

PERSPECTIVE

When should governments increase the supply of psychiatric beds?

S Allison¹, T Bastiampillai^{1,2,3}, J Licinio^{1,4,5}, DA Fuller⁶, N Bidargaddi⁷ and SS Sharfstein⁸

Low numbers of hospital-based psychiatric beds create problems for people with severe mental illness (SMI), when they face extended emergency department (ED) waits, higher thresholds for admission to an acute bed, and short revolving-door stays with high rates of rehospitalisation. Limited access to inpatient treatment has been associated with higher suicide risk, premature mortality, homelessness, violent crime and incarceration. Ultimately, people with SMI can be transinstitutionalised to the criminal justice system. In the USA, for example, prisons have replaced mental hospitals as the largest institutions housing people with SMI. There is no international consensus on the safe minimum numbers of acute, forensic and rehabilitation beds needed to reduce these risks. As a consequence, Organisation for Economic Cooperation and Development (OECD) countries have wide variations in the mix of hospital beds with an average of 71 beds per 100 000 population. Policymakers face difficult choices with few studies to guide decisions on supplying beds. The UK Royal College of Psychiatrists offered a policy framework, which was adapted for Australia. The government of the State of South Australia increased the supplies of crisis, acute and forensic beds to meet a mandatory target to safely reduce mental health boarding in the EDs.

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INTRODUCTION

Over recent decades, Organisation for Economic Cooperation and Development (OECD) countries continued to reduce their supplies of hospital-based psychiatric beds.^{1–3} In 1998, the OECD countries had an average of 99 psychiatric beds per 100 000 population, which was reduced to 71 psychiatric beds per 100 000 population by 2015.¹ Bed closures occurred at different rates across individual OECD countries with only a few nations such as Germany going against the trend by increasing bed numbers.² As shown in Figure 1, these widely different national policies produced large variations in total psychiatric bed numbers across the OECD from Japan (266 per 100 000 population) to Mexico (four per 100 000 population).¹ Within these various policy settings, some countries still had an overreliance on hospital care with too little investment in community resources.³ At the opposite extreme, other countries were unable to meet hospital demand due to low bed numbers, even when diverting admissions with community mental health services.^{4,5}

THE RISKS OF LOW PSYCHIATRIC BED NUMBERS

The OECD emphasises the importance of maintaining a balance between adequately funded community and inpatient services.³ English-speaking countries have relatively low numbers of psychiatric beds (Figure 1), with the USA, UK and Australia illustrating the immediate and long-term problems associated with insufficient beds to meet hospital demand. In their comments on Australia for example, the OECD noted, 'Without sufficient high-quality community care, and with low inpatient

psychiatric bed numbers, patients with severe mental illness (SMI) risk worsening symptoms, more stays in emergency settings, and more hospital readmissions'.^{4,5}

Under these circumstances, general hospital psychiatric wards experience high levels of stress with managerial pressure for early patient discharge, ultra-short admissions, increased numbers of involuntary patients, disrupted wards and overworked demoralised staff.^{5–7} These ward pressures adversely affect patient care. Stretched inpatient services are less able to respond to acute suicide risk, as reported with the reducing bed numbers and the rising suicide rates in the USA.⁸ People may be unable to access community alternatives, and even if they do, higher rates of suicide are found among patients treated by community teams compared to hospital inpatients, especially among vulnerable people living alone, as reported in the UK.⁹ Bed closures have also been associated with increased violence and higher crime rates,¹⁰ and ultimately people with SMI may be transinstitutionalised into the prison system, as described in the USA.¹¹

The Scandinavian case registry studies provide the best observational data on the effects of closing psychiatric beds. Denmark and Sweden reduced their bed supplies below the OECD average (Figure 1). During an initial period of bed closures with inadequately funded community alternatives, the Danish registry studies found problematic services (100% psychiatric bed occupancies, and increased coercion on psychiatric wards), and higher patient risk (increased rates of suicide and incarceration amongst people treated for SMI).¹² The Swedish registry studies identified higher mortality amongst patients treated for SMI, and the investigators concluded, 'reduction in beds is the most probable explanation for the rising mortality' (Ösby *et al.*¹³).

¹Department of Psychiatry, College of Medicine and Public Health, Flinders University, Adelaide, SA, Australia; ²Mind and Brain Theme, South Australian Health and Medical Research Institute, Adelaide, SA, Australia; ³Executive Director Mental Health Strategy, Department of Health, Adelaide, SA, Australia; ⁴Head, Mind and Brain Theme, South Australian Health and Medical Research Institute, Adelaide, SA, Australia; ⁵Project 5-100, South Ural State University Biomedical School, Chelyabinsk, Russian Federation; ⁶Treatment Advocacy Center, Arlington, VA, USA; ⁷Department of Personal Health Informatics, School of Medicine, Flinders University, Adelaide, SA, Australia and ⁸President Emeritus, Shepherd Pratt Health System, Baltimore, MD, USA. Correspondence: Professor S Allison, College of Medicine and Public Health, Flinders University, Adelaide, SA, 5042 Australia. E-mail: stephen.allison@flinders.edu.au

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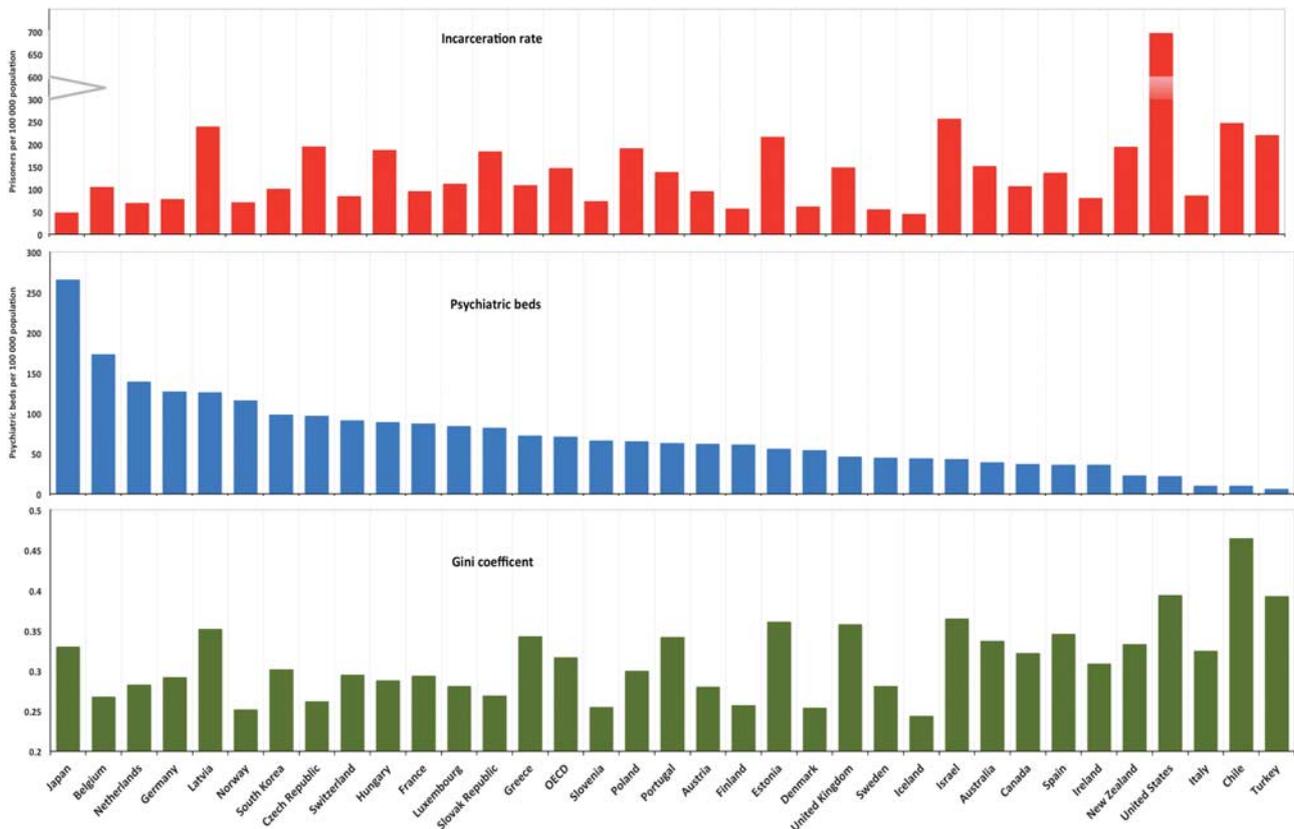


Figure 1. Psychiatric beds, incarceration rates and Gini coefficients for income inequality across the OECD countries. OECD; The Organisation for Economic Cooperation and Development. Source: The OECD.

Violent crime also increased in Sweden as bed supplies fell; 10.7% of male patients and 2.7% of female patients were convicted of a violent offence within 5 years of first diagnosis.¹⁰ In contrast, the Finnish registry studies found less suicides with well developed community programs, and bed supplies nearer to the OECD average (Figure 1),¹⁴ although there were reports of higher mortality among people with SMI.¹⁵

THE LIMITS OF COMMUNITY TREATMENT

Community mental health services provide the first line of mental health treatment.^{3,16} Community programs can offset the risks of bed closures by providing effective person-centred care, and reducing the need for acute, forensic or rehabilitation admissions. However, community programs cannot completely replace inpatient care.^{3,16} Certain minimum numbers of acute admissions are essential for people with SMI who present with combinations of high risk (to self or others), severe dysfunction, physical health problems, unsatisfactory living circumstances, and treatment resistance requiring expert diagnostic re-assessment.

New community initiatives are most effective at diverting admissions in countries where there is an overreliance on inpatient care, and underinvestment in the community.⁷ For example, Japan has the highest numbers of beds in the OECD including many long-stay beds (Figure 1), and the OECD concluded, ‘there is reason to believe that patients in long-stay beds could be effectively cared for in their homes or in the community’.¹⁷ At the other extreme, new community initiatives may be unable to further reduce admission rates in countries that already have low bed numbers, and limited access to inpatient care.^{7,18} In the UK, for example, an impressive array of community

programs has not completely offset the safety issues associated with a reduction in beds from 93 to 46 per 100 000 population, which was associated with higher rates of involuntary admission,¹⁹ more out-of-area transfers when patients cannot be admitted to their local hospital,^{2,20} and high rates of suicide among patients treated in the community.⁹

THE CRIMINALISATION OF SMI

The degree of transinstitutionalisation from hospitals to prisons is controversial with conflicting findings from decades of research.²¹ In 1939, Lionel Penrose described the inverse relationship between mental hospital and prison populations in a cross-sectional study of 18 European countries.²² Recently, the Penrose Hypothesis was supported by a longitudinal study of bed closures in six South American countries.²³ While South American prison populations were rising with law-and-order policies, the increases were more significant in countries with greater reductions of psychiatric beds. However, there is probably no straightforward relationship between prisoner numbers and psychiatric bed numbers (Figure 1).²¹ Macroeconomic conditions are an important covariate. Income inequality can be associated with higher rates of violent crime,²⁴ with countries with higher income inequality tending to have larger prison populations. There is also a tendency for countries with lower psychiatric bed supplies to have greater income inequality.^{1,25} In Figure 1, the Gini coefficient is used as a measure of income inequality for the OECD countries, ranging from 0 (where everyone has the same income) to 1 (where one person has all the income).²⁵ Seventeen OECD countries had Gini coefficients above 0.3, including the 10 countries with the lowest bed numbers. The UK also had a Gini coefficient above 0.3, and on

Table 1. State hospital beds in the United States (1955–2016), Source: the Treatment Advocacy Center

Year	State hospital bed numbers	Per 100 000 population	As a percentage of the historical peak
1955	558 922	337.0	100
2005	50 509	16.8	5.0
2010	43 318	14.1	4.2
2016	37 679	11.7	3.5

present trends, looks set to join the cluster of countries with higher income inequality and lower bed numbers on the right hand side of the figure.

As an example of these complex interactions, the USA has a combination of rising income inequality, low bed numbers^{1,25} along with limited investment in community mental health,²⁶ and a very large total prison population (more than 2.2 million prisoners).²⁷ With these policy settings, prisons appear to have replaced mental hospitals as the largest institutions housing people with SMI.^{11,28,29} Approximately 1.8 million bookings of mentally ill offenders take place each year in the USA, and at least 20% of US jail and prison inmates are reported to have SMI, more than 350 000 prisoners on any given day.³⁰ Prisons have become the default option for the long-term institutional care of people with SMI, partly because they offer ‘an inexpensive solution for housing and treating the mentally ill’ (Sisti et al.,²⁹). The alternatives to prison continue to diminish as US states close their publicly funded beds for SMI. State hospital bed numbers have fallen by a remarkable 97% from the peak in 1955 (337 psychiatric beds per 100 000 population) to a low in 2016 (11.7 per 100 000 population: Table 1).³⁰ There were 37 679 staffed beds remaining for a population of nearly 320 million people. Forensic patients occupied nearly half (47%) of these beds, leaving very limited access to inpatient psychiatric care for individuals with the most acute or chronic SMI unless they have committed crimes (6.2 beds per 100 000 population).

Due to the bed shortages in the USA, people with SMI can only be provided with short revolving-door acute admissions. The average length of stay (LOS) declined from 12-days in 1990 to a very low 6-days by 2010 (compared to the OECD average of 28-days), with 10-days for psychotic conditions, and 6-days for affective disorders.¹ Ultra-short LOS limits the opportunities for adequate acute inpatient care including full assessment, addressing social and interpersonal issues, and dealing with comorbid addiction or physical illness.⁶ The average LOS is below the 2–4 weeks of treatment required for clinically significant improvement from psychiatric medication,^{31,32} including antipsychotics,^{33–35} antidepressants^{36–38} and mood stabilisers.³⁹ Ultra-short LOS is associated with a high 30-day re-admission rate for schizophrenia (22.3%) in the USA, second only to congestive heart failure (24.7%).⁴⁰ Inadequate inpatient treatment may increase the post-discharge risks of suicide and violence.^{8,11,28}

If problems emerge with limited access to inpatient care, and ultra-short LOS, US states should respond by increasing the supply of publicly funded beds, in order to meet reasonable standards of care for people with SMI, especially for those caught up within the criminal justice system. Most states maintain waiting lists of prisoners with SMI who need forensic admissions to their local state hospital. Some of these wait times are months long, and many states have been threatened with lawsuits or held in contempt of court for failing to transfer prisoners with SMI to a state hospital bed.⁴¹ Some states could reduce wait times behind bars with relatively modest increases in the number of state hospital beds.⁴² However, increased funding for beds would

require state legislators to change the de facto policy of prison as the cost saving ‘default option’ for people with SMI.²⁹

SETTING MANDATORY TARGETS

People with SMI are stigmatised by societies around the world,⁴³ and governments can view increased spending on psychiatric beds as politically unpopular. Without strong political support, mental health services will continue to be relatively poorly funded, and people with SMI will have worse health and social outcomes than other members of the community, including higher premature mortality from preventable diseases.^{13,15,43,44} In response, mental health experts advocate for distributive justice with a fair allocation of resources across the health system, including parity of access to inpatient care for people with either mental health or physical health presentations.⁴³

This principle has been adapted for the UK by an independent Commission convened by the Royal College of Psychiatrists (RCP) to examine access to acute mental healthcare. The Commission recommended, ‘patients with mental health problems should have the same rapid access to high-quality care as patients with physical health problems’ (Crisp, Smith and Nicholson,²⁰). In UK general hospitals, rapid access is defined by the 4-hour rule that mandates ‘a maximum four-hour wait for admission to an acute ward’ (Crisp, Smith and Nicholson,²⁰). To meet the 4-hour rule for acute mental health presentations, the RCP recommended that acute bed occupancy needs to be kept below 85%, so that people with SMI can have ready access to a local admission.⁴⁵ The average mental health LOS should be maintained between 2–4 weeks to allow time for clinically significant improvement from inpatient treatment.^{31,32} In terms of the approximate psychiatric bed numbers required to meet these targets, a US-based expert consensus group estimated that it requires 50 (range 40–60) publicly funded adult psychiatric beds per 100 000 population to provide adequate inpatient care for people with SMI.⁴⁶

There are few real-world studies of governments expressly increasing the supply of publicly funded adult psychiatric beds to improve access to acute care,^{20,45} however a government initiative in the State of South Australia provides a precedent.⁵ Australia has a national policy of minimising hospital-based mental healthcare, and developing innovative programs for community mental health and primary care.⁴ These national policy settings led to the closure of publicly funded hospital psychiatric beds in the State (down to 32 per 100 000 population across the public and private sectors in 2012–2013) to fund an expansion of community residential beds (up to nine per 100 000 population in 2014–2015).⁴⁷ The closures took the state well below the Australian (39 per 100 000 population),⁴⁸ and OECD (71 per 100 000 population)¹ averages for hospital beds.

In 2014, the general hospitals reached a tipping point in the State of South Australia (Figure 2).^{5,49,50} Psychiatric bed occupancies rose above 100% with mental health boarding in the emergency departments (EDs) and medical wards. Due to a shortage of forensic beds, prison inmates were also being transferred directly to the psychiatric intensive care units, limiting direct access from the EDs. Capacity was further reduced by patients requiring long stays in the acute wards, due to low numbers of rehabilitation places. Average ED waits for mental health presentations spiked as publicly funded beds were reduced to 27 per 100 000 population in 2012–2013. In October 2014, average ED waits peaked at 16 h, which reflected the long waits for an acute admission (34 h for patients with mental health presentations versus 9 h for patients with non-mental health presentations).^{5,50} Of particular concern, thousands of people with SMI waited over 24 h for an acute bed in busy and overstimulating EDs during 2014, increasing the risks of chemical and mechanical restraint. When patients could not be admitted, the burden tended to fall on the relatives, spouses and friends who provided

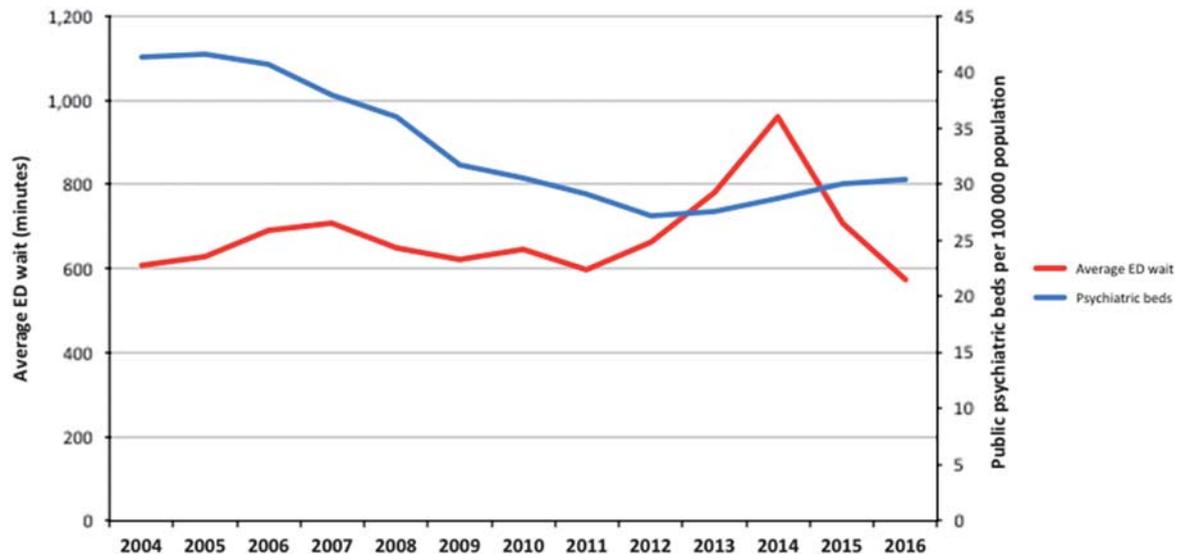


Figure 2. Publicly funded psychiatric beds and Emergency Department (ED) average wait times for the general hospitals. Source: Australian Institute of Health and Welfare, Australian Government.

care and support during the exacerbation of SMI.⁵¹ Australian Coroners found potentially lethal effects from limited access to inpatient treatment and long ED waits.^{52,53} During the 2014 ED crisis, the state suicide rate was the highest in a decade (14.2 per 100 000 population), above the national Australian average (12.0 per 100 000 population).⁵⁴ Over the previous decade, the state's suicide rate had ranged between 11.0 and 12.9 per 100 000 population.⁵⁴

In November 2014, the State Minister of Health responded to the worsening clinical situation and community concerns by announcing a mandatory target that no patient should wait for more than 24 h in an ED for an acute mental health admission.⁵⁵ To meet the ministerial target, the government increased the supply of hospital beds. The additional investment was allocated selectively to short-stay adult units for ED crisis presentations to the general hospitals (average LOS of 36 h); acute adult beds for SMI (two-week average LOS); and forensic beds, which reduced the transfer of prisoners to non-forensic psychiatric intensive care units. The reliance on community residential beds was reduced (from nine per 100 000 population to seven per 100 000 population). Following these changes, the State had 35 hospital beds per 100 000 population (across the public and private sectors), still below the Australian average. It is notable however that a 12% increase in publicly funded hospital beds (above the threshold of 30 beds per 100 000 population) reduced average ED waits to their lowest for over a decade (Figure 2),⁴⁹ despite a continuing increase in mental health presentations to the EDs. In association, the state suicide rate reduced from 14.2 to 13.4 per 100 000 population in 2015; South Australia was the only Australian state to record a decline in their suicide rate during 2015.⁵⁴

CONCLUSION

Governments in the USA, the UK and Australia have adopted policies aimed at minimising psychiatric bed numbers. These policies contrast with those of European countries such as the Belgium, Netherlands, Germany and Norway, where governments have maintained considerably higher numbers of psychiatric beds. Despite the potential risks of reducing access to psychiatric inpatient care, national and state governments in the USA, the UK and Australia continue to close psychiatric beds without fully

monitoring the real-world effects. The adverse outcomes are most evident in the USA, where the low availability of publicly funded beds is associated with the mass incarceration and homelessness of people with SMI, protracted bed waits by mentally ill defendants who require services to restore their competency to stand trial, and ED boarding that can last weeks. The availability of psychiatric beds is greater in the UK and Australia, but health services are now encountering major safety issues with ED boarding, out-of-area admissions, and an increased risk of suicide in community settings. These adverse effects may worsen as total bed numbers fall (below a range of 50–60 beds per 100 000 population for people with SMI). Given these risks, countries with lower numbers of psychiatric beds should follow the lead of the Scandinavian countries by creating disease registries to observe the effects of bed closures on the health and social outcomes of people with SMI. These observational studies should capture the adverse outcomes of SMI such as ED boarding, discharge from hospital to homelessness, incarceration, and suicide/suicide attempt, as well as the downstream financial costs of bed reductions within the health, justice and social welfare systems. For this research to be useful outside the country of origin, we need international agreement on the standardised definitions of the different types of psychiatric beds, and the relevant key performance indicators across the health, justice and social welfare systems. Such international studies could provide data-based evidence for governments on the optimal and safe numbers of psychiatric beds for the treatment of SMI.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

All authors contributed to concept development. The lead author wrote the first draft, and all authors were responsible for revising the correspondence.

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