fit and awaiting admission to a mental health facility.^{26,27} The research
356 studies in question looked at this issue within pediatric units^{26,28} and emergency departments.^{27,28}

357

358 Professionals noted that admission of adolescents with mental health needs also was into general
359 medical wards, pediatric wards and adult mental health wards.^{45,48} Although no specific explanation
360 for these decisions was provided the CAMHS professional reported that one of the reasons for not
361 admitting to inpatient mental health care was lack of availability of beds.^{45,48}

362

363 Two research studies investigated the process and circumstances by which adolescents who were
364 younger than 18 years were admitted to either an adult acute psychiatric units³³ or to an adolescent
365 unit within a general psychiatric ward.³⁷ Park et al.³³ found that the majority of admissions took place
366 outside of working hours with more than half coming from rural areas with a high usage of the Mental
367 Health Act on admission. Zilkis et al.³⁷ conducted a retrospective case note review of adolescents
368 admitted in a Greek integrated adolescent and adult mental health hospital. Of the 25 beds available,
369 five were reserved for adolescents, 86.5% of whom were aged 16 and above. This was a specialized
370 unit. Another unit which served adolescents up to aged 14 was excluded from this study.

371

372 Admission under the Children’s Act or Mental Health Act was mentioned in four of the textual and
373 opinion publications.^{39,46,47,49} In these exceptional cases admission was required to prevent any
374 serious deterioration of the health of the young person.³⁹ The numbers of adolescents who required
375 involuntary/compulsory admission to units was reported across six research studies (20%,³⁵ 5%,³⁶
376 9%,³⁰ 33%²¹ and 61%³³. Duddu et al.³⁰ also reported that a further 22% of adolescents were detained
377 after their admission. One study which was conducted across several inpatient mental health care
378 units found the final decisions for compulsory admission were based on each unit’s consultant and
379 that as a result rates (7 to 67%) varied significantly between units.²¹

380

381 The focus of three of the research studies was around adolescents who required involuntary or
382 compulsory admission to their unit using the respective mental health legislation within each
383 country.^{28,31,35} The study by Patil et al.³¹ examined the characteristics, presentation and outcomes of
384 adolescents who had required involuntary/compulsory admission over a three period and
385 demonstrated that the majority (82%) had been sectioned because of threatened or potential harm to
386 self. Persi et al.³⁵ conducted a comparison of voluntary and involuntary adolescent admissions and
387 found that a higher percentage of involuntary admissions was taking place outside of office hours.
388 The remaining study investigated the impact of pediatric psychiatric patients who had been admitted
389 involuntarily of boarding in a pediatric medical unit due to a lack of psychiatric beds.²⁸.

390

391 **Referral or point of access**

392 Six research studies^{22,26,27,33,36,37} and one textual and opinion publication⁵⁰ detailed the point of access
393 or source of referral for those adolescents who had been admitted (both routine and emergency
394 admissions) to their units. A wide variety of sources are reported across the research studies as
395 shown in table 3. The main source of referrals reported in the audit carried out by the Care Quality
396 Commission⁵⁰ was from community child and adolescent mental health service tier 3 teams and the
397 crisis team including emergency department liaison. Other sources included specialist community
398 services and crisis teams, primary care/general practitioners.⁵⁰

399

400 *Insert table 3 here*

401

402 **Reasons for admission to inpatient mental health care**

403 Only one research study³⁶ and 11 textual and opinion publications,^{39–45,50–53} used the term admission
404 criteria, and for a further two research studies^{21,28} admission criteria could be inferred from within the
405 text

406 *“Written admission criteria stipulate that referred individuals should be aged 16–18 years old,*
407 *living in the primary catchment area and have a likely psychiatric diagnosis based on the*
408 *clinical assessment of the referring psychiatrist.”³⁶ p.556*

409

410 *“The ED only admits or transfers psychiatric patients deemed to require an involuntary*
411 *psychiatric hold (72-hour hold) for danger to self or others or grave disability; others are*
412 *referred for outpatient services”*.^{28 p.126}

413

414 *“The following conditions are specified as qualifying a person for necessary assessment and*
415 *treatment in an acute psychiatric service without delay, to ensure that the units accept*
416 *emergency admissions”*^{21 p.3}

417

418 A further six research studies looked at reasons for admission from within the methods sections of the
419 papers.^{8,21,29,34–36} From across all types of evidence two different ways of understanding the reasons
420 for promoting admission were evident, reasons that are based on diagnosis or presenting behavior.
421 The data available about the clinical presentation of the young person that prompted the referral for
422 admission was collected retrospectively and referred to diagnoses made at point of admission, or
423 diagnosis at point of discharge.

424

425 There was a general consensus across all types of evidence reviewed about the criteria for admission
426 to inpatient mental health care in terms of the presenting difficulties that prompted admission. The
427 need for admission was often categorized as high risk where the young person presented with severe
428 and complex needs^{42,45,49,52} leading to significant functional impairments^{42,49,52} and/or risk that could
429 not be safely managed in the community.^{8,39,49,52,53} The nature of the problems is such that they could
430 not be adequately addressed in a less restrictive environment^{43,44,46,53} or community or home
431 settings^{39,40} or where intensive treatment was required that could not be provided in the community or
432 at home.^{39,40,44,44,45,47,49,51,52} Some noted the requirement of a 24 hour assessment with a multi-
433 disciplinary team^{44,45,51,53}

434

435 Risk was defined as:

- 436 • suicidal thoughts or behaviors^{8,29,34–36,41,42,51}
- 437 • a risk of serious self-harm^{42,43,45,50}
- 438 • a risk to physical self for example through malnutrition that was beyond the family's or
439 community's ability to manage⁴⁵
- 440 • a risk of harm to others^{21,35,41–43,50}

441

442 Other presenting difficulties included

- 443 • family difficulties^{42,51} for example where the caregivers had difficulty coping with the child or
444 young person due to their own distress³⁴ or being less able to cope^{29,45} or needed urgent
445 help²¹
- 446 • where the young person lacked sufficient competence to look after themselves³⁵
- 447 • unresponsive to outpatient care^{45,51,53}
- 448 • difficulties with assessment or diagnosis^{43,51}

- 449 • medically unstable³⁹

450

451 A literature review alongside a consensus forming exercise involving specialist mental health
452 professionals working in both community and inpatient settings identified a number of other
453 appropriate reasons for admission as follows:⁴⁵

- 454 • young person's willingness or desire to engage in treatment package
- 455 • the need to provide a detailed psychiatric assessment in a controlled environment
- 456 • to improve control over the young person's behavior
- 457 • to establish better therapeutic control
- 458 • to facilitate future placements
- 459 • to achieve psychological separation between the parents and the young person
- 460 • to provide therapeutic peer-group experience

461

462 Clinicians from both community and inpatient services were in agreement that the risk of suicide and
463 risk to physical health are amongst the most important factors that influence decisions to admit along
464 with serious harm to self.⁴⁵ Given that there is a degree of shared understanding about what might
465 constitute reasons for admission, there is the potential to develop a set of criteria that could be agreed
466 in advance and form the basis for decision making at these critical points⁴⁵.

467

468 Three textual and opinion publications^{41,46,52} and one research study²¹ presented diagnostic criteria by
469 which admission would be considered:

- 470 • Psychosis^{21,41,52}
- 471 • Anxiety and Emotional Disorders^{41,52}
- 472 • Severe PTSD⁴¹
- 473 • Affective disorders⁵²
- 474 • Obsessive Compulsive Disorders⁵²
- 475 • Self-harm, Attachment and Emotional Regulation Disorders⁵²
- 476 • Primary diagnosis of Mental Illness with co-morbid Learning Difficulties⁵²
- 477 • Serious mental health problems⁴⁶

478 Across the included research studies, there was a difference in how diagnoses were reported
479 (summarized in Appendix III). The majority used diagnosis on admission (n=13),^{8,21-23,25-27,29-31,33,34,37}
480 others on discharge (n=2),^{24,35} on referral (n=1)³⁶ and on initial contact with the service (n=1).³² A
481 further two research studies not report this information.^{28,38} Both the International Classification of
482 Diseases⁵⁴ (ICD-9) (n=1)²⁴ & ICD-10⁵⁵ (n=4)^{21,23,26,30} and the Diagnostic and Statistical Manual of
483 Disorders (DSM IV)⁵⁶ (n=6)^{22,25,27,33,34,36,38} were used. One further study reported that they classified
484 diagnosis using behavioral and emotional symptoms²⁹ and six research studies did not report this kind
485 of information.^{8,28,31,32,35,37}

486

487 Three research studies^{8,35,36} identified reasons for seeking admission as part of the research data, risk
488 to self or others were found to be common reasons,^{8,35,36} with psychosis⁸ and depression³⁶ also cited.
489 Three research studies looked at predictors of, or factors influencing admission.^{23,29,34} Factors
490 influencing admission were the severity of psychotic disorders, affective disorder and violent behavior
491 (but not anxiety), rates of suicidal behavior, levels of parental rejection and inappropriate empathy^{29,34}
492 compared the characteristics of those children referred for outpatient services with those children
493 admitted to inpatient treatment. Those admitted were determined to have greater depressive, anxious,
494 and psychotic symptoms and were judged to be at higher risk of suicide, other physical self-harm, and
495 of harming others.²⁹ Predictors of admission included clinical factors, prior hospitalization, receipt of
496 two or more concurrent psychotropic medications, older age, and urban residence.²³

497
498 Four research studies presented rates of admission for inpatient mental health care.^{24,31,32,37} The
499 study conducted by House et al.³² focused on adolescents who presented with eating disorders in
500 areas with and without specialist eating disorders services. The authors concluded that specialist
501 eating disorders services and specialist CAMHS were comparable in terms of presenting cases and
502 admissions for inpatient treatment³². Sheridan et al.²⁴ found that children with mental health needs
503 presenting to a psychiatric affiliated pediatric emergency department had more than double the rate of
504 admissions than a unit with no psychiatric affiliated pediatric emergency department after controlling
505 for patient characteristics and emergency operational variables.²⁴ One study conducted in Greece,
506 collected admission data over an 8 year period of adolescents (located within two separate rooms)
507 within a general ward, where clinical responsibility of the hospitalized adolescents belonged to the
508 child and adolescent psychiatry team. Over the time period there were 253 admissions of
509 adolescents, 65.61% were first admissions and 34.39% readmissions.³⁷

510

511 **Assessment processes**

512 The majority of research studies (n=16)^{8,21,22,25,25-27,29-31,34-38,42} and seven textual and opinion
513 publications^{11,39,40,42,49,53,57} covered some aspect of the assessment process. A variety of assessment
514 processes were explored throughout the included research studies, which included pre admission
515 assessments (n=6,)^{8,22,25,30,36,37} assessments on admission in the ED (n=3),^{26,27,29} assessment on
516 admission to inpatient units (n=8),^{8,21,25,30,31,34,35,38} These tended to detail who had conducted the
517 assessments and what tools were used to aid the assessment process.

518

519 Pre-admission assessments were carried out in order to determine priority with limited bed
520 availability,^{29,36} suitability for treatment when distance from home was an issue,³⁶ engagement of the
521 young person^{22,36} or to determine the referrers concerns.³⁷ Duddu et al.³⁰ found that pre-admission
522 assessments in their unit which accepts referrals 24 hours a day, seven days a week were conducted
523 by a range of mental health workers including nurses, social workers, adult crisis recovery and home
524 treatment teams, accident and emergency liaison teams, custody nurses.³⁰ One study reported that
525 decisions to admit were made by the nursing office for male adolescents admitted to the treatment
526 unit.²⁵ Adolescents with eating disorders in the study by Fennig et al.²² underwent pre-admission

527 assessment using motivational interviewing techniques. A small number (less than 5%) who after this
528 process did not consent to hospitalization in the unit (less than 5%) were referred to other psychiatric
529 facilities with more restrictive treatment plans.²² Use of the Structured Clinical Interview for DSM-IV or
530 other standardized diagnostic assessment tools was reported as being preferred but not mandatory in
531 another unit.³⁶ In New Zealand, admission to inpatient CAMHS follows a community assessment and
532 discussion with senior clinician from the inpatient service and out of hours, admission is via
533 community crisis teams and on-call psychiatrist.⁸

534

535 Initial assessments on admission to inpatient mental health care are undertaken in order to evaluate
536 the mental state of the adolescents as well as to determine the risk for the patient for self and
537 others^{38,49} and to establish if an admission is desirable and explore alternatives⁵³ which is usually
538 completed with 24 hours⁴⁹ Publications reported that assessments were usually carried out by either
539 specialist staff⁵³ or the nursing and medical team³⁰ and if the admission occurred out of hours a multi-
540 agency review should be carried out as soon as possible.⁵³ Decisions about the seriousness of a
541 young persons' mental health and whether admission is required is made by the consultant
542 psychiatrist.^{39,57} Thompson and Clark¹¹ reported that young people have a comprehensive multi-
543 disciplinary assessment completed within four weeks of admission including mental health and
544 medication, psychosocial needs, strengths and weaknesses and own views of admission.

545

546 A number of standardized measures were used to contribute to the assessment process:

- 547 • Assessment of Severity of Psychopathology (TSP) instrument was used to determine
548 seriousness of mental state³⁸
- 549 • Children's Global Assessment Scale (CGAS) is a clinician rated measure 0-100, higher
550 number reflecting better functioning that can be repeated at 30 day intervals^{25,35,38,42}
- 551 • Child Behavior Checklist which asks parents to rate problem behavior over the past six
552 months³⁵
- 553 • Suicide Risk Self-Report³⁵
- 554 • Clinical Global Impression (CGI) Severity ratings 1-7, with 1 indicating not present and 7
555 indicating extremely which can be administered daily^{30,34}
- 556 • Health of the Nation Outcome Scale for Children and Adolescent²¹
- 557 • Child and Adolescent Level of Care Utilization System/Child and Adolescent Service Intensity
558 Instrument⁴²
- 559 • Goal based outcome measure⁵³

560

561 Also used were a number of diagnosis specific scales such as:

- 562 • Hamilton Depression Rating Scale (HD)³⁸
- 563 • Young Mania Rating Scale (YM)³⁸
- 564 • Yale Brown Obsession and Compulsive Rating Scale (YBOC)³⁸
- 565 • Child Depression Inventory (CDI)³⁸

567 Hansen et al.²¹ found that the proportion of units using standardized diagnostic interviews to aid the
568 admission processes into inpatient mental health care varied significantly from 11% to 38%. The
569 authors suggested that the differences could be due to the differences in diagnostic competence or in
570 the implementation of systematic assessments at the acute units.²¹ A single center study reported that
571 94% of adolescents had “comprehensive” assessment entries.³¹

572

573 A number of different tools were detailed as being used as part of the assessment processes
574 undertaken on admission to the ED., the Crisis Assessment Tool,²⁹ and the psychiatric
575 assessment.^{26,27} Wharf et al.²⁷ reported that initial assessment in the emergency department were
576 undertaken by a hospital social worker before being seen by a trained mental health worker.²⁷
577 Admission was then based on the information obtained from these assessments which was either
578 inpatient hospitalization or referred for outpatient services.²⁹

579

580 **Criteria for discharge**

581 Only two research studies^{8,30} and three textual and opinion publications^{40,49,53} discussed their
582 discharge processes. They report that discharge should take place when the child/young person’s
583 mental state is such that they can be managed by the community mental health team and/or day
584 hospital services⁴⁰ and be based on a significant reduction in risk^{8,49} and when and follow up care can
585 be provided by community mental health teams, step-down team and tier 4 (high intensity) outreach
586 team.^{30,49} This should also be a collaborative process (after having taken risk into consideration)
587 involving the child/young person and their parents/carer’s and include the referrers and other
588 agencies as appropriate.⁵³ This should happen as soon as the community based alternatives are
589 able to meet the child/young person’s mental health needs.⁴⁰ Discharge preparation included
590 creating early warning signs monitoring and strategies for the young person to cope.⁸

591

592 As with admission assessment a number of standardized measures were used to contribute to the
593 discharge process: TSP instrument;³⁸ CGAS;^{25,38} CGI Severity and improvement ratings;³⁰
594 Assessment of General Rehabilitative Achievement;³⁸ and diagnosis specific rating scales (HD, YM
595 and YBO rating scales³⁸ and the CDI.³⁸

596

597 **Reasons for not admitting**

598 Six research studies^{21,22,29,30,36,37} and nine textual and opinion publications^{11,40,41,45,47,49,50,52,53} made
599 reference to reasons for not admitting a person to an inpatient unit. Exclusion criteria for admission to
600 inpatient mental health care were eating disorders in some cases where separate commissioning
601 arrangements were in place;³⁰ delirium;²¹ forensic risk;³⁶ living outside the catchment area;³⁶ unwilling
602 to co-operate;³⁶ or not consenting to admission;²² psychiatric diagnosis unlikely;³⁶ and when
603 outpatient care was sufficient.^{29,37}

604

605 There seems to be a difference of opinion about whether children and young people with a primary
606 diagnosis of autistic spectrum disorder should be admitted to inpatient mental health care,⁴⁵ as it is

607 both cited as an indicator^{49,53} and an exclusion.⁴⁰ When considering diagnostic indicators for
608 admission clinicians tend to agree on the inappropriateness of admitting young people whose primary
609 problem is conduct disorder alone.^{40,41,45,47,52} A number of units also exclude patients where
610 intellectual/learning disability.^{30,40,41,47,52} recommending that such children and young people be
611 treated in specialist services for those with those primary diagnosis of mental illness with co-morbid
612 learning difficulties⁵² whereas other will admit those with mild learning disability.⁴⁹ Such units were
613 found to exclude patients with eating disorders⁴¹ alcohol problems⁴⁷ or substance abuse^{41,47,49,50,52} but
614 this was not always the case.^{49,52,53}

615

616 A large number of contextual factors have been cited as reasons for not admitting children and young
617 people to inpatient mental health care, these included

- 618 • medical issues requiring admission to pediatric wards^{45,53}
- 619 • history of arson⁵⁰
- 620 • incidents of violence⁵⁰
- 621 • the need for forensic care^{47,49,52}
- 622 • where admitting a child/young person may compound their difficulties^{40,53}
- 623 • the young person or parent refused an offer of a place⁴⁵
- 624 • staff considered that inpatient was not considered appropriate⁴⁵
- 625 • the condition of the young person improved after an assessment or while they were waiting
626 for an assessment or admission⁴⁵
- 627 • young people whose primary need is for accommodation due the breakdown of family or
628 other placement⁴⁹
- 629 • extreme behavior disturbance⁵²
- 630 • young people who are deaf where care may be more appropriately be accommodated
631 provided by the National Deaf Child and Adolescent Mental Health Service⁴⁹
- 632 • If there are concerns about separating the child/young person from their home environment⁵³

633

634 A gate keeping assessment prior to admission to inpatient mental health care considers
635 treatment/care needs, the best environment/ level of service in which the care should be provided,
636 risks, the ability of the holding/referring organization to safely care for the patient until admission can
637 be arranged and considers the wishes of the child or young person and the family^{45,57} and whether
638 admission is likely to do more good than harm.⁵³ Senior clinical staff members including the ward
639 manager make decisions about young person being admitted and can refuse to accept young people
640 if they fear that the mix will compromise safety and/or therapeutic activity.^{11,53}

641

642 **Discussion**

643 This scoping review included 35 publications including research studies and textual and opinion
644 papers published over a 9-year period that investigated or described issues related to admission and

645 discharge criteria for adolescents to mental health in-patient care. The vast majority of research
646 studies used a retrospective cohort design using case note review related to admission processes, as
647 opposed to discharge criteria. Using this kind of methodology allows for the examination of data that
648 has been recorded in the case notes but the quality of such data is likely to be variable. The nuanced
649 information that illuminates the threshold behavioral signs presenting by the adolescent that informed
650 why they were admitted may not have been captured. It nevertheless offers some insights as to how
651 such decisions are made and how the combination of risk and diagnosis are important.

652

653 There was only one qualitative study included Stanton et al.⁸ and this considered the perceptions of
654 practitioners. It is of note that there were no studies that investigated the perceptions of families or
655 young people of the admission or discharge criteria for inpatient mental health care, despite the
656 recommendation for research in this area.¹⁶

657

658 The key findings of this review addressed type of admission process, referral or point of access,
659 reasons for admission to inpatient mental health care, assessment processes, criteria for discharge
660 and reasons for non-admission. The main two sources of referrals for inpatient mental health care
661 originated from community mental health services for young people, including crisis teams and
662 emergency department liaison services. Apart from inpatient mental health care, young people were
663 admitted to general medical wards, pediatric services and adult mental health wards. The Royal
664 College of Psychiatrists have reported that admission to non-specialist services has resulted in
665 untoward incidents and 'near misses' with adolescents being exposed to higher risks, and
666 experiencing degrading treatment.^{58 p.10}

667

668 Compulsory admission through either mental health legislation or law pertaining to children was
669 discussed in six studies and four textual and opinion publications but where voluntary admission
670 occurred, the value of negotiating this with the young people was noted. In the evidence the reasons
671 for admission covered both routine and emergency admissions. Diagnostic criteria were mainly
672 determined either on admission or discharge and a range of diagnoses using both DSM and ICD
673 classifications were identified, these did not elucidate the differential characteristics between young
674 people with the same diagnosis not requiring admission. There was however consensus about what
675 constituted a high-risk presentation in a young person; a young person with severe and complex
676 needs who was unable to be safely managed in the community or family within the existing resources.

677

678 Whilst adolescent inpatient mental health care deals with both planned and unplanned admissions the
679 main focus of the included literature was on emergency admissions. Four research studies found pre-
680 admission assessments to be useful for planned admissions.^{22,30,36,37} The literature suggests that
681 admission and discharge decisions reflect a tension sometimes related to bed capacity or
682 appropriateness of the facility, for example admission to a pediatric medical unit²⁸ rather than a
683 mental health, or an adult mental health unit.^{23,33} When evidence for pre-admission assessments were
684 available what was evident was that these were not uniform approaches and a number of different

685 models were used. Decisions to admit were made by different professionals, typically involving the
686 consultant psychiatrist, nursing and social work. Standardized measures were used in some cases to
687 assist decision making and the most frequently reported use was of the CGAS. Such measures could
688 be repeated to inform discharge decision making alongside evidence of reduction in risk, and a
689 consideration that the young person could be managed safely in the community. The most clarity in
690 the evidence was informing decisions not to admit based on either the young person's functioning or
691 diagnosis. Decisions not to admit occurred where the young person did not agree, where they had a
692 risk of offending, lived outside the catchment area and where they were safely supported in the
693 community or still had on-going medical issues that needed addressing. The diagnostic issues noted
694 in the evidence were around eating disorders; admission not supported where specialist eating
695 disorder services were available. There was a lack of agreement about whether young people with
696 autistic spectrum diagnoses should be admitted.

697

698 Internationally, different models of care exist to meet the needs of adolescents with severe and
699 complex mental health needs and so direct comparisons are not always possible. Psychiatric
700 boarding for example has been reported in the USA²⁶⁻²⁸ but not in the UK. However, the need to a
701 consensus regarding criteria for admission is nevertheless a global issue.

702

703 **Limitations of the Review**

704 The objectives of this review were to identify the criteria for admission to and discharge from mental
705 health inpatient care for adolescents and to identify the criteria for not admitting. A date limit was set
706 on this review of 2009-2018. It was assumed that the review published by Kurtz¹⁶ in 2009 had drawn
707 on all the available evidence to date, but there is the possibility that there is some research evidence
708 prior that could have informed this scoping review. Of the nineteen studies retrieved, only one
709 qualitative study was located and the others were of a retrospective cohort design resulting in there
710 being little specific evidence articulating the threshold for admission an adolescent based on their
711 presenting behavior, clinical symptoms or risk. This review has been influenced by a significant
712 number of non-research papers (sixteen), most of these UK based (twelve). This may bias this
713 scoping review towards operational processes in the UK.

714

715 The review was drawn from international evidence, represented by Europe, North America and
716 Australasia, but no evidence was retrieved from South America, Asia or Africa. Such evidence may
717 have been excluded by language limits (English) or because of the different approach to mental
718 health care for young people in these different contexts with care often being delivered in children's
719 services or by family and community carer's.^{59,60}

720

721 **Conclusions**

722 This scoping review highlighted that there are a number of different criteria upon which decisions are
723 made for adolescents to be admitted to inpatient mental health care. Consensus exists about when
724 admission is not required apart from adolescents with autistic spectrum disorders, and on what

725 constitutes risk in terms of admission threshold. There is little evidence of what behavioral or
726 symptomatic indicators suggest admission is required beyond a retrospective identification of what
727 diagnoses were attributed to adolescents who became inpatients. It is the threshold of severity of risk
728 or need that is not currently articulated in the literature. It is difficult therefore to predict which
729 diagnoses predict admission because it is the impairment of functioning alongside a consideration of
730 risk in the context off the availability of family and community resources that appear to determine
731 whether an adolescent needs admission.

732

733 Inpatient mental health care for adolescents is available for both routine or planned and emergency
734 admission and the evidence suggests these two different pathways require different admission
735 criteria. For routine admission pre-admission assessments with a range of disciplines is an option. In
736 some cases, standardized measures were used to aid assessments and guide discharge.

737

738 **Recommendations for research**

739 Any further research in this area might usefully adopt methodologies that allow an illumination of the
740 decision-making processes that inform admission. There were no studies identified in this scoping
741 review that drew on the perspectives of adolescents and their families or carer's about what
742 constituted criteria warranting admission to inpatient mental health care indicating an important area
743 for future investigation.

744

745 **Conflicts of interest**

746 None to declare

747

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913 **Appendix I: Search strategies**

914 **ASSIA, BNI and ProQuest Dissertations & Thesis (On the ProQuest Platform):**

915 Searched: 5th Feb 2018

916 (ti(adolescen*) OR ab(adolescen*) OR ti(teen*) OR ab(teen*) OR ti(youth*) OR ab(youth*))

917 AND

918 (ti(mental NEAR/1 health) OR ab(mental NEAR/1 health) OR ti(mental NEAR/1 illness) OR ab(mental
919 NEAR/1 illness) OR ti(psychiatr*) OR ab(psychiatr*))

920 AND

921 (ti(admit*) OR ab(admit*) OR ti(admission) OR ab(admission) OR ti(discharge*) OR ab(discharge))

922

923 **Open Grey and Ethos:**

924 Searched 5th Feb 2018

925 Admission and youth or adolescent or teen

926 Admit and youth or adolescent or teen

927 Discharge and youth or adolescent or teen

928 Child and adolescent mental health

929

930 **ERIC (on the EBSCO platform)**
931 Searched 22nd Feb 2018
932 S1 TI adolesc* OR AB adolesc*
933 S2 TI teen* OR AB Teen*
934 S3 TI youth* OR AB youth*
935 S4 S1 OR S2 OR S3
936 S5 TI (mental N1 health) OR AB (mental N1 health)
937 S6 TI (mental N1 illness) OR AB (mental N1 illness)
938 S7 TI psychiatr* OR AB psychiatr*
939 S8 S5 OR S6 OR S7
940 S9 S4 AND S8
941 S10 TI admit* OR AB admit*
942 S11 TI admission* OR AB admission*
943 S12 TI discharge OR AB discharge
944 S13 S10 OR S11 or S12
945 S14 TI inpatient OR AB inpatient
946 S15 TI in-patient OR AB in-patient
947 S16 TI residen* OR AB residen*
948 S17 hospitalization
949 S18 S14 OR S15 OR S16 OR S17
950 S19 S9 AND S13 AND S18 (limit from 2009)
951 S20 S9 AND S13 AND S18 (limit to English language)
952
953

954 **(on the EBSCO platform)**

- 955 S1 TI adolesc* OR AB adolesc*
- 956 S2 TI teen* OR AB Teen*
- 957 S3 TI youth* OR AB youth*
- 958 S4 (MM "Adolescence+")
- 959 S5 S1 or S2 or S3 or S4
- 960 S6 TI (mental N1 health) OR AB (mental N1 health)
- 961 S7 TI (mental N1 illness) OR AB (mental N1 illness)
- 962 S8 TI psychiatr* OR AB psychiatr*
- 963 S9 S6 OR S7 OR S8
- 964 S10 S5 AND S9
- 965 S11 TI admit* OR AB admit*
- 966 S12 TI admission* OR AB admission*
- 967 S13 TI discharge OR AB discharge
- 968 S14 S11 OR S12 OR S13
- 969 S15 TI inpatient OR AB inpatient
- 970 S16 TI in-patient OR AB in-patient
- 971 S17 TI residen* OR AB residen*
- 972 S18 (MM "Adolescent, Hospitalized") OR (MM "Adolescent Health Services")
- 973 S19 (MM "Hospitalization") OR (MM "Hospitals, Psychiatric") OR (MM "Inpatients")
- 974 S20 (MM "Community Mental Health Services+") OR (MM "Mental Health Services+")
- 975 S21 (MM "Residential Facilities+")
- 976 S22 S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21
- 977 S23 S10 AND S14 AND S22 (limit from 2009)
- 978 S24 S10 AND S14 AND S22 (limit to English)

- 979

980 **Ovid MEDLINE(R) (on the OVID platform)**

981 Searched 2nd Feb 2018

982 1. adolesc\$.ti,ab.

983 2. teen\$.ti,ab.

984 3. youth\$.ti,ab. 23

985 4. exp ADOLESCENT/

986 5. 1 or 2 or 3 or 4

987 6. (mental adj1 health).ti,ab.

988 7. (mental adj1 illness).ti,ab.

989 8. psychiatr\$.ti,ab.

990 9. exp *Mental Disorders/

991 10. exp Mental Health/

992 11. exp Adolescent Psychiatry/

993 12. exp *Child Psychiatry/

994 13. 6 or 7 or 8 or 9 or 10 or 11 or 12

995 14. 5 and 13

996 15. admit*.ti,ab.

997 16. admission.ti,ab.

998 17. discharge\$.ti,ab.

999 18. exp *FACILITY DISCHARGE/ or exp *DISCHARGE PLANNING/ or exp *PSYCHIATRIC

1000 HOSPITAL DISCHARGE/ or exp *HOSPITAL DISCHARGE/

1001 19. 15 or 16 or 17 or 18

1002 20. inpatient.ti,ab.

1003 21. in-patient.ti,ab.

1004 22. residen\$.ti,ab.

1005 23. exp Mental Health Services/

1006 24. exp Psychiatric Hospitals/

1007 25. exp Community Mental Health Services/

1008 26. exp HOSPITALIZATION/

1009 27. exp Residential Facilities/

1010 28. exp ADOLESCENT, HOSPITALIZED/ or exp ADOLESCENT HEALTH SERVICES/ or exp

1011 ADOLESCENT, INSTITUTIONALIZED/

1012 29. 20 or 21 or 22 or 24 or 25 or 26 or 27 or 28

1013 30. 14 or 19 or 29

1014 31. limit 30 to (english language and yr="2009 - 2018")

1015

1016 **Embase (on the OVID platform)**

1017 Searched 2nd Feb 2018

1018 1. adolesc\$.ti,ab.

1019 2. teen\$.ti,ab.

1020 3. youth\$.ti,ab.

1021 4. exp ADOLESCENT/

1022 5. 1 or 2 or 3 or 4

1023 6. (mental adj1 health).ti,ab.

1024 7. (mental adj1 illness).ti,ab.

1025 8. psychiatr\$.ti,ab.

1026 9. exp *Mental Disorders/

1027 10. exp Mental Health/

1028 11. exp Adolescent Psychiatry/

1029 12. exp *Child Psychiatry/

1030 13. 6 or 7 or 8 or 9 or 10 or 11 or 12

1031 14. 5 and 13

1032 15. admit*.ti,ab.

1033 16. admission.ti,ab.

1034 17. discharge\$.ti,ab.

1035 18. exp *FACILITY DISCHARGE/ or exp *DISCHARGE PLANNING/ or exp *PSYCHIATRIC

1036 HOSPITAL DISCHARGE/ or exp *HOSPITAL DISCHARGE/

1037 19. 15 or 16 or 17 or 18

1038 20. inpatient.ti,ab.

1039 21. in-patient.ti,ab.

1040 22. residen\$.ti,ab.

1041 23. exp Mental Health Services/

1042 24. exp Community Mental Health Services/

1043 25. exp HOSPITALIZATION/

1044 26. exp Residential Facilities/

1045 27. exp ADOLESCENT, HOSPITALIZED/ or exp ADOLESCENT HEALTH SERVICES/ or exp

1046 ADOLESCENT, INSTITUTIONALIZED/

1047 28. 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27

1048 29. 14 and 19 and 28

1049 30. limit 29 to (english language and yr="2009 -Current")

1050

1051 **PsycINFO (on the OVID platform)**

1052 Searched 2nd Feb 2018

1053 1. adolesc\$.ti,ab.

1054 2. teen\$.ti,ab.

1055 3. youth\$.ti,ab.

1056 4. 1 or 2 or 3

1057 5. (mental adj1 health).ti,ab.

1058 6. (mental adj1 illness).ti,ab.

1059 7. psychiatr\$.ti,ab.

1060 8. exp Mental Disorders/

1061 9. Mental Health/

1062 10. exp Adolescent Psychiatry/

1063 11. exp Child Psychiatry/

1064 12. 5 or 6 or 7 or 8 or 9 or 10 or 11

1065 13. 4 and 12

1066 14. admit*.ti,ab.

1067 15. admission.ti,ab.

1068 16. discharge\$.ti,ab.

1069 17. exp HOSPITAL ADMISSION/ or exp FACILITY ADMISSION/ or exp PSYCHIATRIC HOSPITAL

1070 ADMISSION/

1071 18. exp FACILITY DISCHARGE/ or exp DISCHARGE PLANNING/ or exp PSYCHIATRIC HOSPITAL

1072 DISCHARGE/ or exp HOSPITAL DISCHARGE/

1073 19. 14 or 15 or 16 or 17 or 18

1074 20. inpatient.ti,ab.

1075 21. in-patient.ti,ab.

1076 22. residen\$.ti,ab.

1077 23. exp Psychiatric Hospitalization/

1078 24. exp Mental Health Services/

1079 25. exp Residential Care Institutions/

1080 26. exp Psychiatric Hospitals/

1081 27. exp Community Mental Health Services/

1082 28. exp Treatment Facilities/

1083 29. exp Hospitalized Patients/

1084 30. 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29

1085 31. 13 and 29 and 30

1086 32. limit 31 to (english language and yr="2009 -Current")

1087

1088

1089 **Appendix II: Studies excluded on screening**

1090 Ahmed et al 2015.¹ Discharges from an early intervention in psychosis service: Where do patients
1091 stand after 3 years.

1092 Reason for exclusion: Wrong patient population

1093

1094 Allison et al 2012.² Toward brief "red flags" for autism screening: The short Autism Spectrum Quotient
1095 and the short Quantitative Checklist in 1,000 cases and 3,000 controls

1096 Reason for exclusion: Wrong patient population

1097

1098 Aupont et al 2013.³ A collaborative care model to improve access to pediatric mental health services

1099 Reason for exclusion: Not about referral, admission or discharge

1100

1101 Beecham et al 2009.⁴ Cost variation in child and adolescent psychiatric inpatient treatment

1102 Reason for exclusion: Not about referral, admission or discharge

1103

1104 Benneyworth et al 2015.⁵ Cross-sectional comparison of critically ill pediatric patients across hospitals
1105 with various levels of pediatric care

1106 Reason for exclusion Wrong patient population

1107

1108 Biancosino et al 2009.⁶ Factors related to admission of psychiatric patients to medical wards from the
1109 general hospital emergency department: a 3-year study of urgent psychiatric consultations

1110 Reason for exclusion Wrong patient population

1111

1112 Bromley et al 2015⁷: "You might lose him through the cracks": clinicians' views on discharge from
1113 assertive community treatment

1114 Reason for exclusion: Wrong patient population

1115

1116 Curtis et al 2009.⁸ County variation in use of inpatient and ambulatory psychiatric care in New York
1117 State 1999-2001: need and supply influences in a structural model

1118 Reason for exclusion: Wrong patient population

1119

1120 Dazzi et al 2015.⁹ Predictors of inpatient psychiatric admission in patients presenting to the
1121 emergency department: the role of dimensional assessment

1122 Reason for exclusion: Wrong patient population

1123

1124 Freestone et al 2012.¹⁰ Assessments and admissions during the first 6 years of a UK medium secure
1125 DSPD service

1126 Reason for exclusion: Wrong setting: forensic

1127

1128 Fuchs et al 2016.¹¹ Child and adolescent psychiatry patients coming of age: a retrospective
1129 longitudinal study of inpatient treatment in Tyrol
1130 Reason for exclusion: Not about referral, admission or discharge
1131

1132 Haheim and Helgeland 2014.¹² Agreement between referral information and discharge diagnoses
1133 according to Norwegian elective treatment guidelines - a cross-sectional study
1134 Reason for exclusion: Wrong patient population
1135

1136 Hepworth 2015.¹³ Understanding the management of people seeking voluntary psychiatric
1137 hospitalization who do not meet the criteria for inpatient admission: a qualitative study of mental
1138 health liaison nurses working in accident and emergency departments in the north of England
1139 Reason for exclusion: Wrong patient population
1140

1141 Hill et al 2016.¹⁴ Characteristics of male patients admitted to an adolescent secure forensic psychiatric
1142 hospital
1143 Reason for exclusion: Wrong setting: forensic
1144

1145 Hill et al 2016.¹⁵ Characteristics of female patients admitted to an adolescent secure forensic
1146 psychiatric hospital
1147 Reason for exclusion: Wrong setting: forensic
1148

1149 Jacob et al 2013.¹⁶ Clinical characteristics of aggression in children and adolescents admitted to a
1150 tertiary care centre
1151 Reason for exclusion: Not about referral, admission or discharge
1152

1153 Jefferies-Sewell et al 2015.¹⁷ To admit or not to admit? The effect of framing on risk assessment
1154 decision making in psychiatrists
1155 Reason for exclusion: Wrong patient population
1156

1157 Lamb and Lamb 2009.¹⁸ Alternatives to admission for children and adolescents: providing intensive
1158 mental healthcare services at home and in communities: what works?
1159 Reason for exclusion: Not about referral, admission or discharge
1160

1161 Lambe 2012.¹⁹ Admission of adolescents to psychiatric units
1162 Reason for exclusion: Comment on an article
1163

1164 Madan et al 2016.²⁰ Adolescents are less satisfied with inpatient psychiatric care than their parents:
1165 does it matter?
1166 Reason for exclusion: Not about referral, admission or discharge
1167

1168 Manuel et al 2015.²¹ Trends in hospital discharges and dispositions for episodes of co-occurring
1169 severe mental illness and substance use disorders
1170 Reason for exclusion: Wrong patient population
1171

1172 McLeod and Simpson 2017.²² Exploring the value of mental health nurses working in primary care in
1173 England: A qualitative study
1174 Reason for exclusion: Wrong patient population
1175

1176 Mushtaq and Nabeel 2012.²³ A comprehensive and specialist CAMHS service model
1177 Reason for exclusion: Comment on an article
1178

1179 Patterson et al 2016.²⁴ Situation awareness: when nurses decide to admit or not admit a person with
1180 mental illness as an involuntary patient
1181 Reason for exclusion: Wrong patient population
1182

1183 Phillips et al 2012.²⁵ Risk assessment of self- and other-directed aggression in adolescent psychiatric
1184 inpatient units
1185 Reason for exclusion: Not about referral, admission or discharge
1186

1187 Rippon 2010.²⁶ Inpatient services for children and young people with an intellectual disability
1188 Reason for exclusion: Wrong patient population
1189

1190 Shepperd et al 2009.²⁷ Alternatives to inpatient mental health care for children and young people
1191 Reason for exclusion: Not about referral, admission or discharge
1192

1193 Stewart et al 2012.²⁸ Care coordinators: A controlled evaluation of an inpatient mental health service
1194 innovation
1195 Reason for exclusion: Wrong patient population
1196

1197 Ward and Gwinner 2014.²⁹ "It broke our hearts": understanding parents' lived experiences of their
1198 child's admission to an acute mental health care facility
1199 Reason for exclusion: Not about reason for referral, admission or discharge
1200

1201 Zanus et al 2017.³⁰ Adolescent admissions to emergency departments for self-injurious thoughts and
1202 behaviors
1203 Reason for exclusion: Wrong setting: admission to emergency departments
1204

1205 Tabone et al 2016.³¹ Transitions of youth in mental health residential care to less restrictive settings:
1206 The role of strengths and gender

1207 Reason for exclusion: Discharge was from mental health residential care to less restrictive settings
1208 such as foster care, specialised foster care, group homes and transitional living and independent
1209 living.

1210

1211 Remberk et al 2018.³² Inpatient psychiatric treatment is not always effective in adolescent sample
1212 Reason for exclusion: No data about reason for referral, admission or discharge

1213

1214 Van Kessel et al 2012.³³ Trends in child and adolescent discharges at a New Zealand psychiatric
1215 inpatient unit between 1998 and 2007

1216 Reason for exclusion: No data about reason for referral, admission or discharge

1217

1218 Royal College of Psychiatrists 2015.³⁴ Survey of in-patient admissions for children and young people
1219 with mental health problems, Young people stuck in the gap between community and in-patient care.

1220 Reason for exclusion: No data about reason for referral, admission or discharge

1221

1222 Firth 2017.³⁵ Inpatient provision for children and young people with mental health problems.

1223 Reason for exclusion: No data about reason for referral, admission or discharge

1224

1225 Scottish Executive 2017.³⁶ Child and adolescent mental health services: inpatient report.

1226 Reason for exclusion: No data about reason for referral, admission or discharge

1227

1228 North of Scotland Public Health Network 2010.³⁷ Tier 4 Adolescent mental health needs assessment
1229 for the North of Scotland.

1230 Reason for exclusion: No data about reason for referral, admission or discharge

1231

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Appendix III: Characteristics of included research studies

Bryson and Akin 2015.²³ USA: Retrospective cohort using case note reviews
 To examine acute inpatient psychiatric admissions among child Medicaid recipients with a mental health diagnosis in one Midwestern state

<p><u>Setting</u> Acute inpatient psychiatric care within one Midwestern state during 2009</p> <p><u>Participants</u> 178,558 child Medicaid recipients (3-17 years) 51,233 had a paid mental health claim within the study period. 1,293 were admitted one or more times</p>	<p><u>Gender</u> Females: 40.8%</p> <p><u>Age (years)</u> 3-5: (3.0%) 6-8: (13.7%) 9-1: (17.1%) 12-14: (29.4%) 15-17: (36.8%)</p> <p><u>Length of stay</u> Typical <30 days</p>	<p><u>Clinical / diagnostic categories</u> Recorded on admission from inpatient and outpatient claims using ICD-10</p> <p>Mood disorder (n=1,140) Disruptive disorder (n=918) Anxiety disorder (n=779) PPD/ASD (n=116) Psychotic disorder (n=160) Other mental health disorder (n=1,024)</p>
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Duddu et al. 2016.³⁰ UK: Retrospective cohort using case note reviews
 To describe the approach used in one country to address the mental health needs of 16 to 17 year olds and a descriptive evaluation of its early experiences

<p><u>Setting</u> All admissions to a 6 bed acute inpatient psychiatric unit (16-17 years) over a 2 year period from April 2010 to March 2012 This is a 24-hour service, with patients being assessed in various emergency situations including hospital A&Es, custody suites and patients' homes</p> <p><u>Participants</u> n=97</p>	<p><u>Gender</u> Females: 54.6%</p> <p><u>Age (years)</u> 17: 59.8%</p> <p><u>Length of stay</u> Average in first year 30 days (excluding one patient who had a 364-day admission, and 23.1 days in the second year)</p>	<p><u>Clinical / diagnostic categories</u> Recorded on admission using ICD-10</p> <p>Adjustment disorder, anxiety disorders, PTSD, social phobia (32.6%) Emerging personality traits or disorders (15.8%) Schizophrenia, unspecified psychosis, delusional disorder, acute psychotic episode (14.7%) Dysthymia, depressive episodes and manic episodes (14.7%) Harmful use/dependence on alcohol or illicit substances, secondary psychiatric symptoms (14.7%) Impulsive self -harm (2.1%) Incomplete assessments (4.2%)</p>
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		<u>Outcome measures used on admission</u> Severity of psychiatric disorders: CGI-S scale <u>Outcome measures used on discharge</u> Severity and improvement of psychiatric disorders: CGI-S scale
Golubchik et al. 2013. ³⁴ Israel: Retrospective cohort case using note review To investigate the major clinical criteria affecting child psychiatrists' decision to recommend hospitalization		
<u>Setting</u> Psychiatric outpatient clinic for children and adolescents (7-13 years) treated between 2006–2008 <u>Participants</u> n=80 The patients were divided into three groups: Group A: (n=20 who were hospitalized) Group B: (n= 20 who were candidates for psychiatric hospitalization, but ultimately, were not hospitalized) Group C: (n=40 who were admitted to the outpatient clinic and were never considered for hospitalization)	<u>Gender</u> Not specified <u>Age (Mean±SD) years</u> Group A: 11.1±1.1 Group B: 10.1±1.7 Group C: 10±1.4 <u>Length of stay</u> Not reported	<u>Clinical / diagnostic categories</u> Recorded on admission using DSM IV Psychotic disorders Affective disorders Anxiety disorders Violent behaviours <u>Outcome measures used on admission</u> Severity of psychiatric disorders: CGI-S scale
Hanssen-Bauer et al. 2011 ²¹ Norway: Prospective cohort (Pre-post design) To investigate the patients at four acute in-patient psychiatric units for adolescents in terms of: 1) the characteristics of the patients at admission, 2) their outcomes at discharge and 3) the predictors of outcome		
<u>Setting</u> Four acute inpatient psychiatric services for adolescents (13-17 to years) with a total of 31 beds	<u>Gender</u> Females: 70% <u>Age (Mean±SD) years</u>	<u>Clinical / diagnostic categories</u> Recorded on admission using ICD-10 and DSM-IV Axis one diagnosis

<p>Pre-post data from the first episode of care, which started in 2005 for all patients</p> <p><u>Participants</u> n=192</p>	<p>15.7±1.4, range 10-18 years)</p> <p><u>Length of stay</u> Median 8.5 days (range 1-351 days), Psychosis had highest median 37 days No diagnosis had the lowest median 3 days</p>	<p>No axis one disorder (16%) Affective disorder (28%) Externalizing disorder (26%) Neurotic disorder (18%) Psychotic disorder (11%) Eating disorder (2%)</p> <p><u>Outcome measures used on admission</u> Mental health problems and their severity: HoNOSCA</p>
<p>House et al. 2012.³² UK: Retrospective cohort using case note reviews To explore the role of specialist outpatient eating disorders services and investigate how direct access to these affects rates of referral, admissions for inpatient treatment, and continuity of care</p>		
<p><u>Setting</u> Services (n=37/42) that provided treatment for adolescents with eating disorders in London (13-17 years) which included outpatient services specialising in eating disorders (n=12), specialist CAMHs (n=5) and non-specialist CAMHS (n=10), those seen between Dec 2006 and Nov 2008</p> <p><u>Participants</u> n=98</p>	<p><u>Gender</u> Females: 96.8%</p> <p><u>Age (Mean) years</u> 15.1</p> <p><u>Length of stay</u> Not reported</p>	<p><u>Clinical / diagnostic categories</u> At initial contact or re-contact</p> <p>Anorexia Nervosa/EDNOS-AN (100%)</p>
<p>Sheridan et al. 2017.²⁴ USA: Retrospective cohort using case note reviews To compare PED mental health care between a pediatric tertiary care center with PAPED and NOPED with the hypothesis that children have longer LOS at the PED without an inpatient unit</p>		
<p><u>Setting</u> Two pediatric emergency departments. One is a psychiatric affiliated pediatric emergency department and the other has no psychiatric affiliated pediatric emergency department.</p>	<p><u>Gender</u> NOPED: Female: 48% PAPED: Females: 51%</p> <p><u>Age (Mean) years</u></p>	<p><u>Clinical / diagnostic categories</u> From discharge summary using ICD-9</p> <p>NOPED Mood disorders (30%)</p>

<p>Admissions between March 2012 and June 2013 patients <19 years</p> <p><u>Participants</u> NOPED: n=271 PAPED: n=1138</p>	<p>NOPED 14 PAPED: 14</p> <p><u>Length of stay</u> NOPED: 5.6 hours PAPED: 6.3 hours</p>	<p>Substance-related disorders (18%) Anxiety disorders (15%)</p> <p>PAPED Mood disorders (40%) Personality disorders (20%) Anxiety disorders (9%)</p>
<p>Zilakis et al. 2011.³⁷ Greece: Retrospective cohort using case note review A report of an experience from Northern Greece of 253 admissions in a general psychiatric ward at a university general hospital gives</p>		
<p><u>Setting</u> Psychiatric Department of the Medical Faculty of the Aristotle University of Thessaloniki Of the total 25 beds, 5 (in two rooms, for boys and girls) were reserved to adolescent patients Admissions over a period of eight years</p> <p><u>Participants</u> n= 253 65.61% were first admissions and 34.39% readmissions</p>	<p><u>Gender</u> Females: 44.7%</p> <p><u>Age (years)</u> 13: 3% 14: 4.8% 15: 8.4% 16: 19.3% 17: 21.1% 18: 22.3% 19+: 21.1%</p> <p><u>Length of stay</u> Mean 27.91 days <30 days: 68.1% 31-60 days 23.5% 61-90 6.0% >91 days 2.4%</p>	<p><u>Clinical / diagnostic categories</u> On admission</p> <p>Psychotic disorders (42.8%) Personality disorders (14.5%) Attempted suicide (9.6%) Drug related disorders (9.6%) Affective disorders (9.0%) Neurotic disorders (8.4%) Conduct disorders (5.4%) Eating disorders (4.5%) Mental deficiency (3.0%) Reactive (adjustment) disorders PTSD (2.4%) Organic (neurological) disorders (2.4%) Sexual abuse (1.2%) Psychosomatic disorders (1.2%) Other (7.2%)</p>
<p>Stanton et al. 2017.⁸ New Zealand: Qualitative study using interviews To more formally assess community clinicians experiences, perspectives, and needs of engaging with an acute child and adolescent mental health inpatient unit</p>		
<p><u>Setting</u> Mental health services</p>	<p>Not relevant</p>	<p><u>Clinical / diagnostic categories</u> On admission</p>

<p><u>Participants</u> Community clinicians (n=48) Of the 48 participants, nine were from services in the metropolitan area and 39 from smaller centers. Six were psychiatrists or other doctors. Others included nurses, psychologists, occupational therapists, social workers, and cultural workers</p>		<p>There are more than 20 referring teams with more than 350 admission annually, mostly adolescents with parasuicidal behaviour or psychosis. Conduct disorder, substance abuse, and sequelae of trauma are common comorbidities</p>
<p>Scharko 2010.²⁵ USA: Retrospective cohort using case note reviews To characterize patients admitted to a mental health Adolescent Male Treatment Unit over an 18-month interval</p>		
<p><u>Setting</u> Consecutive admissions to adolescent Male Treatment Unit from July 2008 to January 2010</p> <p><u>Participants</u> n=238</p>	<p><u>Gender</u> Male: 100%</p> <p><u>Age (Mean) years</u> 15 (Range: 9 to 17)</p> <p><u>Length of stay</u> < 5 days (44%) > 5 to < 14 days (22%) > 14 to < 30 days (13%) > 30 days 43 (21%)</p>	<p><u>Clinical / diagnostic categories</u> Most frequent psychiatric diagnoses on admission using DSM IV</p> <p>Mood disorder -NOS (24%) Disruptive behavior disorder – NOS (22%) Attention deficit/hyperactivity disorder - combined type (17%) Parent/child relational problem (5%) Adjustment disorder with mixed disturbance of emotions and conduct (3%) Cannabis abuse (13%) Attention deficit/hyperactivity disorder – NOS (13%) Autistic disorder (4%) Bipolar disorder – NOS (4%) Reactive attachment disorder (4%)</p>
<p>Patil 2013.³¹ UK: Retrospective cohort using case note reviews To examine the characteristics, presentation and outcomes in adolescents brought to a place of safety under s.136 of the Mental Health Act 1983</p>		
<p><u>Setting</u> All adolescents, under the age of 18 across a 3 year period admitted under s.136 of the Mental Health Act 1983 between 1 January 2007 and 31 December 2010 (3 years) to London Mental Health NHS Trust</p>	<p><u>Gender</u> Female: 67.6%</p> <p><u>Age (Mean) years</u> 15.9 (Range: 13 to 17)</p>	<p><u>Clinical / diagnostic categories</u> Most common past diagnosis before admission</p> <p>No diagnosis (17.6%) Depressive disorder (17.6%) Conduct Disorder (14.7%)</p>

<u>Participants</u> n=34/40	<u>Length of stay</u> Not reported	
Persi 2016. ³⁵ Canada: Retrospective cohort using case note reviews To compare voluntary and involuntary groups of patients and provides the first detailed description of involuntary admissions to a Canadian child and adolescent inpatient psychiatry setting		
<u>Setting</u> All inpatient discharges between April 2007 and March 2008 across 26 acute care hospitals. Excluded elective admissions <u>Participants</u> n=225	<u>Gender</u> Involuntary admission: Female: 59% Voluntary admission: Female: 64% <u>Age (years)</u> Involuntary admission Child 5-12: 13% Adolescent 13- 17: 87% Voluntary admission: Child 5-12: 27% Adolescent 13- 17: 73% <u>Length of stay</u> Median was 6 days with a range from 1 to 147 days. The distribution was skewed because most patients were discharged within days, but several stayed over 2 months	<u>Clinical / diagnostic categories</u> From discharge summary (% not reported) Psychosis Bipolar Depression Anxiety Substance Abuse Adjustment Behavior No diagnosable disorder <u>Outcome measures used on admission</u> Total problems at admission: CBCL Global functioning: CGAS Suicide risk: Suicide Risk Self-report
Wilson et al. 2012. ³⁶ Ireland: Retrospective cohort using case note reviews To describe referral and admission patterns to an adolescent inpatient unit in Ireland		
<u>Setting</u>	<u>Gender</u>	<u>Clinical / diagnostic categories</u>

<p>All referrals to St. Joseph's Adolescent Inpatient Unit (6 bed unit) Dublin for the first 6 months of opening</p> <p><u>Participants</u> Adolescents 41 referrals 21 assessed 19 (46 %) admitted</p>	<p>Female: 63%</p> <p><u>Age (Mean) years</u> 16.2±1.0</p> <p><u>Length of stay</u> Not reported</p>	<p>On referral using DSM-IV</p> <p>Depression (42%) Anorexia (11%) Psychosis (21%) Anxiety disorders (5%) Bipolar disorder (5%) Obsessive compulsive disorder (5%) Conduct disorder (0%) No clear diagnosis (11%)</p>
<p>Fenning et al. 2017.²² Israel: Prospective cohort study To examine changes in core perceptions and thoughts during the weight restoration phase of inpatient treatment for adolescents with anorexia nervosa</p>		
<p><u>Setting</u> Adolescents with anorexia nervosa consecutively admitted to an inpatient paediatric-psychiatric unit specializing in eating disorders from 2009 to 2012. Admit patients from the age of 6 to 18 years (mostly adolescents)</p> <p><u>Participants</u> n=44</p>	<p><u>Gender</u> Female: 93%</p> <p><u>Age (mean±SD) years</u> Mean 14.80 ±1.73 Range 11.8 to 18.8</p> <p><u>Length of stay</u> Not reported</p>	<p><u>Clinical / diagnostic categories</u> Pre admission on clinical interviews, patient observation, parental information and medical evaluations using DSM-IV</p> <p>Eating disorders (100%)</p> <p><u>Outcome measures used on admission</u> Specific to study evaluation</p>
<p>Guvenir 2009.³⁸ Turkey: Retrospective cohort using case note reviews To examine the treatment outcome of our newly opened CAMHS inpatient unit in terms of patients functioning levels via key variables which were measured at two time periods, namely (i) at admission to the unit and (ii) at discharge</p>		
<p><u>Setting</u> Consecutive admissions of adolescents over a 16 month period to a 10 bedded inpatient unit adolescents with severe behavioural and emotional disturbance</p>	<p><u>Gender</u> Female: 67.8%</p> <p><u>Age (years)</u> 15.3 (range 10-18)</p>	<p><u>Clinical / diagnostic categories</u> Timepoint of diagnosis made not specified but categorized using DSM IV</p> <p>Affective disorders (37.7%) Psychotic disorders (24.3%)</p>

<u>Participants</u> n=97	<u>Length of stay</u> 77.3 days (range 14-136)	Physical & sexual abuse (11.0%) Anxiety disorders (11.0%) Disruptive behaviour disorders (6.6%) Dissociative disorders (5.5%) Anorexia nervosa (4.4%) Tourettes (2.2%) Trichotillomania (2.2%) Gender identity disorder (1.1%) Parent child relational disorder (62.2%)
Gallagher et al. 2011. ²⁶ USA: Retrospective cohort using case note reviews To describe (1) trends in boarding volume over 3 years, (2) demographic and psychiatric and psychosocial characteristics of PBs seen over a 1-year period with particularly high PB volume, and (3) interventions provided by the PCS and outcomes of boarding		
<u>Setting</u> Inpatient pediatric units at one hospital <u>Participants</u> Psychiatric boarders (n=437) between January and December 2013	<u>Gender</u> Female (64.1%) <u>Age (mean±SD) years</u> 15.16±6 2.80- <u>Length of stay</u> 3.11±3.34 days. Most psychiatric boarders (82.6%) boarded after medical clearance for 5 days or less, psychiatric placement was secured within 24 hours for 82 patients (18.8%), and a small proportion of patients boarded longer than 5 days	<u>Clinical / diagnostic categories</u> Recorded on admission using ICD-9 Depressive disorders (56.5%) Anxiety disorders (33.6%) Disruptive behavior disorders (24%) Bipolar disorders (18.1%) Eating disorders (16%) Pervasive developmental disorders (10.1%) Post-traumatic disorders (9.8%) Somatoform disorders (9.8%) Substance use disorders (9.2%) Psychotic disorders and delirium (6.2%) Adjustment disorders (2.3%) <u>Outcome measures used on admission</u> CGAS CGI

<p>Wharff et al. 2011.²⁷ USA: Retrospective cohort using case note reviews To describe the extent of the boarder problem in a large, urban pediatric ED, compares characteristics of psychiatrically hospitalized patients with boarders, and compares predictors of boarding in 2 ED patient cohorts</p>		
<p><u>Setting</u> Psychiatric boarders between July 2007 and June 2008 at an ED of a large urban pediatric teaching hospital</p> <p><u>Participants</u> n= 157</p>	<p><u>Gender</u> Female: 56.7%</p> <p><u>Age (years)</u> <10 Years: 14% 10-13: 4.8% 13-18: 68.2%</p> <p><u>Length of stay</u> Mean 22.7 +8.08 hours Median 21.18 hours</p>	<p><u>Clinical / diagnostic categories</u> Recorded on admission using DSM-IV Axis one</p> <p>Depression (32.5%) Other depressive disorders (17.2%) Psychosis (11.5%) Bipolar (8.3%) Trauma (6.4%) Eating disorder (5.1%) Behavioural disorder (4.5%) Adjustment disorder (3.8%) Substance abuse (1.3%) Other (2.5%)</p>
<p>Claudius et al. 2014.²⁸ USA: Retrospective cohort using case note reviews To evaluate the rate of admission of psychiatric patients to a medical unit, psychiatric care provided, and estimated cost of care</p>		
<p><u>Setting</u> Medical Center is a urban county hospital with a dedicated pediatric ED. Patients (n=1108) on involuntary psychiatric holds presenting to 1 pediatric ED from July 2009 to December 2010</p> <p><u>Participants</u> Admitted for boarding (n=523) Transferred from ED to an inpatient psychiatric facility (n=553)</p>	<p><u>Gender</u> Boarding Females: 46.2% Transfer Females: 50.5%</p> <p><u>Age (Mean±SD) years</u> Boarding: 14.1+3.0 Transfer: 15.6+2.5</p> <p><u>Length of stay</u> Median (range) days Boarding 2.0 (1-30) Transfer: N/A</p>	<p><u>Clinical / diagnostic categories</u> Not reported</p>

Williams et al. 2018. ²⁹ USA: Retrospective cohort using case note reviews To characterize pediatric mental health–related ED presentations in a large urban center and identify factors predictive of inpatient hospitalization		
<u>Settings</u> All pediatric patients (5-18 years) from the managed care plan network who presented in mental health crisis to 1 of 9 regional EDs. January 2012 to April 2014 <u>Participants</u> n=225	<u>Gender</u> Female: 54% <u>Age (Mean±SD) years</u> 14.1±SD, 2.7 <u>Length of stay</u> Not reported	<u>Clinical / diagnostic categories</u> Reported on admission using child behavioral/emotional symptoms Impulsivity (45.2%) Depression (42.9%) Problems with anger control (40.9%) Oppositional (31.1%) Anxiety (29.4%) Conduct problems (28.6%) Difficulties adjusting to trauma (22.7%) Psychotic symptoms (19.1%) Substance use (14.7%)
Park et al. 2011. ³³ New Zealand: Retrospective cohort using case note reviews To investigate patterns of child and adolescent admissions to an acute adult psychiatric unit in a rural city. Correlates of admissions were then considered in terms of service reform for this vulnerable, under-resourced group		
<u>Setting</u> Consecutive admissions to the regional acute adult psychiatric unit, approximately 130 km from a specialized child and adolescent inpatient unit from January 2002 to December 2007 <u>Participants</u> n=332	<u>Gender</u> Female: 51% <u>Age (Mean±SD) years</u> 16.5±1.1 <u>Length of stay</u> Average 7.18 days, (SD 12.6). However, over half of admitted patients (186/332) were discharged within three days	<u>Clinical / diagnostic categories</u> Recorded on admission using DSM-IV Axis one Comorbid Axis one diagnosis (11.4%) Any mood disorder (38.2%) Any anxiety disorder (9.6%) Any psychotic disorder (25.7%) Any disruptive behaviour disorder (6.8%) Adjustment disorder (6.8%) Substance abuse (7.1%) Other (3.7%)

	<p>The durations of admission of two patients were considered statistical outliers (lengths of stay 157 and 247 days); in both cases, admission duration was due to difficulty finding post-hospital accommodation) were excluded from the analysis</p>	
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1333 Key:

1334 A&E: accident and emergency; AN: anorexia nervosa; CAMHs: child and adolescent mental health service; CBCL: Child Behavior Checklist;
1335 CGAS: Children’s Global Assessment Scale; CGI: Clinical Global Impressions scale; CGIS: Clinical Global Impression Scale; CGI-S: clinical
1336 global impression-severity; CMHTs: community mental health teams; CPA: care programme approach; CRHT: crisis resolution and home
1337 treatment; DSM IV: Diagnostic and Statistical Manual of Mental Disorders, 4th edition; ED: Emergency department; EDNOS: eating disorder not
1338 otherwise specified; EDNOS-AN: eating disorders not otherwise specified; EITs: early intervention teams; GAF: Global Assessment of
1339 Function; HoNOSCA: Nation Outcome Scales for Children and Adolescents; IC10-9: International Classification of Diseases 9; ICD-10:
1340 International Classification of Diseases 10; LOS: lengths of stay; NOPED: no psychiatric affiliated pediatric emergency department; NOS: not
1341 otherwise specified; PAPERD: psychiatric affiliated pediatric emergency department; PBs: Psychiatric boarders; PCS: psychiatry consultation
1342 service; PCT: primary care trust; PDD/ASD: pervasive developmental disorders/autistic spectrum disorders; PED: pediatric emergency
1343 department; PICU: psychiatric intensive care unit; PTSD: post traumatic stress disorder

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Table 1: Characteristics of included textual and opinion publications

Author/s,	Type of publication Title of publication	Country of publication
Rogers and Al-Mateen 2016 ⁴³	Book chapter Inpatient psychiatric hospitalization	USA
Cotgrove 2014 ⁵¹	Book chapter Inpatient services	UK
Gosselin and DeMaso 2009 ⁴²	Book chapter The adolescent unit	USA
Hayes et al 2018 ⁴¹	Systematic review Evaluating effectiveness in adolescent mental health inpatient units: A systematic review	Australia
Murcott 2016 ⁴⁸	Scoping review A scoping review of care received by young people aged 16-25 when admitted to adult mental health hospital wards	UK
NSW Ministry of Health 2017 ⁴⁴	Rapid review Evidence check. Inpatient care for children and adolescents with mental disorders	New Zealand
Welsh Health Specialised Services Committee 2014 ⁴⁷	Policy Tier 4 Specialised service policy: CP19 Specialised services policy for Tier 4 child and adolescent mental health services	Wales, UK
Care Quality Commission 2017 ⁵⁰	Report Review of children and young people's mental health services	UK
Health Services Executive 2015a ³⁹	Service specifications A national model of care for paediatric healthcare services in Ireland. Chapter 13 CAMHs	Ireland
Health Service Executive 2015b ⁴⁰	Service specifications Child and adolescent mental health services: standard operating procedures	Ireland
NHS England 2013 ⁵²	Service specifications NHS standard contract for tier 4 child and adolescent mental health services (CAMHS): children's services	England, UK
Thompson and Clark 2016 ¹¹	Standards Service Standards. Eighth Edition	UK
NHS England 2014 ⁵³	Report Child and adolescent mental health services (CAMHS) tier 4 report	UK
NHS England 2015 ⁴⁶	Guidance Specialised mental health services operating handbook protocol	England, UK

O'Herlihy et al. 2009	Report The care paths of young people referred but not admitted to inpatient child and adolescent mental health services	UK
NHS England 2018 ⁴⁹	Service Specifications Child and adolescent mental health services tier 4 (CAMHS t4): general adolescent services including specialist eating disorder services	England, UK

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Table 2: Settings where research was conducted

Emergency Departments	
Williams et al. 2018. ²⁹	One of nine regional EDs in a large urban center, USA.
Sheridan et al. 2017. ²⁴	Comparison between two pediatric emergency departments one psychiatric affiliated and the other with no psychiatric affiliation, USA
Claudius et al. 2014. ²⁸	Pediatric ED in an urban county hospital
Wharff et al. 2011. ²⁷	Large urban pediatric ED, USA.
Adult acute psychiatric unit	
Park et al. 2011. ³³	Acute adult psychiatric unit in a rural city, New Zealand.
Bryson and Akin 2015. ²³	State wide acute inpatient psychiatric care for those with Medicaid insurance
Patil 2013. ³¹	Compulsory admissions within one mental health NHS Trust, London, UK
Specialist eating disorder units	
Fenning et al. 2017. ²²	Inpatient pediatric-psychiatric unit specializing in eating disorders, Israel.
House et al. 2012. ³²	Services that provided treatment for adolescent with eating disorders in London, UK
Adolescent unit with a general psychiatric ward	
Zilikis et al. 2011. ³⁷	5 beds across two rooms for adolescents within a general psychiatric ward at a University general hospital, Greece
CAMHs / Age specific mental health units	
Scharko 2010. ²⁵	Adolescent male treatment Unit USA.
Hanssen-Bauer et al. 2011. ²¹	Four acute in-patient psychiatric units for adolescents, Norway.
Persi 2016. ³⁵	Child and adolescent inpatient psychiatry setting across 26 acute care hospitals, Canada.
Wilson et al. 2012. ³⁶	St. Joseph's Adolescent Inpatient unit (6 bed unit), Dublin, Ireland
Duddu et al. 2016. ³⁰	6 bed acute inpatient psychiatric unit, UK
Guvendir 2009. ³⁸	Newly opened CAMHS inpatient unit, Turkey
Inpatient pediatric units	
Gallagher et al. 2011. ²⁶	Inpatient pediatric units at one hospital, USA
Services making referrals into CAMHs units	
Stanton et al. 2017. ⁸	Community mental health service teams referring into CAMHs units, New Zealand
Golubchik et al. 2013. ³⁴	Psychiatric outpatient clinic for children and adolescents, Israel

Table 3: Sources of referral

Source of referral	Percentage referred
Hospital emergency departments	16.3%, ³³ 32.5% ³⁷
Outpatient mental health services	38%, ²⁶ 15%, ³⁷ 9%, ³⁶ ns ²²
Police	28.9%, ³³ 5.5% ³⁷
Family member	48%, ²⁶ 31% ³³
Social services	ns ³⁶
Social services/ schools	5% ³⁷
Consultation-liaison	8% ³⁷
Psychiatric services	21% ³⁷
Private psychiatric	9.5% ³⁷
Non psychiatric services	2.0% ³⁷
CAMHs service	47% ³⁶
Adult mental health	32% ³⁶
Other hospital inpatient facilities such as adult, pediatric, psychiatric or medical wards	ns, ²² 21%, ³⁶ ns, ²⁷ ns ²⁶
Family physicians	ns ²²
Community psychiatrists	ns ²²