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**Seclusion and restraint use in adult inpatient mental health care: An Australian
perspective**

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Abstract

Background: Australia is committed to reduce or eliminate the use of containment measures (seclusion and restraint) in mental health care. International research suggests that number of containment events and hours spent in containment are often concentrated in a small number of patients. Understanding the concentration of containment episodes can support the development of effective interventions.

Objectives: The purpose of this study is to explore the distribution and frequency of seclusion and restraint events and hours in adult inpatient mental health units in South Australia.

Design: A retrospective audit of seclusion and restraint events during the time period 1/1/2010-31/12/2011.

Setting: Eighteen (18) inpatient mental health units in South Australia.

Results: Containment events were concentrated among a relatively small proportion of patients (10% of patients accounting for nearly 40% of events), with the concentration even more evident for containment hours (10% of patients accounting for over 50% of hours). Rates of containment varied widely between units. The highest rates were in high dependency units, which also accounted for over 90% of patients with the highest percentage of events and hours. More males than females experienced containment, with a significantly larger proportion of males experiencing the highest number of hours in containment.

Conclusions: The concentration of containment events supports the validity of tailoring interventions, such as structured short-term risk assessment tools, reviewing repeat events and debriefing, to high-risk cases. These strategies should be used in conjunction with hospital-wide strategies with demonstrated efficacy, for example leadership, education, consumer involvement and data analysis.

Keywords: inpatient, containment, mental health, psychiatric, restraint, seclusion

Introduction

Containment measures such as seclusion and restraint are used in mental health care to manage risk of harm to patients and staff (Perkins, Prosser, Riley, & Whittington, 2012); yet they are associated with negative physical and psychological effects. This includes an increased chance of physical injury and death among patients as well as staff injury (Evans, Wood, & Lambert, 2003; Rakhmutaullina, Taub, & Jacob, 2013), and both patients and staff report trauma associated with the use of these containment measures (Frueh et al., 2005; Mohr, Petti, & Mohr, 2003; Robins, Sauvageot, Cusack, Suffoletta-Maierle, & Frueh, 2005; Sokol, 2010). Furthermore, the use of these measures raises ethical issues relating to patient rights and dignity, and runs contrary to recovery-oriented mental health care (Chang, Grant, Luther, & Beck, 2014; Mohr, 2010). Consequently there is an international mandate to reduce or eliminate these practices (Department of Health, 2008; Knox and Holloman, 2012). For example, in Australia the National Mental Health Seclusion and Restraint Project (2007–2009), known as the Beacon Project, was developed to establish centres of excellence aimed towards reducing seclusion and restraint in public mental health facilities.

Seclusion and restraint rates, duration and methods used in inpatient mental health care vary widely across countries and between units in the same hospital or area (Beghi, Peroni, Gabola, Rossetti, & Cornaggia, 2013; Knott, Pleban, Taylor, & Castle, 2007; Tekkas & Bilgin, 2010). These variations can be accounted for by characteristics of the settings and case mix, as well as different definitions and data collection techniques (Kruger, Mayer, Haastert, & Meyer, 2013). For the purposes of this study we have used the term ‘containment’ to refer to restriction of movement through physical (hands-on

immobilisation), mechanical (the use of devices such as lap belts or jackets) or environmental (confinement of the patient at any time of the day or night alone in a room or area from which free exit is prevented; seclusion) means.

Researchers often use different methods to calculate rates of seclusion and restraint and/or are not explicit in how rates were calculated, making comparisons between studies difficult (Bowers, 2000). In spite of these shortcomings, recent international and Australian investigation sheds some light on the scope of the issue. A systematic review by Beghi et al. (2013) of 49 studies published between 1990 and 2010 reported the prevalence of restraint as 3.8-20%. Male gender, young adult age, foreign ethnicity, a diagnosis of schizophrenia, involuntary admission, aggression or trying to abscond, and the presence of male staff on the unit were associated with the use of containment measures. In Australia, recent data on rates of seclusion from the Australian Institute of Health and Welfare (AIHW) reports 8.0 seclusion events per 1000 bed days in public acute hospitals in 2013-2014, a reduction from 15.5 events per 1000 beds days in 2008-09 and attributed to the national commitment to reducing seclusion in mental health facilities across Australia (AIHW, 2014). For South Australia, the AIHW (2014) report a seclusion rate of 4.5 events per 1000 bed days in 2013-2014, a reduction from 10.1 events in 2011-12.

Previous international research suggests that the majority of episodes of seclusion and restraint may be concentrated in a small percentage of patients. For example, Hendryx, Trusevish, Coyle, Short, and Roll (2010) explored the frequency and distribution of seclusion and restraint episodes at a state mental health hospital in the USA during the 2004 calendar year. The hospital included forensic, geriatric, and adult mental health

units, and a unit for developmentally disabled adults with co-occurring mental illness. They found that almost 29% of all seclusion episodes and 63% of all seclusion hours were concentrated among 10 patients. Similarly, 10 patients with the most restraint hours constituted nearly 65% of total restraint hours and 48% of all restraint episodes.

Whitehead and Liljeros (2011) conducted a retrospective study of all seclusion and restraint episodes between September 1, 1997 and March 1, 2005 in the Utah State Psychiatric Hospital in the USA. The hospital provided acute services for children, adolescents, and adults with severe mental illness, as well as forensic services. The study aimed to explore the distribution of patients who required one or more seclusion or restraint episodes. They found that 20% of patients with the most seclusion and/or restraint episodes accounted for approximately 75% of the total number of events. Ten percent of patients accounted for 61% of events, and 1% accounted for 21% of events. Knutzen et al. (2014) retrospectively explored the use of pharmacological and mechanical restraint in three Norwegian acute mental health units over a 2-year period (2004-2005). They found 9.1% of patients accounted for 39.2% of all restraint episodes. To our knowledge there are no published studies exploring whether the number of containment events and hours are similarly concentrated in the Australian inpatient setting.

Understanding the factors that contribute to the use of containment measures is an important precursor to the success of any proposed intervention to reduce or eliminate their use (Happell & Koehn, 2010). The purpose of this study is to explore the use of restraint and seclusion in 18 inpatient mental health units in South Australia, and report the distribution and frequency of seclusion and restraint events. In particular we tested

the hypothesis based on Hendryx et al. (2010) and others that the number of containment events and hours are concentrated in a relatively small number of patients. Understanding the concentration of seclusion and restraint episodes can support the development of effective interventions to reduce or even eliminate the use of these measures in inpatient mental health care.

Method

Design

A two-year retrospective audit (1/1/2010-31/12/2011) of restraint and seclusion events in 18 inpatient mental health units across metropolitan South Australia was conducted. These units comprised all public adult acute care and high-dependency units in the state and all inpatient forensic services.

Setting

There were nine general acute units (seven located within six general hospitals and two within a large psychiatric hospital), four forensic units (all of which operate as one service) providing acute and sub-acute care and rehabilitation services, and five high dependency units (HDUs) located within the services. Three of the HDUs were co-located with a general unit, with the other two located separately and used for seclusion and restraint by four of the general units. The remaining two general units did not have HDUs (but did have seclusion rooms) and containment events occurred within the unit. Patients secluded or restrained must be under an involuntary order under mental health legislation or be placed under an order at the time of enacting seclusion and/or restraint.

Data collection

Data from paperwork completed at the time of a seclusion or restraint event is entered by unit nurses into an electronic form used state-wide. The electronic form documents patient name/unit record number, age and sex; date and time of the incident; and checkboxes for reason for use of the measure (prevention of harm to self, harm to others, destruction to property, and an 'other' response with an open field), type of measure used (mechanical restraint, physical restraint, seclusion), and type of mechanical device(s) used. No information on diagnosis was available through the database. The unit where the patient is currently admitted is listed as the unit in the record, even if they are contained elsewhere (i.e. the unit does not have a HDU area or seclusion room). Therefore, records reflect the unit that a patient was admitted to at the time of their containment incident(s) and the decision of staff in that unit to initiate containment. All potentially identifying patient information was removed prior to the data being provided to the researchers, with a unique patient number provided for each recorded incident so that it could be determined how many patients were restrained and/or secluded more than once.

Ethical approval

Access to the data was approved by senior health management and the study was approved by the Flinders University Social and Behavioural Research Ethics Committee.

Data analysis

Restraint and seclusion rates were calculated for both events and restrained patients (i.e. the numerator is either number of events of restraint/seclusion or number of patients

who were contained at least once). Rates per 1000 occupied bed days was used based on a formula recommended by Bowers (2000), calculated by dividing the number of events or patients per month, by the number of occupied bed days (i.e. number of beds multiplied by number of days per month multiplied by percentage occupancy, which was set at 97% for all general/forensic units and 96% for HDUs) multiplied by 1000. This formula was used because Bowers (2000) considers it to have fewer issues than other rate calculations such as only considering bed numbers, and it also allows calculation of a rate based on percentage occupancy rather than patient census data (which was not available). Rates were calculated according to type of unit (general, forensic, HDU). Separate bed numbers were not available for those general units that were co-located with a HDU and these services were grouped under a separate category (97% occupancy was presumed).

Descriptive and inferential statistical analysis using IBM SPSS Statistics for Windows Version 22.0 were undertaken to examine demographics of patients, types of containment used, reasons for containment and duration of containment. Analysis was also undertaken on the distribution of events and hours of containment per patient. Significance of inferential tests was set at $p < .05$. For some statistics reported, n is lower than total containment events/patients due to missing data.

Results

Total number of containment events

There were 1614 containment events reported with an increase from 2010 ($n = 756$ events) to 2011 ($n = 858$ events). These events involved 617 patients contained at least once during that time period, with an increase from 2010 ($n = 281$ patients) to 2011 (n

= 336 patients). These events may have occurred during a single admission or during multiple separate admissions over the two-year period.

The overall rates of containment were 8.60 events (3.17 patients) per 1000 occupied bed days in 2010 and 10.17 events (3.98 patients) per 1000 occupied bed days in 2011. Rates of containment for each type of service unit, with the range of rates for individual units by event and patients, are presented in Table 1. For all service units patient rates were lower than event rates, indicating the impact of patients contained multiple times (this will be explored later). The influence of multiple events from the same patients on event rates was particularly apparent for the HDUs.

The HDUs exhibited the highest rates of containment over the two-year period, with 69.06 events per 1000 occupied bed days in 2010, and 78.91 events per 1000 occupied bed days in 2011. General units without a HDU had the lowest rates of containment (1.37 in 2010 and 2.38 in 2011 events per 1000 occupied bed days). Units with a co-located HDU exhibited rates between those calculated for the general and HDU units. Almost all events from these units involved patients admitted to the secure part of the unit. For forensic services, 78% of events where a particular unit was listed involved a patient in the acute care unit (40% of forensic events did not have a unit type, i.e. acute or rehabilitation, listed).

[Table 1 about here]

Demographics of patients

Of the 617 patients contained at least once during the data collection period, 424 were male (69%) and 193 were female (31%). A one-sample t -test between proportions was conducted to assess whether there was a significant difference between the percent of males and females who were contained at least once. The difference was significant, $t(616) = 10.03, p < .001$. For all types of service unit, there were significantly (all $p < .001$) more males than females contained. Over 60% of events involved a male (66%, $n = 1069$) with 34% ($n = 545$) involving a female patient.

The mean age of patients who were contained was 36.45 ($SD = 11.74$, $Range = 16-69$), with no significant difference in mean ages of male ($M = 36.05$, $SD = 11.86$) and female ($M = 37.33$, $SD = 11.45$) patients, $t(610) = -1.26, p = .21$, 95% CI $[-3.29, 0.72]$.

Types of containment used

Patients experienced a mean of 1.08 ($SD = 0.28$, $Range = 1-3$) types of containment within a containment event. In 130/1600 events (data was missing for 14 events) more than one type of containment was used. The majority of containment events involved seclusion ($n = 1545$, 97%). Physical restraint was used in 11% ($n = 172$) of events. Seclusion was recorded as being used with patients in all of the units, and physical restraint in all but three of the units (two general and one forensic unit). In 10 out of 14 mechanical restraint events the unit listed was a HDU; for the remaining four events, the patient was from a general unit ($n = 2$) or the unit was missing from the data ($n = 2$). The mechanical restraint devices used were: soft shackles ($n = 7$, 50%), hard shackles/leather restraints ($n = 4$, 29%), handcuffs ($n = 2$) and lap belts ($n = 1$). For the 12 mechanical restraint events where a body site was recorded, eight involved shackling

of both arms/wrists and legs/ankles and four involved shackling/handcuffing of arms/wrists.

Reasons for the use of containment were reported for 1538 events. The number of reasons reported ranged from one to five ($M = 2.08$, $SD = 0.87$). Of the three reasons included on the electronic form (prevention of harm to self, harm to others, destruction to property), which staff could tick, the most common reason recorded was prevention of harm to others ($n = 1288$, 84% events where a reason was reported), followed by prevention of destruction to property ($n = 519$, 34%) and prevention of harm to self ($n = 458$, 28%). The other reasons documented in the open field on the electronic form are included in Table 2.

[Table 2 about here]

Distribution of containment events and hours

Individual patients experienced between 1 and 40 containment events over the two-year period ($Mdn = 1$, $IQR = 1-3$). Of all patients, 57% ($n = 353$) experienced one containment event, with 90% ($n = 558$) of patients experiencing ≤ 5 containment events. There was not a significant association between number of containment events (one vs. multiple events) and sex, $\chi^2(3, N = 617) = 0.40$, $p = .53$. Patients with multiple containment events ($M = 34.56$, $SD = 11.17$) were, however, younger than those with only one containment event ($M = 37.89$, $SD = 11.97$), $t(610) = 3.50$, $p = .001$, 95% CI [1.46, 5.19].

Overall, containment events ranged from 1 minute to 96 hours in duration ($Mdn = 2.83$, $IQR = 1.5$ -4.5 hours). Examining total hours in containment per individual patient, the median containment duration was 4.17 hours ($IQR = 1.92$ -10.75, $Range = 1$ minute-254 hours, 40 minutes). Patients who experienced more than one containment event had longer duration in containment ($Mdn = 10.25$ hours, $Range = 8$ minutes-254 hours, 40 minutes) than patients with one containment event ($Mdn = 2.5$ hours, $Range = 1$ minute-96 hours), $U = 14,736$, $z = -14.38$, $p < .001$, $r = -.58$.

Table 3 presents an analysis of patients ranked into groups of 10 by most containment hours, with cumulative hours and events for each group (as per Hendryx et al., 2010). This table confirms that the number of containment events and the total containment hours are concentrated in a relatively small number of patients. The first 10 patients (2% of all patients) accounted for 22% of hours and 14% of events. The first 60 patients (10% of all patients) accounted for over 50% of containment hours and nearly 40% of events. The first 120 patients (20% patients) accounted for almost 70% of hours and over 55% of events. There was a significant association between total containment hours and number of events for patients, $\tau = .55$, $p < .001$ (one-tailed).

We examined in further detail the demographics of 120 patients (approximately 20% of all patients) who accounted for nearly 70% of hours and 55% of events. There were 87 (73%) males and 33 (28%) females, a difference that was statistically significant using a one-sample t -test between proportions, $t(119) = 5.52$, $p < .001$. The mean age was 34.38 ($SD = 11.08$, $Range = 18$ -63), with no significant age difference between males ($M = 33.49$, $SD = 10.64$) and females ($M = 36.73$, $SD = 12.02$), $t(118) = -1.43$, $p = .15$, 95% CI [-7.70, 1.23]. Of the 877 events involving these patients (844 of which

a unit was documented), 92% ($n = 780$) were in a HDU, 4% ($n = 36$) in a forensic unit, and 3% ($n = 28$) in a general unit.

[Table 3 about here]

Discussion

The results of this South Australian study support those of other international research (Hendryx et al., 2010; Knutzen et al., 2014; Whitehead & Liljeros, 2011) demonstrating that while a number of patients were secluded and/or restrained, the containment events were skewed and concentrated among a relatively small proportion of these patients (10% of patients accounting for nearly 40% of events). This concentration was even more evident when looking at containment hours (10% of patients accounting for over 50% of hours). These results are consistent with Knutzen et al's (2014) Norwegian study. However, when compared to the studies conducted in the USA (Hendryx et al., 2010; Whitehead & Liljeros 2011), these previous studies demonstrated smaller numbers of patients accounting for larger percentages of events and hours. This could be due to differences in the types of units included in the studies (for example, our sample did not include geriatric or child and adolescent units) and casemix. The focus of our study on adult inpatient care is a potential limitation of the study, and further research on the distribution of containment events that includes geriatric and child and adolescent units is warranted.

The overall rates of containment in the present study were 8.60 and 10.17 events per 1000 occupied bed days for 2010 and 2011, respectively. As discussed previously,

differences in definitions of containment, casemix, and formulas used for rate calculation (or lack of clarity in previous studies regarding what data/formula was used) across the literature make comparison between studies difficult. For example, due to the lack of information on total patient numbers our formula involved an estimate of percentage occupancy rather than actual patient census data as used by the AIHW (2014), a limitation of our study. Furthermore, the AIHW (2014) report seclusion data only whereas our study includes data on restraint and seclusion. In general, however, the results are broadly comparable to the seclusion rates reported by the AIHW (2014) for the whole of Australia for 2013-14 (8.0 events per 1000 bed days), but higher than the seclusion rates reported for South Australia (4.5 events for 1000 bed days). The AIHW data for South Australia, which is more recent than the data collected in our study, shows a decrease in seclusion from 10.1 events per 1000 bed days in 2011-12. However, this followed an increase from 7.1 events per 1000 bed days in 2010-11, which is reflective of the increase in rates of restraint and seclusion found in our study.

There is a wide variation in the duration of seclusion and restraint reported in the literature. In a survey of international trends in the incidence of seclusion and restraint in mental health hospitals, Steinert et al. (2010) report mean durations ranging from nine minutes to 1182 hours. In our study, the median duration was 2.83 hours with over 75% of events lasting less than five hours. However, when looking at the maximum duration for individual events we see that the maximum for one event was 96 hours. In the case of these longer events, we have been advised by those who maintain the databases these likely represent several events over a short period of time, with staff summing hours as one incident. Nonetheless, these events warrant further investigation, and in fact special reviews were conducted around these patients including second and

third opinions being sought from psychiatrists, and the Office of the Chief Psychiatrist informed of the treatment plans.

The variation in rates in the decision to contain a patient for different types of unit (i.e. even with patients transferred for the purposes of containment, the decision was made in the unit in which they were admitted) is broadly consistent with Beghi et al's (2013) recent review of the literature. In our study, rates ranged from 1.37 events per 1000 bed days in the general units without a co-located HDU to 69.06 events per 1000 bed days in the HDUs in 2010, and 2.05 in forensic units to 78.91 in the HDUs in 2011. The HDUs where more acutely unwell patients are located had the highest rates of containment and also accounted for over 90% of patients with the highest percentage of events and hours. Previous research suggests a higher prevalence of threats and assaults in these units (Bennett, Ramakrishna, & Maganty, 2012; Evans & Petter 2012), which may explain the higher rates of containment. Indeed, the documentation of seclusion and restraint to prevent harm to others in almost 85% of all events may reflect the use of other containment methods when a patient is engaging in self-harming behaviours, such as increased observation, transfer to a high-dependency unit or pro re nata (PRN) medication (Foster, Bowers, & Nijman, 2007; James, Stewart, Wright, & Bowers, 2012). The lack of data on these other methods of containment is a limitation of our study.

The relatively low rate of containment in forensic units is a surprising finding. Patients in forensic hospitals reportedly present with high levels of aggression and violence (Maguire, Young & Martin, 2012; Dickens, Picchioni, & Long, 2013), thus higher levels of containment than general acute units could be expected. The rates of

containment in forensic units in our study were higher than the general units without HDUs in 2010 and similar in 2011. The rates in forensic units were much lower than those of the two separate HDUs and the general units with a co-located HDU. A two-year retrospective study of an Australian forensic mental health service found 44% of patients admitted during this period were secluded (Thomas et al., 2009). The relatively low rates in our study could be the result of the inclusion of three rehabilitation wards where patients are often prepared to be transferred to a non-forensic ward or the community. Indeed, almost 80% of events where the particular unit was listed occurred in the acute care ward. It is also possible that the nature of conflict behaviours (e.g. aggression, self-harm) exhibited in acute care general and forensic units differs, resulting in different staff responses. In a UK study of incidents of self-harm in adult inpatient mental health services (James et al., 2012) more episodes of self-harm occurred within forensic units. Our findings may again reflect the use of methods other than seclusion and restraint for self-harming behaviours (Foster, Bowers, & Nijman, 2007; James et al., 2012).

Patient demographics documented by the services revealed that more males than females were contained in all services, and there was no age difference between males and females. The relationship between containment and gender or age is often inconsistent between studies (e.g. Knutzen et al., 2014), and the higher proportion of males admitted to acute care inpatient units may account for the present findings (Muir-Cochrane, Mosel, Gerace, Esterman, & Bowers, 2011). Lack of more detailed information about demographics (e.g. diagnosis) and hospitalisation (e.g. admission information) is a limitation of the study. In particular, it would be useful to explore in greater detail the demographics of patients with high concentrations of containment and

also the antecedents to the events for these patients. The lack of detailed information in administrative records furthermore has implications for the usefulness of current data collection strategies to inform practices for reducing seclusion and restraint.

In addition to the lack of information on demographic and clinical patient variables (in particular, diagnosis), the study is limited by the lack of a comparison group. Containment data is also prone to underreporting and data errors/omissions, and reliability of event records are dependent on the individual nurse entering the data. As mentioned, for records indicating longer containment events it is likely that many of these represented single containment events over a very short period of time. More stringent requirements for data reporting with involuntary hospitalised patients may reduce this bias. In the present study, occupied bed days was calculated to determine a rate of containment, based on Bowers' (2000) recommendation of its usefulness and the particular data that was provided to the researchers. Researchers in the area need to consider the use of uniform formulas across studies or, at the very least, explicitly provide formulas used for calculation.

The data is from units in one Australian state, and this should be considered when generalising to other states and territories in Australia, where there are likely differences in service configuration and provision. However, the strength of this study lies in it being the first Australian study to explore the distribution of containment events, supporting previous international research on the concentration of containment events and hours in a small number of patients. The study also documents containment across one state's adult inpatient services.

The concentration of containment events and hours as reported in this and other research suggests that tailoring interventions to high-risk cases may have a more significant effect on the reduction or elimination of containment (Hendryx et al., 2010). Increasing the use of structured short-term risk assessment tools to evaluate risks associated with aggression and seclusion has been successful in reducing patient hours in seclusion (van de Sande et al., 2011), and may be particularly relevant for tailoring strategies to high-risk cases. Our research suggests that such tools should include information about previous seclusion/restraint episodes and hours in containment. There should also be intensive review of repeated events and targeted strategies for those patients, developed in conjunction with the individual and their family wherever possible.

Targeting strategies to high-risk patients who account for a large proportion of containment events is not to undermine the importance of action at a systemic level. Reviews of the literature on interventions to reduce the use of seclusion and restraint in inpatient psychiatric settings report inconsistent results (Scanlan, 2010; Stewart, Van der Merwe, Bowers, Simpson, & Jones, 2010; Mohler, Richter, & Meyer, 2011); however there are a number of strategies that show some promise. These include strategies focused on broader, hospital-based change, in addition to interventions targeting patients and behaviours. For example, the six core strategies used in the Australian Beacon Project include leadership, continuous workforce development, genuine consumer involvement, assessment and planning tools, use of data to support practice and debriefing techniques (Maguire et al., 2012). Fisher (2003) also reports the effectiveness of action at a systemic level, including high level administrative

endorsement, participation by recipients of mental health services, culture change, training and data analysis, in addition to individualised treatment, in reducing the rate of restraint and seclusion. A two-tiered approach is therefore suggested, where more generic strategies focusing on hospital-wide change are supplemented with tailored strategies that take into account the antecedents to containment in particular patients.

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References

- Australian Institute of Health & Welfare. (2014). *Mental Health Services in Australia*. Retrieved January 16, 2015 from <http://mhsa.aihw.gov.au/services/admitted-patient/restrictive-practices/>
- Beghi, M., Peroni, F., Gabola, P., Rossetti, A., & Cornaggia, C.M. (2013). Prevalence and risk factors for the use of restraint in psychiatry: A systematic review. *Rivista di Psichiatria*, 48(1), 10-22.
- Bennett, R., Ramakrishna, V., & Maganty, D. (2012). Management of disturbed behaviour in a psychiatric intensive care unit: views of staff on options for intervention. *Journal of Psychiatric Intensive Care*, 7(2), 85-89.

- Bowers, L. (2000). The expression and comparison of ward incident rates. *Issues in Mental Health Nursing, 21*(4), 365-374.
- Chang, N.A., Grant, P.M., Luther, L., & Beck, A.T. (2014). Effects of a recovery-oriented cognitive therapy training program on inpatient staff attitudes and incidents of seclusion and restraint. *Community Mental Health Journal, 50*(4), 415-421.
- Department of Health. (2008). *Code of Practice: Mental Health Act 1983*. London, UK: The Stationery Office (TSO).
- Dickens, G., Picchioni, M., & Long, C. (2013). Aggression in specialist secure and forensic inpatient mental health care: Incidence across care pathways. *Journal of Forensic Practice, 15*(3), 206-217.
- Evans, D., Wood, J., & Lambert, L. (2003). Patient injury and physical restraint devices: a systematic review. *Journal of Advanced Nursing, 41*(1), 274-282.
- Evans, R.E., & Petter, S. (2012). Identifying mitigating and challenging beliefs in dealing with threatening patients: An analysis of experiences of clinicians working in a psychiatric intensive care unit. *Journal of Psychiatric Intensive Care, 8*(2), 113-119.
- Fisher, W.A. (2003). Elements of successful restraint and seclusion reduction programs and their application in a large, urban, state psychiatric hospital. *Journal of Psychiatric Practice, 9*, 7-15.
- Foster, C., Bowers, L., & Nijman, H. (2007). Aggressive behaviour on acute psychiatric wards: Prevalence, severity and management. *Journal of Advanced Nursing, 58*(2), 140-149.
- Frueh, B.C., Knapp, R.G., Cusack, K.J., Grubaugh, A.L., Sauvageot, J.A., Cousins, V.C., et al. (2005). Patients' reports of traumatic or harmful experiences within

- the psychiatric setting. *Psychiatric Services*, 56, 1123-1133.
- Happell, B., & Koehn, S. (2010). From numbers to understanding: the impact of demographic factors on seclusion rates. *International Journal of Mental Health Nursing*, 19, 169-176.
- Hendryx, M., Trusevich, Y., Coyle, F., Short, R., & Roll, J. (2010). The distribution and frequency of seclusion and/or restraint among psychiatric inpatients. *The Journal of Behavioral Health Services and Research*, 37(2), 272-281.
- James, K., Stewart, D., Wright, S., & Bowers, L. (2012). Self harm in adult inpatient psychiatric care: a national study of incident reports in the UK. *International Journal of Nursing Studies*, 49(10), 1212-1219.
- Knott, J.C., Pleban, A., Taylor, D., & Castle, D. (2007). Management of mental health patients attending Victorian emergency departments. *Australian and New Zealand Journal of Psychiatry*, 41, 148-155.
- Knox, D.K., & Holloman, G.H. (2012). Use and avoidance of seclusion and restraint: consensus statement of the American Association for Emergency Psychiatry Project BETA Seclusion and Restraint Workgroup. *Western Journal of Emergency Medicine*, 13(1), 35-40.
- Knutzen, M., Bjorkly, S., Eidhammer, G., Lorentzen, S., Mjosund, N.H., Opjordsmoen, S., et al. (2014). Characteristics of patients frequently subjected to pharmacological and mechanical restraint: A register study in three Norwegian acute psychiatric wards. *Psychiatry Research*, 215, 127-133.
- Kruger, C., Mayer, H., Haastert, B., & Meyer, G. (2013). Use of physical restraints in acute hospitals in Germany: A multi-centre cross-sectional study. *International Journal of Nursing Studies*, 50, 1599-1606.
- Maguire, T., Young, R., & Martin, T. (2012). Seclusion reduction in a forensic mental

- health setting. *Journal of Psychiatric and Mental Health Nursing*, 19, 97-106.
- Möhler R., Richter T., Köpke S., & Meyer, G. Interventions for preventing and reducing the use of physical restraints in long-term geriatric care. [Cochrane Review]. In *Cochrane Database of Systematic Reviews*, 2011 (2). Retrieved July 25, 2014, from Ovid Evidence Based Medicine Reviews: Cochrane Database of Systematic Reviews.
- Mohr, W.K. (2010). Restraints and the code of ethics: An uneasy fit. *Archives of Psychiatric Nursing*, 24(1), 3-14.
- Mohr, W.K., Petti, T.A., & Mohr, B. (2003). Adverse effects associated with physical restraint. *Canadian Journal of Psychiatry*, 48, 330-337.
- Muir-Cochrane, E., Mosel, K., Gerace, A., Esterman, A., & Bowers, L. (2011). The profile of absconding psychiatric inpatients in Australia. *Journal of Clinical Nursing*, 20, 706-713.
- Perkins, E., Prosser, H., Riley, D., & Whittington, R. (2012). Physical restraint in a therapeutic setting: a necessary evil? *International Journal of Law and Psychiatry*, 35, 43-49.
- Rakhmatullina, M., Taub, A., & Jacob, T. (2013). Morbidity and mortality associated with the utilization of restraints: A review of the literature. *Psychiatric Quarterly*, 84(4), 499-512.
- Robins, C.S., Sauvageot, J.A., Cusack, K.J., Suffoletta-Maierle, S., & Frueh, B.C. (2005). Consumers' perceptions of negative experiences and 'sanctuary harm' in psychiatric settings. *Psychiatric Services*, 56, 1134-1138.
- Scanlan, J.N. (2010). Interventions to reduce the use of seclusion and restraint in inpatient psychiatric settings: What we know so far. A review of the literature. *International Journal of Social Psychiatry*, 56, 412-423.

- Sokol, D.K. (2010). When is restraint appropriate? *British Medical Journal*, 341(4147), 283.
- Steinert, T., Lepping, P., Bernhardsgrutter, R., Conca, A., Hatling, T., Janssen, W., Keski-Valkama, A., Mayoral, F., & Whittington, R. (2010). Incidence of seclusion and restraint in psychiatric hospitals: a literature review and survey of international trends. *Social Psychiatry and Psychiatric Epidemiology*, 45(9), 889-897.
- Stewart, D., Van der Merwe, M., Bowers, L., Simpson, A., & Jones, J. (2010). A review of interventions to reduce mechanical restraint and seclusion among adult psychiatric inpatients. *Issues in Mental Health Nursing*, 31, 413-424.
- Tekkas, K., & Bilgin, H. (2010). Professional containment methods used in psychiatry wards: Justifications for their utilization, types, international practices, and perceptions. *Turkish Journal of Psychiatry*, 21(3), 235-242.
- Thomas, S.D.M., Daffern, M., Martin, T., Ogloff, J.R.P., Thomson, L.D.G., & Ferguson, M. (2009). Factors associated with seclusion in a statewide forensic psychiatric service in Australia over a 2-year period. *International Journal of Mental Health Nursing*, 18, 2-9.
- van de Sande, R., Nijman, H.L.I., Noorthoorn, E.O., Wierdsma, A.I., Hellendoorn, E., van der Staak, C., et al. (2011). Aggression and seclusion on acute psychiatric wards: effect of short-term risk assessment. *The British Journal of Psychiatry*, 199, 473-478.
- Whitehead, P.D., & Liljeros, F. (2011). Heavy-tailed distribution of seclusion and restraint episodes in a state psychiatric hospital. *Journal of the American Academy of Psychiatry and the Law*, 39, 93-99.

Table 1. Rates of containment

Service unit	Total beds	2010		Total beds	2011	
		Rate of containment events per 1000 bed days (Range*)	Rate of contained patients per 1000 bed days (Range*)		Rate of containment events per 1000 bed days (Range*)	Rate of contained patients per 100 bed days (Range*)
Acute general without a HDU	109	1.37 (0.19-3.25)	1.09 (0.25-2.65)	109	2.38 (0.12-6.18)	0.17 (0.12-4.66)
Acute general with a HDU	81	5.06 (4.24-6.38)	2.51 (1.41-3.19)	70	7.42 (2.97-10.87)	4.12 (2.54-4.94)
HDU	20	69.06 (41.38-95.89)	18.41 (16.27-20.55)	20	78.91 (66.21-91.61)	22.69 (21.69-23.69)
Forensic	40	2.19†	0.08†	40	2.05 (1.13-2.26)	0.71 (0.28-0.85)
Total	250	8.60	3.17	239	10.17	3.98

* Range refers to the *individual* units with the lowest and highest rate per 1000 occupied bed days.

Note: †A range could not be calculated for forensic services for 2010 since a specific unit was not recorded for a number of events.

Table 2: Reasons for containment

Reason	<i>N</i> [†]	% [‡]
Prevention of harm to others	1288	84
Prevention of destruction to property	519	34
Prevention of harm to self	458	30
Intrusive	396	26
Disinhibited	236	15
Non-compliance	192	12
Other reason*	75	5
Prevention of falls	13	8
Prevention of absconding	9	6
Client request	6	4

Note: * Some examples of ‘other’ reasons include wandering, being disruptive and at risk from other patients; [†] Total does not equal total number of events for which reasons were recorded as multiple reasons could be selected for an individual event; [‡] Denominator is 1538 events (*n* of events for which data was available).

Table 3. Distribution of containment events and hours among patients ranked by hours in containment

Patients ranked from most to least hours	<i>N</i> events (%) cumulative	<i>N</i> hours (%) cumulative
1-10	219 (14)	1438.15 (22)
1-20	327 (20)	2031.57 (31)
1-30	391 (24)	2502.23 (38)
1-40	470 (29)	2879.34 (43)
1-50	562 (35)	3195.93 (48)
1-60	630 (39)	3462.43 (52)
1-70	681 (42)	3697.28 (56)
1-80	733 (46)	3909.44 (59)
1-90	769 (48)	4093.83 (61)
1-100	807 (50)	4262.75 (64)
1-110	848 (53)	4421.39 (66)
1-120	877 (55)	4567.38 (69)
1-612	1608 (100)	6657.46 (100)