A systematic review of inpatient psychiatric care for people with intellectual disabilities and/or autism: effectiveness, patient safety and experience

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Author note

We have no known conflict of interest to declare.

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Data Availability Statement. The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contribution Statement: All authors made substantial contributions to the conception, design, and interpretation of data, revising the work for important intellectual content, approved the final version to be published, and agreed to be accountable for all aspects of the work in ensuring accuracy and integrity. CM and PL were responsible for the initial acquisition of data and analysis along with the drafting of the initial version of the manuscript.

Abstract

Background: An increasing number of children, adolescents, and adults with intellectual disabilities and/or autism are being admitted to general psychiatric wards and are being cared for by general psychiatrists.

Aims: The aim of this systematic review was to consider the likely effectiveness of inpatient treatment for this population while comparing and contrasting differing models of inpatient care.

Method: A systematic search was completed to identify papers where authors had reported data about the effectiveness of inpatient admissions with reference to one of the three domains: (a) treatment effect (e.g., length of stay, clinical outcome, re-admission), (b) patient safety (e.g., restrictive practices), or (c) patient experience (e.g., patient or family satisfaction) were included. Where possible, outcomes associated with admission were considered further within the context of differing models of inpatient care (e.g., specialist inpatient services *vs*. general mental health inpatient services).

Results: One-hundred and ~~five~~ six studies were included and there was evidence that improvements in mental health, social functioning, behaviour, and forensic risk were *associated* with an inpatient admission. There were two main models of inpatient psychiatric care described within the literature: admission to a specialist intellectual disability or a general mental health inpatient service. Patients admitted to specialist intellectual disability inpatient services had greater complexity, but there were additional benefits including fewer out-of-area discharges, and lower seclusion rates.

Conclusions: There was evidence that admission to inpatient services was associated with improvements in mental health for this population. There was some evidence indicating better outcomes for those admitted to specialist services.

Keywords: Intellectual disabilities; Developmental disability, Autism; Forensic; Mental Health; Challenging Behaviour.

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People with intellectual and other developmental disabilities, such as autism, have an increased prevalence of mental health problems relative to the general population[1-8], and governments of some countries, such as England, have pledged to reduce admissions to inpatient psychiatric settings for this population. The launch of a national service model for people with intellectual disabilities and/or autism in England shifted focus towards increasing community-based provision within a national programme of inpatient bed closure[9, 10]. However, within England, at the end of June 2021, there were 2075 inpatients with intellectual disabilities within a bed specifically commissioned for this group, and 57% of them had a length of stay of over 2-years, while more broadly in other mental health beds, there were 1040 people with intellectual disabilities admitted during June 2021, and a total of 3600 inpatients with intellectual disabilities were in these types of beds[11]. There is a push to ensure that inpatient services implement the most effective treatment service model, bearing in mind that despite the recognised high cost of inpatient admission, there is a lack of substantial evidence about the effectiveness of these services for this group[12-15].

Aims of the Review

The aim of this review was to undertake a systematic search of the available literature about inpatient mental health care for individuals with intellectual disabilities and/or autism who have additional mental health, behavioural, or forensic needs. The specific aims were to: (a) consider and describe the different models of service provision, and (b) evaluate the outcomes from admission across three domains – treatment effectiveness, patient safety and patient experience.

Method

A series of electronic database searches were completed with the final search being completed on 1st March 2021 using Web of Science, PsychInfo, Medline, PubMed and CINHAL. A grey literature search was also conducted using http://www.opengrey.eu. The complete search terms are found in Table 1. Backward searching of publications that met our eligibility criteria was used to identify any further eligible papers. EPPI Reviewer software [16] was used to collate the results, and once duplicates were removed, the titles and abstracts were screened against the eligibility criteria, Table 1. Papers which described admission to an inpatient psychiatric service via accident and emergency services were included. No date limit was applied to the searches and studies involving children, adolescents, and adults were included. Title and abstract screening, as well as full text reviews, were completed by two authors. This systematic review was registered with PROSPERO (CRD42019136568) before the searches and review had been completed.

Eligible studies were initially classified by methodology to ascertain the size and quality of the evidence base available to address the aims of the review and explore inpatient treatment. Studies were then categorised

according to patient population (adult or child/adolescent) and inpatient service type (general mental health, specialist intellectual disabilities, or forensic/secure service) to allow for consideration and description of current models of inpatient care. Due to the variability across studies, and the large amount of extracted data, a data science approach was used to collect/clean, investigate, analyse, and visualise the results using Python. Twenty-~~four~~ five of the included studies comprised a sample already included in another study; for example, the authors reported a further follow-up study of a previous sample or were a review that included studies identified in our search. To avoid double counting, ~~Data~~ data from these papers were not extracted and were only included in the synthesis if they added new information (e.g., an additional outcome measure or reporting on a specific patient group, for example, those with intellectual disabilities and personality disorders). Studies excluded and the associated reason is detailed within Supplementary Material, Table A. Quality appraisal methods were considered, but not used. The reasons for this were: (1) there was marked heterogeneity in research designs across the included studies and synthesising information using a single, or several tools, using different ratings scales would have added additional complexity to an already complex synthesis and make comparisons challenging, and (2) considering that most of the included studies used observational designs, drawing on convenience samples, issues associated with bias are generally ostensible. Where sources of bias were apparent, these were identified and included within our synthesis to help facilitate the interpretation of evidence.

Studies were organised by outcome from admission across three domains. These domains were adopted from the UK Department of Health's Transparency in Outcomes Framework[9]. We used three of the four domains for assessing quality: (a) measures of effectiveness, (b) patient safety, and (c) patient experience for NHS services. The fourth domain, *efficiency*, concerning value for money was not included as part of this review as data were not available. This framework was used to organise findings, including any potential difference in outcomes between the models of care, and was developed for public health services. Similar service quality indicators are found internationally[17-20]. According to each of the three domains, specific outcomes were identified within the included studies (e.g., clinical assessment within the effectiveness domain; observation levels within the safety domain, and quality of life within the patient experience domain). The specific outcomes selected to evaluate inpatient treatment were informed by existing research[21, 22] and developed to be consistent across quality frameworks. This was done to ensure as much of the available literature was captured by the framework, and findings regarding treatment outcomes were recorded and organised using key indicators associated with admission outcomes. Eligible studies were categorised by the broad domain, and then further categorised by specific outcomes investigated.

As shown by the PRISMA diagram, Figure 1, 4,~~828~~ 829 potential studies remained after the removal of duplicates, with 4,150 studies excluded following title and abstract screening. Six-hundred and fifty-~~six~~ seven articles were included in the full text review and following further exclusions, ~~105~~ 106 studies met the eligibility criteria and were incorporated in the synthesis. All studies included in the review can be found in Table 2 along with a summary of their findings.

Results

The majority of eligible studies were published within the last thirty years, with most involving children and young people taking place more recently. There were 8 studies published in the 1990s, 28 published in the 2000s, 40 published in the 2010s, and 9 published in the 2020s which focused upon adults. No papers were published in the 1990s, 1 paper was published in the 2000s, 14 papers were published in the 2010s and 6 papers had been published in the 2020s that focused upon children. Eighty-~~four~~ five of the included studies included samples of adults, while twenty-one studies included samples of children and adolescents, both with intellectual disabilities and/or autism. Studies ranged in size from small samples of less than ten participants using qualitative research methodologies[23] to large-scale studies using population or census records and healthcare databases[24, 25]. The majority of studies were conducted in the United Kingdom, Scandinavia and Canada; however, a smaller number of studies took place in other European counties, Asia, and Australia[26-34].

Methodologically, most studies lacked appropriate comparison samples or did not collect data prospectively at intervals (data collection periods ranged from one-month to over ten years, with a median of 36 months), and instead, were cross-sectional and observational, describing a single group of participants, Table 2. For studies which included a comparison group, there was variability in the amount of detail provided, with some specifying sampling strategies or matching criteria[35] and others providing little information[36]. For retrospective studies, many were case file reviews, but were considered valuable because important clinical information was reported which highlighted the care pathways of patients. There was a single clinical trial[37].

The studies about inpatient care for adults characterised three different inpatient services or unit types: (a) twenty-~~one~~ two studies focused upon general mental health (GMH) inpatient services, (b) thirty-eight studies focused upon specialist inpatient intellectual disability services, (c) twenty-five studies focused upon forensic/secure services (both GMH and specialist intellectual disabilities services). The literature about the inpatient treatment of children and adolescents was sparse but included fourteen studies about GMH and/or specialist intellectual disabilities services, as well as seven studies about admissions ~~to non-psychiatric~~via other services, i.e., accident & emergency departments because of crisis associated with mental health or behaviour that challenges, which resulted in admission or transfer to a service for inpatient psychiatric treatment, Table 3.

Participants

Twenty-four papers included duplicate or potentially duplicate participants (such as sub-samples of a larger population or a later follow-up study) reducing the total number of papers where data were extracted to eighty-two. Not all of the eighty-two studies provided data that could be extracted. However, sixteen studies included information about GMH inpatient services, thirty studies focused on specialist intellectual disability inpatient services, and seventeen studies were about forensic or secure inpatient services. Data were extracted from thirteen studies about children and young people within either GMH or specialist intellectual disability inpatient services, and data were extracted from six studies about the admission of children or adolescents with intellectual disabilities and/or autism via accident and emergency departments, Table 3.

Adults with intellectual disabilities and/or autism

The characteristics of adult participants were explored across the different inpatient service types. The participant data available within studies were variable and reporting of age, ethnicity, gender, level of intellectual disability, Full Scale IQ, and detention status was inconsistent; most studies did not adequately describe their samples, Table 3. For example, while sixteen studies were about adults with intellectual disabilities and/or autism within GMH inpatient services, data about degree of intellectual disability was only reported in three studies. Adults with intellectual disabilities within GMH inpatient services tended to have mild to borderline intellectual disabilities and were a similar age to those without intellectual disabilities using the same service. However, there was evidence that adults with severe to profound intellectual disabilities were admitted to GMH inpatient services but were more frequently admitted to specialist inpatient intellectual disability services[5, 6, 38], Tables 3 and 4.

More males than females with intellectual disabilities and/or autism were admitted to inpatient services, and this was most notable for patients with autism, children, and adolescents, and those admitted to forensic services, Table 4. A greater percentage of adults who were from minority ethnic backgrounds with intellectual disabilities and/or autism were found amongst those admitted to GMH inpatient services, while a greater percentage of white adults with intellectual disabilities and/or autism were admitted to specialist intellectual disability inpatient services or forensic inpatient services. It was noted that for all services, adults from ethnic minority backgrounds appeared to be overrepresented.

Children and adolescents with intellectual disabilities and/or autism

Nineteen papers were identified which focused upon children and adolescents with intellectual disabilities and/or autism with the oldest included paper having been published in 2006. Children and adolescents with intellectual disabilities and/or autism tended to be younger than comparison samples without developmental disabilities, Table 4. However, these data were extracted from relatively few papers, as with the adult literature, authors did not robustly describe their included participants.

Autism

Twenty-one papers focused specifically upon autistic inpatients. Of these, seven reported data about autistic participants within a larger sample which included participants with intellectual disabilities[39], and data for these participants were extracted where possible, or were contained within previous literature reviews[40].

Ten of the included studies involved autistic adults, with a single paper exploring this group within GMH inpatient services[41]. Three investigated autism within specialist intellectual disability inpatient services [36, 42, 43]and six were about autistic adults within forensic inpatient services, including one forensic service for patients with intellectual disabilities[39, 40, 44-46].

Eleven of the included papers involved autistic children and adolescents. Six of these papers were about the admission of autistic children and adolescents, including those with intellectual disabilities, to accident and emergency within general hospitals due to mental health crises and/or behaviour that challenges[25, 47-51]. A

single follow-up paper[52] reported on the same set of autistic participants within an earlier study[53], and to avoid double-counting, the data were not extracted and included within Table 4.

Models of Service Provision

General Mental Health and Specialist Intellectual Disabilities Inpatient Service Models of Care for Adults

The studies identified referred to two broad approaches to inpatient mental health for adults with intellectual disabilities and/or and autism (a) admission to inpatient general psychiatric or mental health wards services (with other patients who do not have intellectual disabilities and/or autism)[54], or (b) admission to inpatient specialist services designed for those with intellectual disabilities and/or autism[3].

For adults with intellectual disabilities and/or autism in GMH inpatient services, it was noted that admission could be to GMH beds[8, 26, 55], or 'specialist intellectual disability beds' located within an otherwise GMH service[2, 5]. 'Specialist beds' within GMH services were typically described as a separate ward or unit[5], with a few authors reporting staff within these services had specialist knowledge of intellectual disabilities or treatment and therapeutic programmes adapted for this group[8, 56]. Specialist intellectual disability services, or units, tended to be smaller, with reports of 6 or 14-bed units[1, 7] compared to GMH services[57]. It was noted that "specialist" in this context was not clearly defined but included reference to the training of staff and the adaptation of interventions to meet the needs of inpatients.

Both the GMH and specialist intellectual disability inpatient service models for adults were characterised by twenty four-hour care and a 'locked' environment, although some patients were described as having free to 'access' the community depending on the nature of their admission or detention status[5, 58]. Patients had access to psychiatry and nursing care, and frequently, a multi-disciplinary team including nursing, psychologists, and allied health professions, such as speech and language therapy and occupational therapy[59] .

Therapeutic and treatment services offered in GMH, and specialist inpatient intellectual disability services, included group and individual psychotherapy, medication, behavioural and educational programmes. Further details regarding treatment components specifically for patients with intellectual disabilities were sparse, but were described more so within papers about specialist inpatient intellectual disability services, rather than GMH inpatient services, e.g. staffing levels[60], staff training programmes or requirements[1, 14], ratio of different types of nurses (those with training in intellectual disabilities vs. mental health)[1, 3, 59], patient-to-staff ratios[4], and use/availability of 'adapted' treatment or therapeutic programmes[14]. Those that did report such information were frequently pilot studies or retrospective case reviews of new service models, for example, enhanced outpatient services compared to inpatient treatment[61], or studies on early or new specialist intellectual disability inpatient services[2, 5].

Within studies, GMH and specialist intellectual disability inpatient services were described using different language, for example, acute assessment and treatment[62] or services for 'longer stay' patients[63]. Some authors

described the purpose for admission and the expected duration of stay, for example, admission for assessment and treatment[64], or emergency care/admission with short stays[26].

Details of 'after care' following discharge, including collaborative working with community services, were absent from much of adult literature. For example, the impact of an enhanced community assessment and treatment team on inpatient admissions was evaluated within one study [61], although such an approach to evaluation appears to be the exception. Other groups of authors reported a poor availability of community placements which resulted in 'bed-blocking' and delayed discharges[59, 65], and a single study referred to 'telepsychiatric' support for patients 'discharged' (resided in family home but still a 'patient') during the COVID-19 pandemic[33].

No autism-specific service treatment models or service/unit types for adults were identified in the review.

Secure Forensic Service Models of Care for Adults

Twenty-five papers illustrated that forensic services in the United Kingdom followed the same two broad treatment models: GMH (where services also treated those without intellectual disabilities and/or autism)[27, 40, 44-46, 66-72], and specialist inpatient services for those with intellectual disabilities[73]; and covered levels 1 and 4 of the Royal College of Psychiatrists'[22] tiered model of forensic provision for intellectual disabilities: low, medium and high-secure services, and 'locked rehabilitation' units. Studies from the Netherlands reported a similar, tiered structure of forensic services[46, 68, 71], whilst within Canada, the use of 'forensic beds' within a GMH model was described, rather than the use of specialist inpatient provision[27, 70]. Six studies explored those detained within GMH forensic services, three of which focused upon the admission of autistic patients to low, medium, and high secure units[44, 46, 68-71].

As might be expected, GMH and specialist intellectual disability forensic services had an increased focus upon security and increased restrictions on community access but were otherwise comparable to other inpatient units in terms of the availability of care and treatment delivered by psychiatry, nursing, and psychology[74, 75]. Fewer papers provided information such as staff-to-patient ratios or specialist training in intellectual disabilities or forensic mental health relative to studies about GMH or specialist intellectual disability inpatient services, although some offence specific treatments were described[74].

Service Models of Inpatient Treatment for Children and Adolescents

Inpatient service models for the treatment of children and adolescents with intellectual disabilities and/or autism were comparable to adult services, with admissions to two broad types of services: (1) GMH[28, 33] or (b) specialist intellectual disability services[76, 77].

Both GMH and specialist intellectual disability services for children and adolescents with intellectual disabilities and/or autism were described as "locked", and twenty-four-hour care was provided by nurses, psychologists, psychiatrists, and allied health professionals [28, 78, 79]. Studies that included child and adolescent participants provided more information about staffing, service structure and approach than found within the adult literature, allowing for differentiation between GMH and specialist intellectual disabilities and/or autism inpatient services[80].

For example, Smith and Berney[79] described the differences between patient need within two 'open' wards with different levels of dependence based on severity of intellectual disabilities, and one low secure ward within their specialist intellectual disabilities service; they described how these wards used focused behavioural and activities-based programmes more so than GMH units. Others focused on describing staff training programmes, and the care pathway for autistic children and adolescents[52, 53, 81]

Inpatient service models for children and young people, both GMH and specialist, attempted to integrate collaboration with community teams or 'outreach programmes' as part of treatment (more so than that seen in the adult literature). Inpatient and community services were part of the same 'team' or 'hub' to directly reduce/avoid inpatient admission or re-admission[52, 78].

Several papers were identified which explored the admission of children and adolescents with intellectual disabilities and/or autism to accident and emergency departments[30, 48]. Whilst not considered a model of inpatient psychiatric treatment, the authors of these papers reported that children and adolescents with intellectual disabilities and/or autism were more likely to visit or be admitted to a general hospital due to mental ill health relative to those without disabilities, often leading to further admission to inpatient psychiatric services[25, 30, 50]. These findings highlight how accident and emergency is utilised by families and carers of children and adolescents with intellectual disabilities and/or autism which is likely due in part to the poor provision of community-based services for this group.

Outcomes Associated with Inpatient Admission

Two narrative reviews[15, 82] and 1 systematic review[40] were excluded to avoid double-counting. One hundred and ~~two~~ three papers reported at least one outcome within one of the three outcome domains investigated: (a) measures of effectiveness, (b) measures of patient safety, or (c) measures of patient experience. A variety of outcome measures were used within each domain, and while reporting was variable, most outcome measures were classified as falling within the effectiveness domain (reported in ninety papers), with patient experience being the rarest outcome domain reported. The categorisation of papers according to outcome domain is found within Figure 2. Twenty-two studies (22%) reported outcomes that were categorised as falling within more than one domain. Across all studies, regardless of the type of service model, there was a focus upon reporting data about length of stay and discharge pathway. Authors describing specialist inpatient services tended to report clinical and risk outcomes, while authors focused upon GMH inpatient services tended to report admission and discharge rates. Authors of studies about inpatient forensic services focused upon measures of patient safety, behaviour that challenges, and offending behaviour, including crime. It was notable that none of the included studies about GMH inpatient services reported information about the use of physical interventions, including seclusion. It was notable that there were relatively fewer studies considered outcomes for children and adolescents with intellectual disabilities and/or autism following admission to inpatient settings.

General Mental Health and Specialist Intellectual Disability Inpatient Services for Adults

Measures of Effectiveness. There were seventy studies categorised as investigating measures of effectiveness within GMH and specialist intellectual disability inpatient services.

Length of Stay. Thirty-~~eight~~ nine studies reported information about length of stay within GMH and/or specialist intellectual disability inpatient services. Twelve of these studies reported length of stay data for adults with intellectual disabilities and/or autism within GMH units only with no comparison to data from specialist intellectual disability services[2, 26, 29, 35, 38, 54, 62, 83-87]. ~~Seven~~ Eight of the twelve compared length of stay for adults with and without intellectual disabilities and/or autism in GMH services[26, 29, 35, 38, 54, 84, 86, 88], and five reported length of stay for patients with intellectual disabilities and/or autism only[2, 62, 83, 85, 87]. Three of the twelve studies reported medians with the remaining nine reporting the mean[38, 84, 86]. A single study reported a range for length of stay data and the mean or median could not be extracted[88] The authors of all but ~~one study~~two studies [38, 88] reported that adults with intellectual disabilities and/or autism had a longer length of stay compared to inpatients without these disabilities. The average inpatient stay within GMH inpatient services for those with intellectual disabilities and/or autism ranged from 29.40 days to substantially longer admissions of over five years [2, 35, 54, 62, 84, 89, 90]. When length of stay was averaged across studies, the mean length of stay for those with intellectual disabilities and/or autism was substantially shorter within GMH inpatient services than the length of stay for those without these disabilities, Table 5. However, when inpatients without intellectual disabilities and/or autism who were classed as "long-stay" were excluded, the difference in length of stay between those with and without intellectual disabilities and/or autism within GMH inpatient services disappeared, Table 5. Examining the median length of stay as reported within studies[5, 38, 84, 86, 91, 92] also indicated that those with intellectual disabilities and/or autism had a shorter length of stay in comparison to patients without these disabilities within GMH inpatient services[38, 65, 84, 86], Table 5.

A further twenty-six studies reported length of stay data for adults with intellectual disabilities and/or autism in specialist inpatient intellectual disability services. Eleven studies explored length of stay within specialist intellectual disabilities services and/or GMH services and comparisons were made between the two[5, 7, 24, 56, 91-93], or between those with and without intellectual disabilities[41, 63, 65, 94]. The remaining fifteen papers reported data about inpatients with intellectual disability and/or autism in specialist intellectual disability services only[1, 3, 4, 6, 8, 14, 36, 59-61, 64, 90, 95-97], Table 5. The mean and the average median length of stay within specialist inpatient intellectual disability services was longer relative to GMH inpatient services but was shorter when those identified as long stay were removed, Table 5.

There was a single study about the admission of adults with intellectual disabilities who had a history of forensic mental health problems to GMH inpatient services[83], and length of stay was shorter for this group than for adults with intellectual disabilities who did not have forensic mental health problems. It is likely that this was because many were transferred to specialist forensic services following their admission as there is evidence from elsewhere that forensic mental health needs are associated with discharge to non-community settings[7].

A diagnosis of autism was associated with a longer length of stay within both GMH and specialist intellectual disability inpatient services[41, 98]. One group reported that those with intellectual disabilities and autism, relative to those with only a diagnosis of autism had a longer length of stay than those with intellectual disabilities without co-occurring autism[41].

Discharge Pathway. Across twenty-four studies, the percentage of inpatients with intellectual disabilities and/or autism who were discharged to their residence prior to admission ranged from 40 to 83%, whereas 27.5-45% were discharged to a different residence/new placement[1-4, 6, 7, 14, 26, 54, 56, 59, 61, 62, 65, 83, 84, 87, 90, 91, 94, 95, 97, 99, 100]. The authors of a single study reported that discharge to a new location was associated with a longer inpatient admission and difficulties with internalising or externalising behaviours; whilst discharge to same residence prior to admission was associated with living in a socially deprived area[87]. Those discharged from specialist intellectual disability inpatient services were reported as less likely to be from "out of area"[7], and more likely to go back to the family home than those discharged from GMH inpatient services[26].

From three studies, "delayed discharge" rates for inpatients with intellectual disabilities ranged from 10 to 63%[59, 65, 97]. However, the authors of a single study reported that inpatients with intellectual disabilities were no more difficult to discharge or more likely to stay beyond their discharge date than inpatients without intellectual disabilities, but were more likely to be discharged to their prior accommodation relative to inpatients without intellectual disabilities within GMH inpatient services[54]. Discharges from both GMH and specialist intellectual disability inpatient services to the community tended to be high[1, 2, 90]. For example, Xenitidis et al. (1999) reported that 84% of all admissions from community settings and 81% of all admissions from non-community settings were discharged to the community. Within the same study, a history of fire setting was noted to be associated with discharge to non-community settings. Within more recent studies, discharges to group homes and shared residential settings rather than to family homes appeared to be more frequent suggesting changes in the model of community-care for this group over time[61, 91, 97].

In two studies from Canada, higher levels of recommended care were seen as being needed for adults within intellectual disabilities and/or autism compared to those without disabilities which included considering whether someone could manage in the community themselves, required residential support, or continued to require inpatient care[41, 56]. Consideration for increasing outreach programmes and more intensive discharge planning for adults with intellectual disabilities was reported as needed[41].

Clinical Outcomes. Seventeen papers reported outcomes from assessments of mental health, psychiatric symptoms or risk and challenging behaviour[1, 4, 6-8, 14, 26, 36, 37, 59, 61, 63, 64, 89, 92, 96, 101]. A range of clinical assessments were used to measure mental health symptoms and index outcome from treatment during an inpatient stay. Examples of these included the Clinical Global Impression Scale[26, 102], assessments of behaviour and functioning such as the Global Assessment of Functioning Scales[7, 92, 103], Aberrant Behaviour Checklist [14, 96, 98, 104], Reiss Screen for Maladaptive Behaviour and measures of overall health outcomes, including the Health of National Outcomes Scales (HoNOS) including the version for people with learning disabilities[8, 61, 63, 105, 106].

Admission to inpatient services, either GMH or specialist intellectual disability inpatient services was associated with improvements in symptoms during the stay ([e.g., 7, 26, 92]), with some demonstrating continued improvements at follow-up [e.g., 4, 14]. The authors of a single study reported that admission to a GMH inpatient service was associated with increased clinical symptoms at both admission and discharge relative to admission to specialist intellectual disability inpatient services[92]. The author of a further single paper reported that autistic adults tended to have increased difficulties with adaptive behaviour and functioning when admitted to psychiatric services relative to those with intellectual disabilities without comorbid autism[36]. Van Minnen et al.[37] completed a clinical trial where adults with intellectual disabilities were randomised to either inpatient admission or enhanced community-based treatment. Their findings indicated that psychiatric symptoms at the end of the trial did not differ between the two groups, and they argued that enhanced treatment in the community may be appropriate for some people with intellectual disabilities who are experiencing mental health crisis.

A single paper made comparisons between elderly longer stay patients with and without intellectual disabilities[63]. They reported that elderly inpatients without intellectual disabilities within GMH inpatient services had more problems with relationships, occupation and activities, and depressed mood relative to elderly patients with intellectual disabilities within a specialist intellectual disabilities inpatient service. The authors suggested that the differences between the groups supported the use of specialist inpatient services for those with intellectual disabilities.

Readmissions. Readmission was considered within ~~fifteen~~ sixteen papers[1, 3-7, 14, 27, 38, 58, 59, 87, 88, 93, 97, 107]. Rates for adults with intellectual disabilities across the included studies ranged from 8 to 53%. Four studies reported rates of multiple re-admission (an individual discharged and re-admitted more than once during the study period) of between 6 to 38%[1, 3, 5, 107] for specialist intellectual disability inpatient services. The readmission rates to GMH inpatient services for adults with intellectual disabilities ranged from 9% to ~~29~~36.3%[5, 7, 38, 88], with no significant difference in re-admission rates between GMH and specialist intellectual disability inpatient services[5, 7]. A single study reported significantly higher rates of re-admission for those with "developmental disabilities" compared to those without[88]. Those with borderline-to-moderate intellectual disabilities were noted to have higher re-admission rates compared to those with a greater severity of intellectual disabilities in two studies[14, 58]. It was noted that generally there has been a significant reduction in re-admission rates for individuals with intellectual disabilities over time [93, 97]. In one study, admission to accident and emergency departments was more likely following discharge from a psychiatric hospital for adults with intellectual disabilities over a period of up to 26 months[108].

Measures of Patient Safety. Nine papers focused upon measures of patient safety with adults with intellectual disabilities and/or autism[7, 38, 42, 54, 57, 59, 60, 99, 109].

Observation Levels. Only two papers included information about observations levels for adults with intellectual disabilities within either GMH or specialist intellectual disability inpatient services[54, 59]. Within GMH inpatient services, adults with intellectual disabilities required significantly higher staffing levels than those without

intellectual disabilities[54], and within specialist intellectual disability units, just under one third required specialist observation levels over a fifteen month period[59]. Lohrer et al.[54] reported 'enhanced observations' were used with 12.5% of adults without intellectual disabilities compared to 43.5% of adults with intellectual disabilities within GMH inpatient services. The use of 'enhanced observations' with adults without intellectual disabilities is at a rate similar to that reported by others[110, 111].

Seclusion, Physical Interventions and Pro Re Nata Medication. The authors of six papers reported data about the use of seclusion and broader physical interventions within specialist intellectual disability inpatient services[38, 42, 57, 99, 109, 112]. A single study reported data about the use of *pro re nata* medication [38], and two studies compared seclusion rates for inpatients with and without intellectual disabilities. Turner and Mooney[109] reported that adults with intellectual disabilities used seclusion at almost twice the rate of those in a GMH inpatient service (6.4% compared to 3.5%), but those admitted to specialist inpatient services spent significantly less time in seclusion than those with intellectual disabilities admitted to GMH services. In contrast, a recent study by Van Melle et al.[57] reported neither a diagnosis of intellectual disability, nor autism, was associated with increased seclusion use in GMH services.

No further comparisons were made to inpatients without intellectual disabilities and/or autism, but some reductions in the use of physical interventions and PRN medication were associated with new programmes or changes in practice[15, 38].

Within a survey of hospitals in a single study, higher use of seclusion and physical intervention were seen within the independent sector compared to the National Health Service in Britain, although the rates of patient injuries were the same[99]. Comparing the data reported about the use of restrictive interventions with adults with intellectual disabilities to other studies indicated that they were used more frequently used [113]. Bakken and Hoidal[60] reported that 51% of inpatients with intellectual disabilities utilised seclusion which was higher than that reported by other authors within low and medium secure forensic services[114].

Measures of Patient Experience. There were only eight papers that reported outcomes associated with the patient experience for adults with intellectual disabilities[8, 37, 99, 101, 115-118]. All studies made use of measures of patient experience within specialist intellectual disability inpatient services but made no comparisons to patients without intellectual disabilities, and a single literature review included patient experiences of those with intellectual disabilities and/or autism within GMH services.[116]

Met and Unmet Need. Two studies measured met and unmet needs as reported by family, staff and service users, with admission being associated with increased met needs and decreased unmet needs[8, 115]. Hall et al.[8] explored staff, service users and parent/carer views of inpatient needs in comparison to those receiving treatment in the community. Service users reported satisfaction with their met needs following community treatment, however, staff reports were not consistent; staff identified more unmet needs relative to those who had received inpatient care[8]. Hellerud and Bakken[115] reported that admission to inpatient services was associated with an increase in met needs, but families expressed concern about the risk of abuse, lack of specialist knowledge, and challenges with

understanding the detention process as well as cultural and language differences in how mental health is understood. Two further studies explored service user views and experiences during admission within inpatient specialist intellectual disability services where topics such as discomforting environments, staff support and relationships, being far from home and family, and limited opportunities to participate in decision making were noted[117, 118].

Carer Burden. Carer burden was examined within the only clinical trial included within this systematic review and was noted to be high upon initial baseline assessment[37]. Carer burden did not increase for those who were allocated to outreach community-based treatment, and decreased slightly over time, but not significantly. Comparisons to those allocated to inpatient admission could not be made due to missing data.

Complaints and Visits. It was noted in one study that fewer complaints, and a higher number of visitors were reported for adults with intellectual disabilities within National Health Service specialist intellectual disability inpatient services in Britain relative to the private/independent sector[99].

Assessments of Quality of Life. Two studies made references to assessments of quality of life, one following admission to a specialist intellectual disability assessment and treatment unit, and the other following discharge from GMH and/or specialist intellectual disability services[116]. Davies et al.[101] reported significant increases quality-of-life at discharge (compared to at admission), indicating improvements in quality of life during admission. A literature review by Chowdhury and Benson[116] reported improvements in quality-of-life after discharge from inpatient services to homes in the community, with improvements being most prominent within the first 6-months to year, after which improvements plateaued or declined.

Secure Forensic Services for Adults

The authors of twenty-four studies considered one of the outcome domains following admission to forensic or secure inpatient services for adults with intellectual disabilities and/or autism[21, 27, 39, 44-46, 66-75, 114, 119-125].

The majority of studies took place within the United Kingdom, with the exception of two describing adults with and without intellectual disabilities with forensic needs detained within GMH, specialist intellectual disability and forensic inpatient services in Canada[27, 70], and two studies (using the same sample) which included forensic patients in United Kingdom and the Netherlands[68, 71]. Within the United Kingdom, inpatient forensic services are traditionally categorised into locked rehabilitation, low, medium, and high secure services. These units tend to be characterised by high staff to patient ratios, with increasing assessment of risk resulting in increased restrictions i.e. more locked areas, higher numbers of restricted items and increased safety in physical structure such as removal of ligature points[126]. The number of included papers across the four levels of security were as follows: locked rehabilitation, n = 2, low, n = 5, medium, n = 10, and high secure, n = 7. The majority focused upon describing the care pathway and outcomes.

Measures of Effectiveness. Effectiveness, mostly length of stay, was considered within nineteen studies [21, 27, 39, 44, 46, 66, 67, 69, 71-75, 114, 119, 121, 123-125].

Length of Stay. Forensic inpatients in the United Kingdom tended to have a shorter length of stay than those in similar services within the Netherlands[46]. Within the United Kingdom, adults with intellectual disabilities were reported to have a longer length of stay than patients without intellectual disabilities within medium and high secure inpatient units[27, 66, 124], but this difference was only found to be significant in one paper [124]. A single study explored length of stay within low secure units but made no comparisons to those without intellectual disabilities[75]. Previous studies reported data to suggest that people with intellectual disabilities who have forensic needs tend to have a lengthy hospital stay which can exceed 10 years[21, 67]. However, within one study, when length of stay was calculated using all admissions to secure/forensic inpatient services, adults with intellectual disabilities had a shorter length of stay than those without intellectual disabilities[67]. Stays within inpatient forensic services tend to be longer than those within GMH and specialist intellectual disability inpatient services[38, 86], and increased risk associated with criminal offending behaviours is likely to account for the longer length of stay within forensic hospitals[127].

Length of stay for individuals with intellectual disabilities were comparable across low and medium secure inpatient services within another study[119] whilst a longer stay was noted for patients with intellectual disabilities and a co-occurring personality disorder[124, 125]. Whether detention in hospital was ordered by a court did not appear to lead to a longer length of stay [75].

For those with both autism and intellectual disabilities, no significant differences in length of stay were reported relative to those with intellectual disabilities only in one study[39], while in two further studies, autistic adults were reported to have a shorter length of stay[44, 69]. However, there are studies indicating that autistic adults have longer stays within inpatient forensic services[128, 129]. Senn et al.[46] reported that autistic inpatients were less prevalent within forensic services within the United Kingdom relevant to the Netherlands.

Discharge Pathway. Nine studies reported information relating to discharge outcomes for forensic services[39, 67, 73, 75, 114, 119, 121, 123, 125].

Discharges from secure/forensic inpatient services were frequently characterised by involvement with another service or care provider, rather than absolute discharge to the community. As perhaps would be expected, there was evidence that low secure services discharged more frequently to the community, with earlier studies showing more discharges to a home or the family home, while later studies were more likely to describe discharge to 'group' homes or residential care[119, 123]. Within several papers, it was reported that between 20 to 91% of those discharged within the United Kingdom remained subject to the Mental Health Act (1983)[114, 119, 123, 130].

Individuals within medium and high secure care tended to stay within secure inpatient services, and discharges tended to associated with transfer to another secure inpatient setting[75, 130]. This was not only illustrated by discharge data but also by the source of the admission as described by Chester et al.[67]. They and colleagues

reported that 51.5% of patients with intellectual disabilities were admitted from medium secure, 10.6% were from low secure, and 13.6% were from high secure settings. A similar pattern was found for patients without intellectual disabilities, although this group were significantly more likely to be admitted from a high secure service and significantly less likely to be admitted to high or medium secure services direct from the community. They also noted that patients with intellectual disabilities were less likely to be admitted to hospital via a court ordered admission, and more likely to experience transfer to services of the same or increasing security than patients without intellectual disabilities[67]. For those with intellectual disabilities and a diagnosis of personality disorder, there were no differences in discharge outcomes within a forensic inpatient service relative to those with intellectual disabilities without a diagnosis of personality disorder[125].

Clinical Outcomes. Numerous clinical or risk assessments and outcome measures were discussed within five papers about admission to forensic inpatient services[44, 67, 74, 75, 124]. These included the Health of National Outcomes Scores for people with learning disabilities [HoNOS; 105], the Historical, Clinical and Risk – 20 [HCR-20; 131], the Psychopathy Checklist Screening Version[132], and mental health and behaviour, e.g., Emotional Problems Scale – Behaviour Rating Scale and Self-Report Inventory[133]. Most comparisons were made between groups of adults with intellectual disabilities, where authors demonstrated that risk and symptoms were improved at discharge relative to admission, lower for those who had been discharged compared to current inpatients, or higher for those who were subject to more restrictive practices[21, 44, 69]. These findings suggested that admission is associated within clinical improvements over time.

There was some evidence that adults with intellectual disabilities who have associated forensic needs tend to score higher on the HCR-20 in comparison to those without intellectual disabilities[67]. In a different study, this was also the case for adults with intellectual disabilities who had a personality disorder; they scored higher on the HCR-20 than those with intellectual disabilities who did not have a diagnosis of personality disorder and those who did not have intellectual disabilities, but did have a diagnosis of personality disorder[124]. In a further study, HoNOS scores for adults with Asperger syndrome significantly decreased from admission to discharge, and higher scores on this measure were not associated with increased use of seclusion for this patient group[44].

Criminal Offending or "Offending-Like" Behaviours. Further offending behaviours or reconvictions (including aggression and violence) were examined in eight papers exploring forensic inpatient services for individuals with intellectual disabilities[67, 71, 74, 75, 119, 121, 123]. Reconviction rates were lower than displays of 'offending-like behaviours', with the former ranging between 3 to 11% for those discharged, and the latter ranging between 30 to 58% over follow-up periods of 5 to 12 years[123, 130]. A diagnosis of personality disorder was associated with a *higher* post discharge conviction rate in adults *without* intellectual disabilities, whereas individuals with intellectual disabilities and a co-occurring personality had a higher post discharge conviction rate than individuals with intellectual disabilities without a diagnosis of personality disorder[124]. In a single study within the United Kingdom, there was evidence that more frequent aggression was observed by those with intellectual disabilities detained under Part II of the Mental Health Act, 1983, compared to Part III[75]. Challenging behaviour and violent incidents

were noted to reduce over longer admissions[134], and further instances of 'offending-like' behaviours were associated with re-admission and transfers to higher security services[123]. Those with intellectual disabilities and/or autism were not more likely to display physical violence relative to those within these disabilities[71].

Readmission. Readmission rates for adults with intellectual disabilities within inpatient forensic services were reported to vary between 20 to 44% across low, medium, and high secure services across five papers[27, 74, 119, 121, 123].

Readmission to medium and low secure units was associated with discharge to the community, along with multiple changes to residence, rather than discharge or transfer to another inpatient service, unsurprisingly considering this group remained within inpatient services[123, 130]. Readmission appeared due to criminal offending, or behaviour that challenges, rather than mental ill health[123]. However, in a single study comparing adults with and without intellectual disabilities who have forensic histories there was no difference in readmission rates over a ten year period[27].

Measures of Patient Safety. Aspects of patient safety were examined within ten studies[39, 44, 68-71, 74, 75, 114, 125].

Use of Observation Levels, Seclusion, and Physical Intervention. A small number of papers explored observation levels, seclusion rates and physical interventions within inpatient forensic services[39, 44, 45, 75, 114, 125]. Studies predominantly reported data about rates of seclusion, physical intervention and/or rapid tranquilisation or enhanced observations. No significant differences were noted in use of seclusion or physical restraint for those with and without intellectual disabilities within high security hospitals[70]. Several papers[39, 114, 125] explored patient safety outcomes in a medium secure service across a six-year period and reported no significant differences in use of seclusion, physical intervention or observation levels between adults with and without personality disorder who had intellectual disabilities[134].

However, the authors of one paper reported significantly higher levels of enhanced observations and use of physical interventions for autistic inpatients compared to their non-autistic peers[39]. Further papers reported that the use of seclusion with autistic adults in medium and low secure services was higher than those with a diagnosis of paranoid schizophrenia, but lower than those with a diagnosis of emotionally unstable personality disorder or dissocial personality disorder[125]. There was some evidence to indicate that autistic inpatients within high secure hospitals are secluded more frequently and for longer relative to non-autistic inpatients[69].

Reed et al.[75] compared those detained under Part III and II of the Mental Health Act, 1983, within the United Kingdom within in a low secure unit and noted the *higher* use of physical restraint, intervention and seclusion and more instances of aggression amongst those detained under Part II, relative to Part III which are those who were admitted to hospital via order of a Crown court. Those detained under Part II were more likely to have a diagnosis of pervasive developmental disorder, which included autism, whereas those detained under Part III were more likely to have a diagnosis of personality disorder and present with self-harm[75].

Measures of Patient Experience. Four studies investigated aspects of the patient experience within forensic inpatient services[21, 23, 45, 122]. A systematic review and Delphi study[21] identified patient and carer experience as an important indicator of service quality within inpatient forensic services for people with intellectual disabilities and/or autism. Three studies, excluding the systematic review by Morrissey et al.[21] investigated patient experience within inpatient forensic services, with one focusing specifically on family and home visits[122]. Two papers made use of semi-structured interviews and identified hospital admission as 'helpful' although the environment was characterised as 'noisy' and 'stressful', with both studies recognising loss of freedoms and restrictions of personal items as challenging for patients[23, 45]. Restriction of items associated with circumscribed interests was noted to be difficult for autistic adults. Despite these restrictions, satisfaction with quality of life were comparable or higher for autistic adults within high security compared to other detained forensic patient groups[45]. Williams et al.[23] interviewed a small sample of seven women with intellectual disabilities detained in hospital. They reported that these women found hospital admission helpful, including the treatment offered, but at the same time, they found their setting undesirable, experienced some interpersonal conflict with other inpatients, and wanted to live in the community.

Family contact and home visits were shown to be high in a retrospective casefile review of inpatients within a medium, low and 'locked-rehab' forensic service, with 81% maintaining some degree of contact with their relatives. This included 44% receiving a family visitor, and 54% undertaking a home visit during a 12-month period[122].

Inpatient Treatment for Children and Adolescents

Measures of Effectiveness. There were twenty different studies that investigated aspects of effectiveness associated with admission to a psychiatric inpatient service for children and adolescents[25, 28, 30, 31, 33, 47-53, 76, 78-81, 135, 136].

Length of Stay. Mean length of stay was available from thirteen papers for children and adolescents, min = 13.4 days, max = 263 days[28, 33, 47-49, 52, 53, 76-81]. Length of stay data indicated that a shorter length of stay was associated with admission to specialist higher dependency intellectual disability inpatient services, relative to secure open inpatient services [79], relative to the length of stay associated with admission to GMH inpatient services[76]. Further still, one group of authors reported that there were no differences in length of stay for children and adolescents with or without autism who also had intellectual disabilities[77]. However, a database review of public health services in Canada noted longer psychiatric hospitalisations for autistic adolescents and young adults compared to those in infancy and childhood[47]. The findings from three further studies indicated that the implementation of an autism-specific care pathway shortened length of stay for autistic children, but not significantly[52, 53, 81].

Two papers focused specifically on adolescent GMH inpatient services during the COVID-19 pandemic[33, 48], noting a shorter inpatient length of stay after the COVID-outbreak, and although based upon small numbers, a shorter length of stay was noted for autistic adolescents relative to those with both autism and intellectual disabilities[33].

Discharge Pathway. Only one paper explored the discharge pathway from specialist intellectual disability inpatient services[79], while another explored discharge pathways from forensic medium secure units[136]. Smith & Burney[79] examined discharges of children and adolescents with moderate intellectual disabilities from one open unit, and those with mild intellectual disabilities from a different open or a low secure unit. Both, Smith and Burney[79] and Livanou et al.[136] reported that discharges from secure units were most often to another specialist and highly staffed unit, including forensic inpatient or secure services, sometimes for adults. Discharge from the open units was more likely to be back to the family home[79]. It was noted that males with neurodevelopmental disabilities, including those with intellectual disabilities and autism, were more likely to be transferred to an adult secure psychiatric service (low, medium, or high) but the authors did not report whether these services were specialist[136]

Clinical Outcomes. Four studies measured symptomatology over time following inpatient admission for children and adolescents with intellectual disabilities and/or autism[28, 33, 76, 80]. The authors of two studies reported improved symptoms following admission to a GMH inpatient service for children with intellectual disabilities and/or autism[28, 33]. There was also evidence to indicate improvements in symptoms following admission to a specialist intellectual disability inpatient service which included autistic children[80]. The authors of the final study to examine clinical outcomes reported that children with intellectual disabilities and/or autism admitted to specialist intellectual disability inpatient services had fewer symptoms and problems at discharge compared to admission, than children admitted to GMH inpatient services[76]. However, overall, the degree of symptomology and problems was higher for children and adolescents with intellectual disabilities and/or autism relative to those without these disabilities at both admission and discharge.

Admission and Readmission. Ten studies reported admission and re-admission rates[25, 30, 31, 47, 48, 50, 51, 78, 135, 136]. Evidence suggested that children and adolescents with mild intellectual disabilities were more likely to be admitted to GMH inpatient services, and those with more severe intellectual disabilities were more likely to be admitted to specialist intellectual disability inpatient services[76, 79]. Males were more likely to be within forensic inpatients services[136]. There was also evidence from a single study that readmission rates to specialist intellectual disability inpatient services were lower than that seen following discharge from GMH inpatient services for children and adolescents with intellectual disabilities and/or autism[78].

For autistic inpatients, admissions were noted by some groups as disproportionately higher than for those without autism and increasing over time[49, 50, 79, 137, 138]. This included increasing admissions of autistic children with and without intellectual disabilities to non-psychiatric settings for mental ill health[47, 48, 51]. Whilst Kalb et al.[25] noted an increased admission rate for those with autism compared to those without autism, they reported that there had been no change in the number of autistic children and adolescents presenting to accident and emergency departments in the United States due to mental ill health, or behaviour that challenges, between the years 2010 to 2013. However, in another study[50] from the United States with just over 2 million participants, a significant increase in hospitalisation during the years 1999 to 2009 was associated with a diagnosis of autism,

excluding intellectual disabilities, and the most cited reason for admission was psychiatric disorder; autistic teenagers were more likely to be admitted, a finding echoed within data from Canada[47]. Within these two studies, psychiatric care was the most expensive medical cost incurred for autistic children and young people. A substantial increase was noted in the number of discharges of autistic children and adolescents within another study[50], but no associated increase in rates of admission for children and adolescents who had both autism and intellectual disabilities[50]. A single study noted a decrease in child and adolescent admissions to both the emergency room and the psychiatric inpatient units for those diagnosed with autism during the first month of the COVID-19 outbreak[48].

Measures of Patient Safety. The literature about patient safety within child and adolescent inpatient services for those with intellectual disabilities and/or autism was scant. There were only three published papers within this domain, and they were about the same clinical service using the same data[52, 53, 81]; both physical interventions and intramuscular injection as *pro re nata* medication were examined when used with autistic children and adolescents. The authors reported that following the implementation of a new autism specific inpatient care pathway, the use of physical interventions, and intramuscular injection decreased relative to the prior care pathway[52, 53].

Discussion

The aim of this systematic review was twofold: (a) to describe the different models of psychiatric inpatient service provision for children, adolescents, and adults with intellectual disabilities and/or autism, and (b) to evaluate outcomes from admission with reference to treatment effectiveness, patient safety, and patient experience, as found within the peer-reviewed literature.

Generally, there were two main models of inpatient psychiatric care described, but there was complexity, and there are differences between countries. These were admission to a specialist intellectual disability or a GMH inpatient service, whether for children, adolescents, or adults with intellectual disabilities and/or autism, with or without forensic needs. It was noted that specialist intellectual disability inpatient services appeared more commonly in the United Kingdom. Within GMH inpatient services, admissions were to beds within the same unit as other patients without intellectual disabilities and/or autism, or to beds that were said to be explicitly for people with intellectual disabilities and/or autism, sometimes located elsewhere, and where staff may have specialist knowledge, but were characterised as part of a GMH inpatient service[8, 56]. It was the case that while these services were within or described as GMH services, they did provide some specialist assessment and treatment specific for those with intellectual disabilities and/or autism, indicating a need for specialist staff and services when working with this patient population within GMH services. All services provided 24-hour care, some were locked, and inpatients had access to a multidisciplinary team, and a range of bio-psycho-social interventions, while specialist services tended to have staff with specialist training and experience in working with people with intellectual disabilities and/or autism, and “adapted” clinical interventions and care-pathways[1, 3-5, 8, 14, 37, 58, 130]. This was not always the case within GMH inpatient services.

It was noted that adults with borderline to mild intellectual disabilities appeared more likely to be admitted to GMH inpatient services relative to those with more severe disabilities who were more likely to be admitted to specialist inpatient service[5, 6, 38]. More males with intellectual disabilities and/or autism tended to be admitted, and this was most marked for autistic people, and those admitted to forensic inpatient services. There was evidence that while those from minority ethnic communities were over-represented, they were more likely to be admitted to GMH inpatient services, while those who were White, tended to be admitted to specialist services.

Effectiveness

General Mental Health and Specialist Intellectual Disability Inpatient Services for Adults. Turning to consider treatment effectiveness, data about length of stay indicated that adults with intellectual disabilities and/or autism had a similar mean length of stay within GMH inpatient services than those without these disabilities when "long stay" patients were excluded. The mean length of stay within specialist intellectual disability inpatient services was substantially shorter compared to mean length of stay for adults with intellectual disabilities and/or autism admitted to GMH inpatient services, again, when long-stay patients were excluded. However, when the median length of stay was ~~examined~~examined, differences were observed. The average median length of stay revealed that adults with intellectual disabilities had the shortest length of stay within GMH inpatient services, staying for a shorter period than those without such disabilities, while those admitted to special intellectual disability inpatient services had the longest length of stay, Table 5. However, there are limitations associated with these data. Firstly, they are based upon relatively few observations, secondly, not all authors reported both the mean and the median length of stay, thirdly, studies took place at different times and within different countries where services may be organised differently. These findings are likely related to too few observations within and across studies, and a much larger study would be needed to provide a robust estimate. Finally, a shorter length of stay may not be associated with greater effectiveness, and instead, the opposite. It may be more appropriate to examine readmission within a short period of time (e.g., 30-days) which appears more likely for people with intellectual disabilities [139], or the frequency of delayed discharge [140]. ~~These findings are likely related to too few observations within and across studies, and a much larger study would be needed to provide a robust estimate.~~

Considering discharge, a substantial proportion of inpatients returned to their prior residence when discharged relative to those who moved to live at a new location[2-4, 6, 14, 61, 100], which appeared to be associated with a longer length of stay[87]. Those discharged from specialist inpatient services were less likely to be from "out of area" and more likely to return to live at home[7, 26]. There was some evidence that this group required higher levels of care upon discharge from hospital[41]. There was evidence to suggest that readmission rates to GMH or specialist inpatient intellectual disability services did not differ[5, 7], but they may be more likely to attend accident and emergency for a period of time following discharge[108]. However, there was evidence that those with borderline to moderate intellectual disabilities had higher readmission rates relative to those with more severe intellectual disabilities[14, 58].

Admission to a psychiatric hospital was *associated* with a reduction in clinical symptoms[7, 26, 92], while there was some evidence that admission to a GMH inpatient service was associated with an increase in clinical symptoms for some patients with intellectual disabilities and/or autism[92] with further evidence that autistic inpatients experience an increase in symptoms upon admission relative to those with only intellectual disabilities[98]. The only clinical trial to have been completed in this area evidenced that both inpatient admission and enhanced care in the community led to improvements in psychiatric symptomatology and there was no difference between the two care models[37]

Secure Forensic Services. Data about length of stay for adults with intellectual disabilities and/or autism admitted to forensic services suggested that this group may stay longer[27, 66, 124, 128, 129], or for shorter periods[44, 67, 69] than inpatients without these disabilities indicating inconsistency within the literature. There was some evidence that a diagnosis of personality disorder may be associated with a longer length of stay within forensic services[124, 125]. There was also evidence that autistic inpatients have a longer length of stay[128, 129].

Discharge into community settings were more frequent from low secure services, while moving to another forensic inpatient service was more common within medium and high secure hospitals[75, 130]. It was noted that over time, discharge to residential care settings, relative to the family home, had become more common[119, 123]. There was evidence that admission to secure forensic services was associated with improvements in clinical symptoms and a reduction in criminogenic risk[21, 44, 69], including challenging behaviour and aggression[123]. There was also evidence that readmission rates for those with intellectual disabilities and/or autism were not elevated following discharge relative to those without these disabilities[27].

Inpatient Services for Children and Adolescents. For children and adolescents, there was evidence that admission to specialist higher dependency services was associated with a shorter length of stay relative to open secure inpatient services [79] and in comparison to GMH inpatient services[76]. For autistic children and adolescents, there was evidence that this group had a longer length of stay relative to others[47]. There was also some evidence that admission rates were shortened during the COVID-19 pandemic[33, 48]. There were relatively fewer papers that focused specifically on discharge pathways for children and adolescents, other than tentative evidence to indicate that this group, when admitted to secure services were more likely to transfer to another specialist unit, including secure inpatient services, while those within non-secure units tended to return home[79, 136].

There was evidence that admission to inpatient services was associated with a reduction in clinical symptoms amongst children and adolescents with intellectual disabilities and/or autism[28, 33, 76, 80], bearing in mind that this conclusion is based on fewer papers, relative to the literature about adults. There was also evidence that admission to a specialist inpatient service was associated with greater improvements, and few readmissions, relative to admission to GMH inpatient services[76, 79]. However, admission rates over time for autistic children and adolescents were noted to be increasing[49, 79, 137], including to non-psychiatric settings even though this was for problematic mental health[25, 50].

As with the adult literature, children and adolescents with mild intellectual disabilities appeared more likely to be admitted to GMH inpatient services, while those with more severe intellectual disabilities were more likely to be admitted to specialist inpatient services[76, 79].

Patient Safety

General Mental Health and Specialist Intellectual Disability Inpatient Services for Adults. Patient observation levels were noted to be higher for inpatients with intellectual disabilities, relative to those without[54] with higher observations rates needed within GMH inpatient services. Inpatients with intellectual disabilities were secluded more frequently than those without, but the rate was lower within specialist services[109]. However, there was evidence from a single study that seclusion rates were not elevated for inpatients with intellectual disabilities and/or autism within GMH inpatient settings[57], while further evidence suggested that seclusion and physical interventions were higher for inpatients with intellectual disabilities and/or autism within independent sector hospital relative to the National Health Service in Britain[99].

Secure Forensic Services. There was evidence that there were no differences in the use of seclusion, physical interventions, and observation levels for those with and without intellectual disabilities and/or autism within secure forensic services[70, 74, 114, 125]. This was not the case for autistic inpatients, where increased observation levels and physical interventions, including seclusion, were reported[39, 44].

Inpatient Services for Children and Adolescents. Relatively few papers had been published that focused upon patient safety during admission for children and adolescents with intellectual disabilities and/or autism which is surprising considering the inherent vulnerability of this population. There was some evidence that the implementation of an autism-focused care pathway led to reduction in the use of physical interventions, including *pro re nata* medication[52, 53].

It is important to note that Morrissey and colleagues [21] defined patient safety within forensic services for people with intellectual disabilities as being defined by premature death and suicide, physical health problems, excessive use of medication, restrictive practices (restraint, seclusion, aggression), and victimisation and safeguarding. Within the included studies, there was little focus upon these domains other than restrictive practices, and this should be addressed within future studies. There is a literature focused upon understanding the experience of being restrained with people with intellectual disabilities indicating that it is a negative experience, leading to increased distress in some cases, with some having experienced abuse [141-143], while there is also some evidence that increased observation levels may improve engagement and relationships [144].

Patient Experience

General Mental Health and Specialist Intellectual Disability Inpatient Services for Adults. None of the included studies focused upon the experiences of inpatients within intellectual disabilities within GMH inpatient services. Findings from the included papers about admission to specialist inpatient service indicated an increased rate of met need associated with admission[8, 115]. There was evidence to indicate that family members have difficulties with

understanding aspects of an inpatient admission, and expressed concern about the risk of abuse and the lack of specialist knowledge[115]., while at the same time expressing relief that their loved one is receiving care [115]. Inpatients reported concerns about staying within challenging environments, issues with staff support and relationships, being away home and family, and concerns about being able to take part in decision making[117, 118]. There was evidence that admission was associated with improvements in quality of life[101, 116].

Secure Forensic Services. Service users were seen to characterise their admission as helpful but found the environment challenging, particularly with the restrictions that are common within secure forensic services[23, 45]. There was some evidence that autistic adults reported satisfaction with their quality of life within high secure hospitals, relative to other inpatients[45]. There was also evidence that family contact and home visits were frequent within low, medium, and 'locked-rehab' forensic services[122].

Inpatient Services for Children and Adolescents. None of the eligible studies focused upon the patient experience associated with admission to a psychiatric hospital for children and adolescents with intellectual disabilities and/or autism, or their families.

Strengths and Limitations

Within this systematic review, we have synthesised data and findings across a large number of papers with differing methodologies, which was challenging due the breadth of findings and associated heterogeneity. While challenging, our focus upon admissions for children, adolescents, and adults with intellectual disabilities and/or autism across GMH, specialist intellectual disability, and forensic inpatient services is a strength. Our search strategy and inclusive approach allowed for a thorough synthesis of findings across a range of studies. A further strength is the method we used with integrate and synthesise our findings according to whether they were relevant to key aspects care, namely, treatment effectiveness, patient safety, or patient experience; an approach taken by others who have completed related work[21]. However, the included literature is problematic due to a preponderance of observational designs where researchers have collected data retrospectively, or prospectively, describing and contrasting different groups. While highly informative and valuable, these designs do not allow for clear conclusions about causality. Further, inpatient psychiatric care has changed over time. The majority of studies involving adults had taken place from 2000 to 2019, with only 8 studies having taken place prior to 1999. For studies involving children, which was sparse relative to the adult literature, only 1 study had taken place prior to 2009, with all other studies being conducted after this period. The design of inpatient psychiatric care changes with time as units and services are redesigned or new services, interventions, and policies are developed and implemented. These changes may have had an impact upon some of our outcomes (e.g., length of stay, seclusion rates, physical interventions, and prescribing). For example, there was evidence that length of stay was shortened following the implementation of an autism-specific care pathway [52, 53, 81]. While it is the case that inpatient psychiatric care has changed over time, it is also the case that definitions of both autism and intellectual disabilities have changed which may have led to heterogeneity between studies and affected conclusions drawn. The majority of the included papers had taken place after the year 2000, and diagnostic conceptualisation of both intellectual disabilities and autism were relatively

clear. Nevertheless, wider societal and professional understanding of both intellectual disabilities and autism has improved throughout this period which would mean that specialised knowledge about developmental disabilities within GMH inpatient services has also improved.

However, the evidence as it stands indicated that admission to a psychiatric hospital is *associated* with improvements in clinical symptomatology for children, adolescents, and adults with intellectual disabilities, whether they are admitted to GMH, specialist intellectual disability, or forensic inpatient services. There is a lack of sufficient evidence to drawn firm conclusions about whether GMH inpatient services with specialist expertise are helpful for some patients relative to specialist intellectual disability inpatient services that were characterised as not being part of GMH services. It was notable that there has been a single clinical trial comparing enhanced community treatment *vs*. inpatient treatment, demonstrating that both forms of treatment are associated with improvements in clinical symptoms, but there were issues with missing data[37]. However, undertaking research into complex mental health care systems, operating within both inpatient and community settings is challenging, as interventions are multi-professional and multi-faceted with a focus upon the biological, psychological, and social. It was noted that there was no description of psychiatric liaison. Richer and more thorough descriptions of the interventions that are offered to services users with intellectual disabilities and/or autism who have mental health disorders remains needed along with greater focus upon studies that describe lived experience. Comparing and contrasting different models of care proved challenging as much of this information may be found within documents that is not readily available within the peer reviewed literature (e.g., service specifications for inpatient services including details about staffing levels and eligibility criteria for admission, or data about observation levels, length of stay, seclusion rates, or use of *pro re nata* medication which may be seen as sensitive and not consistently placed within the public domain). Nevertheless, there was some evidence that admission to specialist services is associated with better outcomes for services users with intellectual disabilities and/or autism, recognising that services should work effectively to avoid unnecessary admission where possible in accordance with national policies within some countries[9, 10].

Future Directions

There was evidence that admission to specialist intellectual disability inpatient services is associated with better outcomes across several domains for service users with intellectual disabilities and/or autism, recognising that admission to these services was more likely for those with more severe intellectual disabilities. This in somewhat unsurprising considering that these services have expertise in working with this population, relative to GMH inpatient services. However, we were not able to conclude with certainty that these improvements are caused by an inpatient admission due to the preponderance of observational designs within the included literature and the challenges of conducting clinical trials within this area. There were few studies that focused on describing patient safety and experience, including restrictive practices, within GMH inpatients services which should be addressed, noting evidence that those with mild disabilities may be more likely to be admitted to these services. Further, there was a relative paucity of studies about the lived experiences of children and adolescents with intellectual disabilities and/or autism and their family following admission to an inpatient service which should also be addressed. Finally,

while conducting clinical trials to examine outcomes from an inpatient admission for this population presents with design challenges, large observational studies over time and the inclusion of common outcome measures would allow researchers to model causality, make comparisons between different service types, and would be remarkably valuable.

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