Systematic Review of Psychiatric Observation Units and Their Impact on Emergency Department Boarding

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Abstract

Objective: To investigate the effectiveness of acute short-stay hospital admissions in psychiatric observation units for improving the flow of patients with mental health presentations through the emergency department (ED).

Data Sources: CINAHL, MEDLINE, OVID, PsycINFO, PubMed, Web of Science, and Google Scholar were systematically searched for English-language studies from 1990 onward. Descriptors used to describe psychiatric observation units were identified, and in databases with MESH term availability, the terms "mental disorder" and "emergency services, psychiatric" were also utilized to further enhance the search.

Study Selection: A total of 6,571 studies were screened. The PICOS framework was used to determine the inclusion and exclusion criteria, and the process of study selection followed PRISMA guidelines. Articles were included if the unit studied had a length of stay (LOS) <72 hours and if patients suffered from a mental health condition and were treated as hospital inpatients.

Data Extraction: Reviewers performed data extraction and quality assessment of the included studies following the review protocol.

Results: A total of 14 psychiatric observation unit studies were included in the review: 5 in North America and 9 in Australia. Most of these units were in large urban general hospitals. There appears to be some improvement in ED LOS for patients with mainly crisis mental health presentations. Seven of the 14 studies specifically discussed ED LOS, and 6 of these studies showed mild to moderate improvement in ED LOS, ranging from 17 minutes to >11 hours.

Conclusions: Psychiatric observation units were mainly located in North American and Australian settings. These units may reduce ED LOS based on limited, poor-quality evidence. Further research is required to determine whether psychiatric observation units have ongoing effects on ED LOS and alleviate access block.

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Psychiatric observation units offer short-stay hospital admissions with the aim of reducing emergency department (ED) boarding (or access block hereafter) for patients with mental health conditions, a problem that emerged after deinstitutionalization in the United States and Australia.[1–3] Access block arises from simultaneous increasing demand for mental health care and a deficit in the supply of hospital and ED beds,[1] resulting in patients being unable to transition from the ED to a hospital bed within a reasonable time.[4,5] Patients with mental health conditions in the United States often have to wait in EDs for days before obtaining a psychiatric bed.[6] Psychiatric observation units might reduce these excessive ED stay times.

Psychiatric beds per capita have dropped markedly across the US private and public sectors over the past 50 years.[3,7,8] Currently, the United States has low numbers of psychiatric beds compared to other OECD (Organization for Economic Cooperation and Development) countries, and inpatient care no longer meets community demand.[3] In the United States, there are 22 psychiatric beds per 100,000 population, a figure markedly lower than the OECD average of 71 beds per 100,000 population.[8] Only 4 of the 35 countries in the OECD have fewer psychiatric beds than the United States.[8] The demand for these declining inpatient psychiatric beds has increased due to rising ED psychiatric demand. In the United States,[6] ED mental health and substance abuse presentations have increased by 44% from 14.1 to 20.3 presentations per 1,000 population between 2006 and 2014.[6,9] In the context of this increasing supply-demand mismatch for US psychiatric beds, inpatient length of stay (LOS)

Clinical Points

- Psychiatric observation units are mainly described in North American and Australian settings within large urban general or academic hospital centers.
- Psychiatric observation units mainly treat patients for <72 hours; these patients present predominantly with acute mental health crises or suicidality.
- There is currently insufficient evidence to determine definitively if such units have significantly impacted bed access block and improved patients' journeys through acute care.

declined from 12 to 6 days between 1990 and 2010.[10] Inpatient LOS 30-day readmission rates for schizophrenia (22.3%) are the second highest among all diagnostic groupings (the highest is congestive cardiac failure).[11]

There are concerns that declining access to psychiatric inpatient care in the United States has contributed to homelessness, incarceration, and suicide.[3,12] A study[13] in Massachusetts found that 27% of patients discharged from a state psychiatric hospital became homeless in 6 months. A similar study in Ohio found homelessness rates of 36%.[14]

There are concerns that US patients with psychotic conditions are often transinstitutionalized into prisons.[3,12,15] By default, US jails and prisons have now become the largest provider of psychiatric care.[15] It is estimated that 15%–16.6% of US jail and prison inmates have a psychotic condition.[16,17] Researchers have commented on the potential correlation between the 24% increase in US suicide rates between 1999 and 2014 and the decline in US psychiatric beds of 35% between 1998 and 2013.[8] A more detailed earlier study by Yoon and Bruckner[18] found reductions in public psychiatric beds were associated with increased suicide rates between 1982 and 1988, which was only partially compensated for by increased community mental health spending. US patients presenting with a mental health disorder wait much longer in the ED compared to those presenting with other health conditions.[19] Comparative ED wait times are 5 to 12 hours longer in the ED for patients with mental health disorders compared to other health conditions.[20,21]

Like the United States, deinstitutionalization in Australia resulted in low psychiatric beds per capita compared to the OECD average.[2] Australia is ranked in the lowest 8 countries in the OECD for hospital psychiatric beds per 100,000 population, having 39 beds per 100,000 population.[2] Australia's psychiatric sector has now reached the tipping point of high inpatient bed occupancy, which has directly led to significant ED boarding.[2] Australian national data showed that the 90th percentile ED wait times for patients with mental health conditions were 4.5 hours longer than for patients diagnosed with other health conditions.[19]

There has also been significant recent growth of young Australians presenting to the ED with mental health crisis–related and self-harm–related presentations.[22–24] In Victoria, Australia, between 2008 and 2009 and 2014 and 2015, ED mental health presentations for patients aged 0–19 years increased by 6.5% annually, compared to 2.1% for physical health presentations.[23] In NSW, Australia, the combined number of ED presentations for suicidal ideation, self-harm, or intentional poisoning increased by 27% annually for those aged 10–19 years between 2010 and 2014, which was the highest annual increase for all age groups.[24]

Access block consumes resources, increases overall bed scarcity, delays adequate psychiatric treatment, and may contribute to increased violence and use of restraint in the ED.[25] EDs are not an optimal environment for assessing patients presenting with a mental health crisis, and the busy ED environment can exacerbate mental distress.[26]

In Denmark, which reduced psychiatric beds by 39% since 1977, a comprehensive case register–based study[27] in 1999 supported the concerns raised above. This study[27] found a 100% increase in standardized mortality rate of suicides for patients with psychosis, a 6.7% annual increase in psychiatric patients within the criminal system, a several hundred percent increase in coercive activities in wards for some measures, and an increase in psychiatric bed occupancy from 80% to 100%.

In response, to overall hospital congestion related to health presentations, acute medical units (AMUs) have been implemented to provide care for patients requiring short LOS in the hospital (2 to 3 days) for medical reasons. Increasing systemic capacity by streaming short-stay patients with general medical conditions to AMUs has been shown to reduce overall inpatient LOS from 0.3 to 2.6 days and patient mortality to 8.8%, as well as to decrease ED overcrowding and the need for ambulance diversions.[28,29]

Psychiatric observation units are analogous to AMUs. Psychiatric observation units provide care for patients presenting with acute mental health crises or suicidal ideation and have LOS < 72 hours. This systematic review will examine key aspects of psychiatric observation units, including impact on ED LOS, readmission rates, use of restraints, and their location. To date, there has been no systematic review, to the best of our knowledge, of the psychiatric observation unit and its effectiveness.

METHODS

Search Strategy and Information Sources

This systematic review protocol was registered in PROSPERO (international prospective register of systematic reviews; registration number: CRD42022268749), and the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines were followed.[30]

Search Terms

Known studies were reviewed, and a scoping search was undertaken to identify the various descriptors used to describe psychiatric observation units in the literature. For this study, psychiatric observation units were defined as a stay < 72 hours. These were utilized as free text searches to further hone the search terms and reduce the number of irrelevant results. Given the wide variety of nomenclature for psychiatric observation units, the following terms were used in the master search: ("psychiatric illness" or "psychiatric disorder" or "psychiatric illness" or "psychiatric condition" or "psychiatric" or "mental health illness" or "mental health disorder" or "mental health condition" or "mental health" or "mental health crisis" or "psychiatric crisis" or "emergency psychiatric" or "psychosocial needs" or "psychiatry") AND ("short stay unit*" or "emergency care cent*" or "extended care unit*" or "assessment and planning unit*" or "behavioral assessment unit*" or "emergency psychiatric service*" or "satellite psychiatric ward*" or "short-stay inpatient psychiatric service*" or "emergency psychiatric unit*" or "brief admission unit in emergency psychiatry" or "psychiatric emergency cent*" or "psychiatric emergency service*" or "psychiatric decisions unit*" or "emergency psychiatric assessment treatment healing unit*" or "EmPATH" or "psychiatric emergency service*" or "psychiatric urgent care cent*" or "crisis stabilization unit*" or "regional dedicated psychiatric emergency services program" or "extended observation unit*" or "psychiatric observation unit*" or "brief admission unit* in emergency psychiatry" or "psychiatric emergency cent*" or "mental health decisions unit*" or "psychiatric urgent care cent*" or "voluntary crisis cent*"). In databases with MESH term availability, "mental disorder" and "emergency services, psychiatric" were also utilized to further enhance the search.

Databases

The 6 databases searched were CINAHL, MEDLINE, OVID, PsycINFO, PubMed, and Web of Science. Google Scholar was utilized with a keyword search, and the first 200 entries were included for screening.

Screening

Duplicate, title, and abstract screening was undertaken by the 2 co-lead authors (A.W.M. and J.W.), with conflicts resolved through discussion.

Eligibility Criteria

The PICOS (population, intervention, comparison, outcomes, and study) framework was used to determine the inclusion and exclusion criteria. The population was patients presenting to a hospital ED with a psychiatric illness, and the intervention was admission to an inpatient psychiatric short-stay unit. No restrictions were placed on controls, outcomes, or study design. The search included studies published from 1990 onward and was limited to English-language journals due to the lack of translation service availability. Only published studies were included, and authors were not contacted to obtain further information. Articles were included if the unit studied had an LOS < 72 hours, patients suffered from a mental health condition and were treated as hospital inpatients, and there were data relevant to the outcomes of interest. Articles were excluded when the LOS was > 72 hours, no full text was available, the care was community based, consult liaison psychiatry services were involved, and the population was intoxicated patients or patients without a mental health disorder.

Study Selection and Data Extraction

Full text screening was undertaken by the 2 co-lead authors. Data were extracted into tables by a lead and checked by the other lead. Conflicts were resolved through discussion and consultation with another author.

Risk of Bias

Risk of bias for the studies was conducted (J.W.) according to the ROBINS-I (Risk Of Bias in Nonrandomized Studies–of Interventions) assessment tool.[31]

RESULTS

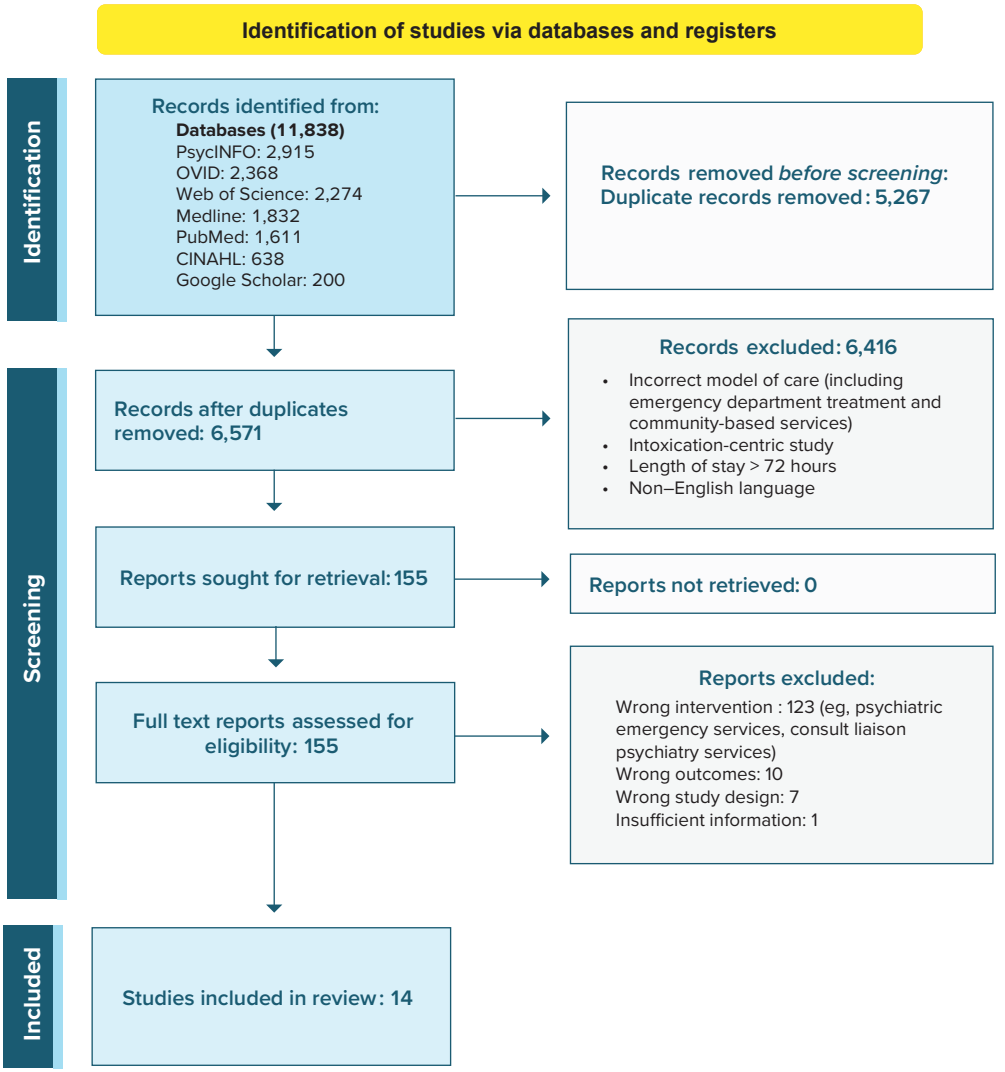
From the literature search, 11,638 studies were identified: 2,915 in PsycINFO, 2,368 in OVID, 2,274 in Web of Science, 1,832 in MEDLINE, 1,611 in PubMed, and 638 in CINAHL. An abridged search was run using Google Scholar, and the first 200 results were included. No additional studies were identified through screening of references. Following removal of duplicates, 6,571 studies were screened at the title and abstract level. Full text screening of 155 studies yielded 15 studies for inclusion. A PRISMA diagram detailing the identification, screening, eligibility, and included studies is shown in Figure 1. Given the heterogeneity of the studies and the models of care, we have undertaken a systematic descriptive review rather than a formal meta-analysis.

Summary of Included Studies

A total of 14 studies were included in the final review, and all were located in either North America (US and Canada) or Australia. Within North America, 4 units were located in the United States and 1 in Canada. The US medical centers in which the psychiatric observation units were located are urban areas, with the majority being academic medical centers.

The 9 Australian studies were conducted solely in the states of New South Wales and Victoria. All

Figure 1.
PRISMA Flow Diagram of Included and Excluded Studies



Abbreviations: BAU = behavioral assessment unit, ED = emergency department, IQR = interquartile range, LOS = length of stay, MH = mental health, NMH = non–mental health, PAPU = psychiatric assessment and planning unit, PECC = psychiatric emergency care center, SSU = short-stay unit.

the units in Australia were located in public sector hospitals and affiliated with the university sector.

North American Studies

Psychiatric Observation Units and Inpatient LOS. The number of beds for short-stay units ranged from 4 to 12 (Table 1).[32–36] The LOS goals for these units were within either 48 hours or 72 hours,[32,34,36] with the exception of 2 studies in which one had a goal of 1 to several days, and the other did not state an LOS goal.[33,35] Three studies reported actual LOS.[32,34,36] Two reported a similar mean LOS (2.4 and 2.5 days, respectively),[32,33] and the third reported a mean LOS of 25.2 hours.[36]

Patient Demographics and Diagnostic Profile. The patient demographics were similar among the 4 studies that reported these data.[32–34,36] Male to female ratios were mainly equivalent, with the male ratio ranging from 50% to 57% among the 4 studies.[32–34,36] The mean ages were in the mid-30s, ranging from 32 to 38.8 years.[33,34,36] Another finding was that 87% of the patients were between the ages of 15 and 45 years.[32]

Suicidal ideation was a common presenting complaint across the North American studies.[32–36] Two other common presenting complaints were interpersonal problems and depression.[32] The other common comorbid diagnoses were adjustment disorder and personality disorder.[32,34]

ED LOS. Three of the North American studies demonstrated changes in ED LOS for psychiatric patients.[33,35,36] All 3 studies showed a positive impact on

Table 1.

North American Studies of Psychiatric Observation Units

Study	Study Type	Unit Name, Hospital (country), Type	No. of Beds	LOS Goal (h)	Actual LOS	Male, %	Age, y	Presenting Complaint	Diagnostic Profile	ED LOS Pre (h:min)	ED LOS Post (h:min)	Readmission Rate	Use of Restraint	Other
Ash and Galletly, 1997[32]	Retrospective longitudinal	Crisis unit, Hillcrest Hospital (US), urban medical center	4	72	2.4 days	51	15–25: 28% 26–35: 32% 36–45: 27%	Interpersonal problems: 72%, suicidal thoughts/ behavior: 68%, depression: 62%	Adjustment disorder: 38%, BPD: 17%, substance abuse: 15%, personality (other than BPD): 10%	Not stated	Not stated	18% within 6 months	Not stated	
Kim et al, 2022[33]	Pre- and post-intervention retrospective	EmPATH (US), urban academic medical center	12	≥24	Not stated	43	35.9 ± 15.6	Suicide complaints only	Not stated	16:12	4:54	30-day readmission rate reduced from 20.3% to 15.2%	2.8%–3.8% (95% CI, 0.66–2.85)	Reduction in incomplete admissions
Mok and Watler, 1995[34]	Retrospective	SSU, Camp Hill Medical Centre (Canada), urban medical center	5	72	Mean of 2.5 days; range, 1–8	50	35.8 (range, 17–86), 84% aged 20–49	Suicidal ideation: 69%	Adjustment disorder: 46%, substance abuse: 30%, bipolar disorder: 8%	Not stated	Not stated	5.6% in 4 months	Not stated	Involuntary admissions: 11%, bed occupancy: 64%, patients aged >50 y had longer stays
Parwani et al, 2018[36]	Pre- and post-intervention retrospective	Crisis intervention unit (US), urban academic medical center	12	48	25.2 h	57.7	38.8	Not stated	Not stated	2:35 (median)	00:35 (median)	Not stated	Not stated	Reduced psychiatric inpatient admission rate
Stamy et al, 2021[35]	Pre- and post-intervention retrospective	EmPATH (midwest US), urban academic medical center	12	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	5:51 (psychiatric patients)	5:34 (psychiatric patients)	Not stated	Not stated	EmPATH took 21% of ED mental health presentations

Abbreviations: BPD = borderline personality disorder, ED = emergency department, EmPATH = emergency psychiatric assessment, treatment and healing unit, LOS = length of stay, SSU = short-stay unit.

reducing ED LOS, the biggest reduction being 11 hours and 18 minutes,[33] followed by a reduction of roughly 2 hours for the other 2 studies.[35,36] One study also found that the ED LOS became more predictable and less varied after implementing the EmPATH unit,[33] and another found that there were fewer incomplete admissions after EmPATH implementation.[35]

Readmission Rate

Three of the North American studies described readmission rates as an outcome.[32–34] One study[32] showed a 6-month readmission rate of 18% for the crisis unit as compared to the annual readmission rate of 30% for the whole hospital. Another study[33] demonstrated a reduction of 30-day readmission rates from 20.3% to 15.2% after implementing the EmPATH unit. The other study[34] described a readmission rate of 5.6% within 4 months without comparison.

Use of Restraint. Only 1 of the 5 North American studies reported changes to restraint use.[33] There was a statistically insignificant increase in restraint use in the ED from 2.8% to 3.8% after an EmPATH unit implementation.[33]

Risk of Bias. Four of the 5 North American studies[32–35] had a serious overall risk of bias mainly due to confounding; 1 study[36] had a moderate overall risk of bias (Table 2).

Australian Studies

Psychiatric Observation Units and Inpatient LOS. The majority of the Australian studies discussed psychiatric observation units with a maximum stay of 48 or 72 hours (Table 3). These units are small, with a 4- or 6-bed capacity and aim to have patients discharged home or transferred to an acute psychiatric unit within the stipulated time period. Two studies[37,38] discussed a behavioral assessment unit (BAU), which also accepts patients with behavioral disturbances that are influenced by intoxication who are likely to be discharged within 24 hours, with no requirement for a mental health diagnosis, in addition to patients with crisis-related presentation without intoxication. This BAU 6-patient model was included in our review, as the studies include pre- and post-

Table 2.
Risk of Bias Using ROBINS-I Assessment Tool

Study	Overall Risk of Bias
North America	
Ash and Galletly, 1997[32]	Serious
Kim et al, 2022[33]	Serious
Mok and Watler, 1995[34]	Serious
Parwani et al, 2018[36]	Moderate
Stamy et al, 2021[35]	Serious
Australia	
Brakoulias et al, 2010[43]	Moderate
Brakoulias et al, 2013[41]	Serious
Browne et al, 2011[45]	Serious
Huber et al, 2021[44]	Serious
Kealy-Bateman et al, 2019[40]	Serious
Mitchell et al, 2020[39]	Moderate
Seymour et al, 2020[42]	Moderate
Braitberg et al, 2018[37]	Serious
Daniel et al, 2021[38]	Serious

Abbreviation: ROBINS-I = Risk Of Bias in Nonrandomized Studies—of Interventions.

unit ED flow data, which is one of the key metrics for the efficacy of psychiatric observation units.

Three studies cited statistics for their LOS, and 2 studies gave the mean LOS. The first 3-site study reported an LOS of 32.9 hours (SD: 52), 23.6 hours (SD: 42.8), and 50.7 hours (SD: 45.8).[39] The second study reported 3 days with an SD of 2.4.[40] Another study[41] provided more detailed data of discharges (between 12 and 24 hours [58.7%] and 24 and 48 hours [27.2%]), showing that the majority of patients were discharged within 12–48 hours and medical complications were associated with a longer LOS. An 8-year follow-up study[42] stated that their inpatient LOS had declined, although no data were presented. Finally, the BAU study included ranges for LOS at discharge, which showed that the median LOS for mental health patients was 12.7 hours (interquartile range [IQR]: 5.6–19.7) and 5.2 for non–mental health patients (IQR: 2.7–13.0).[38]

Patient Demographics and Diagnostic Profile. Patient demographics collected varied, with the most consistent being age, and the mean age reported was in the mid to high 30s.[38,39,42–44] Patient sex varied over the 6 studies that included this statistic, with the percentage of male patients varying from 30% to < 70%.[38–40,42–44]

Four studies described the presenting complaint, with suicidal ideation or suicidality being the most common in 3 studies.[42–44] Adjustment disorder, depression, and borderline personality disorder appeared frequently.[39,42] Other results of note were a 20% involuntary status for patients in 2 studies,[38,40] an overall underlying increase in mental health presentations across all 3 sites in 1 study,[39] and problems associated with admitting intoxicated patients reported in another.[44] Two studies[39,44] demonstrated an increase in the number of mental health patients presenting to the ED over time.

ED LOS. Three of the 9 Australian studies[37,39,44] reported ED LOS. One study[45] stated that the introduction of the psychiatric observation unit reduced the proportion of patients waiting in the ED > 24 hours and improved the 8-hour admission rate. Of the 3 studies that stated ED LOS, 2 showed significant improvement in ED LOS,[37,44] while the third,[39] which covered 3 sites, showed improvement in ED LOS at only 1 site.

Readmission Rates. Readmission rates were reported in only 2 of the included Australian studies,[39,40] with both studies citing readmission rates at 28 days. The multisite study[39] reported readmission rates below the Victorian State target (14%); however, there was no comparison group in this study. The second study[40] described a readmission rate of 20% at 28 days, but again no comparison was provided.

Use of Restraint. Four of the 9 Australian studies discussed rates of restraint.[37,41,42,45] One study[41] stated that the requirement for physical restraint decreased by half in comparison with the "virtual" unit. Two studies provided data on restrictive interventions.[37,45] The first study[45] showed a significant decrease in the number of patients requiring physical restraint (38 pre, 17 post) and a significant decrease in the amount of time spent restrained (6.8 hours pre, 2.5 hours post). In the second study,[37] there were fewer calls for assistance with agitated patients (code gray; 17.7% pre, 14.7% post) and a significant reduction in the requirement for mechanical restraint (9.0% pre, 6.6% post) and therapeutic sedation (8.2% pre, 6.6% post). One study[42] compared use of chemical restraint in the psychiatric observation unit across 2 cohorts 8 years apart and found a significant reduction in the use of most benzodiazepines, with the exception of temazepam.

Risk of Bias. Six[37,38,40,41,44,45] of the 9 studies have serious overall risk of bias mainly due to confounding; the 3 remaining studies[39,42,43] have moderate overall risk of bias (see Table 2).

DISCUSSION

Psychiatric observation units are analogous to AMUs (for patients with general medical conditions) and have arisen in the context of increasing crisis-related ED presentations. They are mainly used for streamlining support for short-stay patients who require up to 72 hours of specialist psychiatric care. However, there has been no systematic review conducted to assess their overall effectiveness. This review of psychiatric observation units included 14 studies: 4 studies from the United States, 1 from Canada, and 9 from Australia. We found that there appears to be some benefit following the introduction of such units in ED LOS. Seven of the 14 studies reported ED LOS, a key ED metric, and the majority (6 of 7) showed some reduction in ED LOS. There were also improved key performance indicators through decreased readmission rates and use of restraint.

Table 3.

Australian Studies of Psychiatric Observation Units

Study	Study Type	Unit Name, Hospital, Type	No. of Beds	LOS Goal (h)	LOS Actual	Male, %	Age, y	Presenting Complaint	Diagnostic Profile	ED LOS Pre (h:min)	ED LOS Post (h:min)	Readmission Rate	Use of Restraint	Other
Brakoulias et al, 2010[43]	Retrospective case control	PECC; Nepean Hospital; public sector, urban hospital with strong university affiliations	4	48	Not stated	45.5	34.6 (mean) (SD = 13.94)	Suicidal ideation: 47.6% Intoxication: 22.6% Suicide attempt: 24.5% Depression: 20.2%	Adjustment disorder: 36% Depression: 25%, psychosis (including schizophrenia): 22.9%	Not stated	Not stated	Not stated	Reduced requirement for physical restraint, states halved	
Brakoulias et al, 2013[41]	Retrospective	PECC; Nepean Hospital; public sector, urban hospital with strong university affiliations	4	48	12–24 h: 58.7% 24–48 h: 27.2%	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Medical complications while in PECC increased LOS
Browne et al, 2011[45]	Retrospective case control	PAPU; Royal Melbourne Hospital; public sector, urban hospital with strong university affiliations	4	48	Not stated	Not stated	Not stated	Not stated	Not stated	Not stated	Reduced stays in ED > 24 h Improved 8-hour admission rate	Not stated	Patients requiring restraint: 38 pre, 17 post Time spent restrained: 6.8 h pre to 2.5 h post	
Huber et al, 2021[44]	Retrospective case series	PECC; St Vincent's Hospital; public sector, urban hospital with strong university affiliations	6	48	Not stated	63	36.5 (mean) (range, 13–92)	Suicidality: 52% Psychotic: 22%	Increase in admission of patients with suicidal ideation	13:00	8:00	Not stated	Not stated	Increase in patients with psychotic symptoms admitted to acute inpatient ward Increase in ED MH presentations over 10 y Intoxication is a barrier
Kealy-Bateman et al, 2019[40]	Retrospective	SSU; Royal Prince Alfred Hospital; public sector, urban hospital with strong university affiliations	6	72	3 days (SD = 2.4)	39	Not stated	Not stated	Personality disorders and acute stress reactions: 34% Intoxication: 18%	Not stated	Not stated	20% at 28 days	Not stated	Involuntary admissions: 20%

continued

Table 3 (continued).

Study	Study Type	Unit Name, Hospital, Type	No. of Beds	LOS Goal (h)	LOS Actual	Male, %	Age, y	Presenting Complaint	Diagnostic Profile	ED LOS Pre (h:min)	ED LOS Post (h:min)	Readmission Rate	Use of Restraint	Other
Mitchell et al, 2020[39]	Mixed prospective and retrospective case control	PAPU; Austin Health, Peninsula Health, Eastern Health; public sector, urban hospitals with strong university affiliations	4, 6, and 4	72	1.5 days (mean)	38.5	36.7 (mean) 16–25: 43% 26–35: 19.8% 36–45: 16.4% 46–55: 15.5% 56–65: 4.5% >66: 9.3%	Not stated	BPD: 20.7% Depression: 18.2% Adjustment disorder: 16.7%	5:05	5:57	11.3% at 28 days	Not stated	1 site improved ED flow, 2 sites worsened ED flow Increase in MH presentations across all sites
Seymour et al, 2020[42]	Retrospective case series	PECC; Nepean Hospital; public sector, urban hospital with strong university affiliations	4	48	LOS decreased from original study in 2007	2007: 41.9 2015: 45.6	2007: 35 2015: 36.1 (mean)	Suicidal ideation 2007: 47% 2015: 41.2% Suicide attempt 2007: 25.4% 2015: 25.5% Depression 2007: 22.9% 2015: 7.2%	Adjustment disorders 2007: 32.5%, 2015: 10.9% Depression 2007: 28.8%, 2015: 30.3% Substance abuse/ dependence 2007: 18.7% 2015: 12.2% Borderline personality disorder 2007: 9.6%, 2015: 13.6%	Not stated	Not stated	Not stated	Significant reduction in use of chemical restraint within the PECC over time	
Braitberg et al, 2018[37]	Pre- and post-intervention retrospective case control	BAU; Royal Melbourne Hospital; public sector, urban hospital with strong university affiliations	6	24	Not stated	Not stated	Not stated	Not stated	Not stated	7:03 (SD= 4:25)	3:30 (SD = 2:59)	Not stated	Code gray: 17.7% pre, 14.7% post Mechanical restraint: 9.0% pre, 6.6% post Therapeutic sedation: 8.2% pre, 6.6% post	72,389 ED presentations, 3,259 admitted to BAU (12 months)
Daniel et al, 2021[38]	Prospective observational	BAU; Royal Melbourne Hospital; public sector, urban hospital with strong university affiliations	6	24	12.7 h (median MH patients) IQR = 5.6–19.7 5.2 h (median, NMH patients) IQR = 2.7–13.0	Overall: 61.15% MH: 53% NMH: 69.3%	35 (mean) (range, 18–76)	Not stated	Psychiatric diagnosis: 49% Intoxication: 32% Psychosocial crisis: 11% Medical: 8%	Not stated	2:36	Not stated	8.5%	Few established care plans despite repeat ED MH presentations Involuntary: 21%

Abbreviations: BAU = behavioral assessment unit, ED = emergency department, IQR = interquartile range, LOS = length of stay, MH = mental health, NMH = non–mental health, PAPU = psychiatric assessment and planning unit, PECC = psychiatric emergency care center, SSU = short stay unit.

However, the majority of the studies were retrospective and of relatively poor quality due to risk of bias.

We characterize the psychiatric observation unit model and patient demographics from these data. These units have only been described in North America and Australia and were located in generally large urban medical centers. These units were typically 4–12 beds with an expected LOS of up to 72 hours. The sex distributions were approximately equal, and the average patient age was in the mid-30s. The most common presentation was suicidal ideation/suicidality, and the common diagnoses were adjustment disorder, depression, and personality disorder. Notably, psychotic patients do not appear as a significant proportion of the psychiatric observation unit population, perhaps because they require intensive care in an acute psychiatric ward and were generally transferred directly. The specific staffing models of these psychiatric units are not well reported, and this is a potential area for further investigation.

There were few data on involuntary or voluntary status of admission. Intoxicated patients are often difficult for psychiatric observation units to deal with, as they require medical observation. Mental health presentations accompanied by intoxication are often associated with prolonged ED wait times.[46] The BAU was introduced specifically to address this problem and has shown some promising results with respect to ED LOS.[37]

Strengths

This review has a number of strengths. The scoping search allowed us to identify the descriptors used for psychiatric observation units, which strengthened the search terms. We implemented a broad, inclusive search with a focus on population and intervention and no restriction on outcome or study design, which allowed us to maximize the likelihood of retrieving all relevant studies. This was further strengthened by searching multiple databases and reference screening of known studies. A further strength was that the data were analyzed by 2 reviewers independently.

Limitations

There are limitations, reducing our ability to generalize the findings. Only English-language studies were included in the review. There is a lack of studies on psychiatric observation units, and with the majority being retrospective studies with limited pre-post analysis, it is difficult to assess the true impact of these units. Often, studies were limited to recording of current data with no comparator given, and 1 study was a comparison to data from the same unit 8 years previously.[42] The models of care, LOS, patient populations, and outcome measures varied. Some studies did not cite their data, only commenting on an observed change, and this combined with the disparity of metrics meant we were unable to combine data for systematic statistical meta-analysis. Also, validity of the studies is limited, as the risk of bias for most are serious, with only a small number having moderate risk of bias.

Overall, it is difficult to make definitive conclusions, as the quality of the evidence is not high. There is some evidence of improvement of ED LOS following psychiatric observation unit implementation, and of the studies reporting ED LOS, only the multisite study showed an increase in ED LOS.[39] We were able to characterize the patient population with reasonable confidence, as there was concordance across the studies.

Further research is needed to more broadly evaluate the drivers of ED access block to design evidence-based interventions. As our systematic review only included studies located in North America and Australia, perhaps such access block may be a Westernized high-income country phenomenon. This raises the question of why mental health presentations are increasing in Westernized high-income countries. How are other countries treating their psychiatric patients in relation to the overall model of care across acute and nonacute hospital, community, and primary care sectors? Are there models of primary and community mental health care in other countries that provide more appropriate care for this cohort of patients?

Perhaps psychiatric observation units have arisen in Westernized high-income countries due to specific health care models, as well as demand-side and social determinants of psychiatric care seeking. We therefore need broader-ranging research into the demand-side and social determinants of ED mental health presentations, especially in Westernized high-income countries and more broadly for international context. In North America and Australia, further prospective pre- and post-treatment psychiatric observation unit evaluations will clarify the benefits of these units, if any, for the optimal management of mental health patients presenting to the ED.

CONCLUSION

Psychiatric observation units have been introduced to deal with increasing mental health ED presentations and bed access block, mainly in North America and Australia. There are currently insufficient data to determine if psychiatric observation units have significantly impacted bed access block.[3] There is some evidence of a decreased ED LOS in North America and Australia, but these studies are of poor quality. Only in Australia has there been a reduction in readmission rates and use of restraint. Streaming via psychiatric observation units may potentially be beneficial to the overall flow/patient journey and patient care outcomes.

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References

1. Di Somma S, Paladino L, Vaughan L, et al. Overcrowding in emergency department: an international issue. *Intern Emerg Med*. 2015;10(2):171–175.
2. Allison S, Bastiampillai T. Mental health services reach the tipping point in Australian acute hospitals. *Med J Aust*. 2015;203(11):432–434.
3. Allison S, Bastiampillai T, Licinio J, et al. When should governments increase the supply of psychiatric beds? *Mol Psychiatry*. 2018;23(4):796–800.
4. Forero R, Hillman KM, McCarthy S, et al. Access block and ED overcrowding. *Emerg Med Australas*. 2010;22(2):119–135.
5. Luo W, Cao J, Gallagher M, et al. Estimating the intensity of ward admission and its effect on emergency department access block. *Stat Med*. 2013;32(15):2681–2694.
6. Gabor D, Wolfe R, D'Onofrio G, et al. Emergency department crowding: the canary in the health care system. *NEJM Catalyst Innovations in Care Delivery*. Published September 28, 2021. Accessed September 12, 2023. https://catalyst.nejm.org/doi/full/10.1056/CAT.21.0217
7. American Psychiatric Association Presidential Report on the Assessment of Psychiatric Bed Needs in the United States. The psychiatric bed crisis in the United States: Understanding the problem and moving toward solutions. *Am J Psychiatry*. 2022;179(8):586–588.
8. Bastiampillai T, Sharfstein SS, Allison S. Increase in US suicide rates and the critical decline in psychiatric beds. *JAMA*. 2016;316(24):2591–2592.
9. Moore B, Stocks C, Owens P. Trends in emergency department visits, 2006–2014. The HCUP Report: Healthcare Cost and Utilization Project (HCUP): Statistical Briefs #227. AHRQ website. September 2017. Accessed April 7, 2023. https://www.hcup-us.ahrq.gov/reports/statbriefs/sb227-Emergency-Department-Visit-Trends.jsp
10. Organization for Economic Cooperation and Development. *OECD Health Statistics 2015*. OECD.Stat website. 2015. Accessed 7 April 2023. http://stats.oecd.org/#
11. Elixerhauser A, Steiner C. Readmissions to US Hospitals by Diagnosis, 2010. In: *Healthcare Cost and Utilization Project (HCUP) Statistical Briefs*. Rockville, MD: Agency for Healthcare Research and Quality (US); 2006 Feb. Statistical Brief #153. April 2013.
12. Torrey E, Entsminger K, Geller J, et al. *The Shortage of Public Hospital Beds for Mentally Ill Persons*. Treatment Advocacy Center website. 2012. Accessed 7 April 2023. https://www.treatmentadvocacycenter.org/storage/documents/the_shortage_of_publichospital_beds.pdf
13. Drake RE, Wallach MA, Hoffman JS. Housing instability and homelessness among aftercare patients of an urban state hospital. *Hosp Community Psychiatry*. 1989;40(1):46–51.
14. Belcher JR. Defining the service needs of homeless mentally ill persons. *Hosp Community Psychiatry*. 1988;39(11):1203–1205.
15. Sisti DA, Segal AG, Emanuel EJ. Improving long-term psychiatric care: bring back the asylum. *JAMA*. 2015;313(3):243–244.
16. Steadman HJ, Osher FC, Robbins PC, et al. Prevalence of serious mental illness among jail inmates. *Psychiatr Serv*. 2009;60(6):761–765.
17. James D, Glaze L. *Mental Health Problems of Prison and Jail Inmates*. US Dept of Justice, Office of Justice Programs, Bureau of Justice Statistics; 2006.
18. Yoon J, Bruckner TA. Does deinstitutionalization increase suicide? *Health Serv Res*. 2009;44(4):1385–1405.
19. Sweeny A, Keijzers G, O'Dwyer J, et al. Patients with mental health conditions in the emergency department: Why so long a wait? *Emerg Med Australas*. 2020;32(6):986–995.
20. Pearlmutter MD, Dwyer KH, Burke LG, et al. Analysis of emergency department length of stay for mental health patients at ten Massachusetts emergency departments. *Ann Emerg Med*. 2017;70(2):193–202.e16.
21. Conrad HB, Hollenbach KA, Gehlbach DL, et al. The impact of behavioral health patients on a pediatric emergency department's length of stay and left without being seen. *Pediatr Emerg Care*. 2018;34(8):584–587.
22. Delaney SK, Allison S, Looi JCL, et al. Rapid national increases in the hospitalisation of Australian youth due to intentional self-harm between 2008 and 2019. *Australas Psychiatry*. 2022;30(2):166–170.
23. Hiscock H, Neely RJ, Lei S, et al. Paediatric mental and physical health presentations to emergency departments, Victoria, 2008–2015. *Med J Aust*. 2018;208(8):343–348.
24. Perera J, Wand T, Bein KJ, et al. Presentations to NSW emergency departments with self-harm, suicidal ideation, or intentional poisoning, 2010–2014. *Med J Aust*. 2018;208(8):348–353.
25. Costumbrado J, Nikroo N, Guldner G. 10 Boarding psychiatric patients in the emergency department is associated with increased Emergency Department violence. *Ann Emerg Med*. 2018;72(4):S5.
26. Trethewey SP, Deepak S, Saad S, et al. Evaluation of the Psychiatric Decisions Unit (PDU): effect on emergency department presentations and psychiatric inpatient admissions. *Postgrad Med J*. 2019;95(1119):6–11.
27. Munk-Jørgensen P. Has deinstitutionalization gone too far? *Eur Arch Psychiatry Clin Neurosci*. 1999;249(3):136–143.
28. Reid LE, Dinesen LC, Jones MC, et al. The effectiveness and variation of acute medical units: a systematic review. *Int J Qual Health Care*. 2016;28(4):433–446.
29. Kelen GD, Scheulen JJ, Hill PM. Effect of an emergency department (ED) managed acute care unit on ED overcrowding and emergency medical services diversion. *Acad Emerg Med*. 2001;8(11):1095–1100.
30. Page MJ, McKenzie JE, Bossuyt PM, et al. *Declaracion PRISMA 2020: Una Guia Actualizada Para La Publicacion De Revisiones Sistematicas*. (The PRISMA 2020 statement: an updated guideline for reporting systematic reviews). *Rev Esp Cardiol (Engl Ed)*. 2021;74(9):790–799.
31. Sterne JAC, Hernán MA, Reeves BC, et al. ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ*. 2016;355:i4919.
32. Ash D, Galletly C. Crisis beds: the interface between the hospital and the community. *Int J Soc Psychiatry*. 1997;43(3):193–198.
33. Kim AK, Vakkalanka JP, Van Heukelom P, et al. Emergency psychiatric assessment, treatment, and healing (EmPATH) unit decreases hospital admission for patients presenting with suicidal ideation in rural America. *Acad Emerg Med*. 2022;29(2):142–149.
34. Mok H, Watler C. Brief psychiatric hospitalization: preliminary experience with an urban short-stay unit. *Can J Psychiatry*. 1995;40(7):415–417.
35. Stamy C, Shane DM, Kannedy L, et al. Economic evaluation of the emergency department after implementation of an emergency psychiatric assessment, treatment, and healing unit. *Acad Emerg Med*. 2021;28(1):82–91.
36. Parwani V, Tinloy B, Ulrich A, et al. Opening of psychiatric observation unit eases boarding crisis. *Acad Emerg Med*. 2018;25(4):456–460.
37. Braitberg G, Gerdtz M, Harding S, et al. Behavioral assessment unit improves outcomes for patients with complex psychosocial needs. *Emerg Med Australas*. 2018;30(3):353–358.
38. Daniel C, Mukaro V, Yap CYL, et al. Characteristics and clinical outcomes for mental health patients admitted to a behavioural assessment unit: implications for model of care and practice. *Int J Ment Health Nurs*. 2021;30(1):249–260.
39. Mitchell DA, Crawford N, Newham BJ, et al. The efficacy, safety and acceptability of emergency embedded psychiatry assessment and planning units: an evaluation of psychiatry assessment and planning units in close proximity to their associated emergency departments. *Aust N Z J Psychiatry*. 2020;54(6):609–619.
40. Kealy-Bateman W, McDonald A, Haber PS, et al. Development of a joint mental-health and drug health assessment unit and short-stay unit. *Australas Psychiatry*. 2019;27(4):374–377.
41. Brakoulias V, Seymour J, Lee J, et al. Predictors of the length of stay in a psychiatric emergency care centre. *Australas Psychiatry*. 2013;21(6):563–566.
42. Seymour J, Chapman T, Starcevic V, et al. Changing characteristics of a Psychiatric Emergency Care Centre. An eight year follow-up study. *Australas Psychiatry*. 2020;28(3):307–310.
43. Brakoulias V, Mandali R, Seymour J, et al. Characteristics of admissions to a recently opened psychiatric emergency care centre. *Australas Psychiatry*. 2010;18(4):326–329.
44. Huber JP, Wilhelm K, Landstra JM. Months of May: Mental health presentations and the impact of a psychiatric emergency care centre on an inner-city emergency department. *Emerg Med Australas*. 2021;33(4):691–696.
45. Browne V, Knott J, Dakis J, et al. Improving the care of mentally ill patients in a tertiary emergency department: development of a psychiatric assessment and planning unit. *Australas Psychiatry*. 2011;19(4):350–353.
46. Hsu CC, Chan HY. Factors associated with prolonged length of stay in the psychiatric emergency service. *PLoS One*. 2018;13(8):e0202569.