Seclusion: a literature review

Report from the Conflict and Containment Reduction Research Programme

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1. Background

Violence in psychiatric inpatient settings is common. The Royal College of Psychiatrists’ National Audit of Violence found that 36% of inpatients reported that they have been personally attacked, threatened, or made to feel unsafe while in hospital. This figure increased to 41% for clinical staff and 77% of nursing staff. Even 18% of visitors to the units reported that they have been personally attacked, threatened, or made to feel unsafe (Healthcare Commission 2005b). Seclusion is one of a few containment measures used to control these violent patient behaviours (Mason & Whitehead 2001; Parkes 2003; Ramchandani, Akhtar, & Helfrich 1981; Salib, Ahmed, & Cope 1998). Seclusion can be defined as the voluntary or involuntary temporary isolation of a patient in either a specifically designed room, usually non-stimulating, bare or sparsely decorated (seclusion room), or any other single room, locked from the outside with a window for observation. Compared to other forms of containment, seclusion is not used that often. An annual census in England and Wales during 2005 till 2008 found that between 3% and 4% of inpatients had experienced one or more episode of seclusion, but 8% to 12% of patients experienced at least one episode of manual restraint during their stay (Healthcare Commission 2005a; Healthcare Commission 2007a; Healthcare Commission 2007b; Healthcare Commission 2008).

This review brings together evidence from empirical studies on seclusion conducted in psychiatric inpatient settings. Despite the large number of papers on seclusion, there were no randomised control trials. The majority of the studies used retrospective analyses of official incident records, were recent (post 1990) papers on seclusion and were conducted in the United States and the United Kingdom. The extensive number of papers and the different topics covered, made this a comprehensive review of seclusion. Incidence and duration of seclusion, temporal ecology, environmental factors influencing seclusion, antecedents of seclusion, medication and seclusion, the profile of secluded patients, seclusion staff characteristics, patient attitudes and staff attitudes towards seclusion and intervention studies to reduce seclusion will be some of the topic under discussion. Evidence for and against the working model will also be discussed.

2. Literature search

Electronic searches of the main databases were conducted to locate post-1960 empirical studies of inpatient seclusion in English. The databases searched were: PsycInfo, Cochrane, Medline, EMBASE Psychiatry, CINAHL and the British Nursing Index. The search terms utilised was seclusion, isolation, solitary and confinement. Following this initial search, the numbers of identified references were reduced by searching within the findings for any of the following terms: psychiatric nursing/patient or psychiatr$, inpatient, acute care or acute or acute care nursing practitioners, mental health or ment$, attitude to mental illness, nurse attitude, patient attitude, disruptive behaviour or challenging behaviour, stress, psychology or critical care nursing, or professional ethics, crisis intervention and therapeutic processes. Resulting titles and abstracts were then inspected for relevance. Where there was any ambiguity, the original was obtained and inspected. Only published studies reporting empirical findings were included in the review. The search did not include theses or other grey literature, nor did it include policy documents or other analyses. As the
literature accumulated, further references were obtained by following up citations. The final number of identified empirical studies was 115.

3. Analytic procedure

A matrix was constructed in spreadsheet software with a number of headings including: methodology, sample, definitions and setting used in the article; the patient profiles (age, gender, ethnicity, diagnosis, treatment, marital status, family circumstances, previous psychiatric history, etc); the rates of occurrence; times and places or occurrence of the event; circumstances of event; antecedents and causes; relationships between types of adverse events; patient motivations; staff related factors and limitations. Each article was reviewed and analysed by extracting data/evidence for the relevant sections in the matrix. Additional information not directly fitting in the predefined categories, was collated in an ‘other findings’ column and processed separately. All this information was then summarised by each analytic topic.

4. Methodologies of the studies reviewed

Nearly half (n=58) of the studies used retrospective analyses of official incident records. Twenty eight papers used questionnaires to collect data; 27 papers were case-control studies and ten were before-after trials of some kind. Twenty studies used quantitative or observational data, two were natural experiments and one was a novel study. Lastly, 22 papers used some form of qualitative data, such as interviews.

The studies were conducted in various types of wards. More than half of the studies (n=75) were conducted in an acute or PICU setting and 25 in forensic settings. Studies were also conducted in general hospital wards (n=2), community mental health care centres (n=3) and long-stay wards (n=3). Nineteen studies did not specify the type of ward. Nine of the studies covered more than one setting. The studies were conducted in 14 countries, the majority being conducted in the United States (n=48) and the United Kingdoms (n=27).

Table 1: Countries where studies were undertaken (one study covered two countries)
5. Seclusion incidence

A total of 38 studies reported rates of seclusion. Wide variation in the presentation of seclusion rates made the findings difficult to compare. A patient-based rate and event-based rate was calculated to simplify comparisons. A patient-based rate is based only on the number of patients secluded; disregarding the number of times patients were secluded, i.e. patients who were secluded repeatedly will only be included once. An event-based rate is based on the number of seclusion episodes that took place, disregarding the number of patients involved with these events, i.e. patients who were secluded repeatedly will be included more than once. Twenty six studies gave enough information to calculate a patient-based rate of seclusion: the number of patients involved in seclusion per 100 admissions per month. An event-based rate could also be calculated for 21 studies: the number of seclusion episodes per 100 admissions per month. Seven studies reported seclusion rates not comparable with the majority of papers and were excluded from this section of the review.

Analysing seclusion rates according to country did not indicate a clear pattern, but showed that seclusion rates differed between countries, for both patient-based rates and event-based rates (see Addendum 1). The Netherlands had the highest patient-based rate (mean=79.35 patients per 100 admissions per month) and event-based rate (638.04 incidents per 100 admissions per month) (Hildebrand, De-Ruiter, & Nijman 2003). These results were from one paper investigating the relationship between psychopathy and various types of disruptive behaviours of 92 forensic inpatients, half of which had a history of attempted murder or manslaughter. The exceptionally high rate of seclusion use could be explained by the violent sample, which is not consistent with the majority of the 38 papers reporting rates of seclusion, so this paper was excluded.

According to the literature, Australia and New-Zealand had the lowest patient-based rate per admission per month. In Australia an average of 10.96 patients were secluded per 100 admissions per month ((ranged from 7.27 (Baxter, Hale, & Hafner 1989) to 14.55 (Sullivan, Wallis, & Lloyd 2004)) and in New Zealand an average of 15.58 patients were secluded per 100 admissions per month (El-Badri & Mellsop 2002). The countries with the highest mean patient-based rate per admission for seclusion were Finland and Canada. In Finland an average of 27.29 patients were secluded per 100 admissions per month ((ranged from 6.61 (KaltialaHeino et al. 2000) to 47.68 (Repo-Tiihonen et al. 2002)) and in Canada an average of 28.57 patients were secluded per 100 admissions per month ((ranged from 24.12 (LeGris, Walters, & Browne 1999) to 33.86 (Kirkpatrick 1989)).

The countries with the lowest event-based rates were Germany and Switzerland. In Germany an average of 7.99 incidents occurred per 100 admissions per month (Martin et al. 2007) and in Switzerland an average of 8.11 incidents occurred per 100 admissions per month (Martin, Bernhardsgrutter, Goebel, & Steinert 2007). The UK and the USA had the highest event-based rate per country per 100 admissions. In the UK an average of 93.41 seclusion events occurred per 100 admissions per month ((ranged from 1.13 (Templeton, Gray, & Topping 1998) to 271.03 (Russell, Hodgekinson, & Hillis 1986)) and in the USA an average of 131.43 incidents occurred per 100 admissions per month ((ranged from 23.07 (Grassian 1983) to 400.37 (Simpson, Thompson, & Beckson 2006)).
The literature indicated that, apart from the Netherlands, Canada and Finland had the highest patient-based rate for seclusion and the UK and the USA had the highest event-based rate for seclusion.

Comparing patient-based rates with event-based rates indicated that most countries secluded patients more than once. For instance, in the UK an average of 21.10 patients were secluded per 100 admissions per month with 93.41 seclusion events per 100 admissions per month, so one patient could be secluded an average of four times (see Table 2). In the USA patients were secluded six times, whereas Australia, Canada and New Zealand secluded patients usually only twice and in Finland patients were secluded once only.

Table 2: Repeated seclusion rates per country per 100 admissions per month

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>Mean patient-based rate*</th>
<th>N</th>
<th>Mean event-based rate*</th>
<th>Repeat rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>4</td>
<td>10.96</td>
<td>4</td>
<td>25.59</td>
<td>2</td>
</tr>
<tr>
<td>Canada</td>
<td>3</td>
<td>28.57</td>
<td>2</td>
<td>45.23</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>3</td>
<td>27.29</td>
<td>2</td>
<td>15.29</td>
<td>1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1</td>
<td>15.58</td>
<td>1</td>
<td>23.93</td>
<td>2</td>
</tr>
<tr>
<td>UK</td>
<td>6</td>
<td>21.10</td>
<td>6</td>
<td>93.41</td>
<td>4</td>
</tr>
<tr>
<td>USA</td>
<td>8</td>
<td>21.14</td>
<td>4</td>
<td>131.43</td>
<td>6</td>
</tr>
</tbody>
</table>

* Per country per 100 admissions per month

Although almost all of the figures come from different studies which made proper comparisons of this nature difficult, it does seem that patients in the UK experienced more repeated seclusion episodes compared to the majority of other countries. This could explain why the UK had a low patient-based rate for seclusion and one of the highest event-based rates for seclusion (see Addendum 1). A census in England and Wales during 2005 found that secluding patients repeatedly were uncommon (Healthcare Commission 2005). The minority (3%) of inpatients had experienced one or more periods of seclusion, even less (0.3%) experienced five or more episodes and only 0.1% had experienced ten or more episode of seclusion within the last three months of their stay (Healthcare Commission 2005). These results could indicate that seclusion rates in the seclusion literature may be biased. It could be that seclusion studies were conducted only in wards or hospitals with an unusual high number of repeated seclusions.

When comparing seclusion rates by setting, forensic settings generally had a higher mean seclusion rate compared to acute inpatient wards or PICUs (see Addendum 2). The rate of patients secluded per 100 admissions per month in acute wards or PICUs (n=17) ranged from 10.96 to 28.99 (mean=19.44). Four studies conducted in forensic settings indicated rates ranging from 25.33 to 47.68 patients secluded per 100 admissions per month (mean=31.52). The event-based rate in acute wards or PICUs (n=12) ranged from 23.93 to 100.95 (mean=50.20) and in forensic settings (n=5) it ranged from 46.36 to 400.37 seclusion events per 100 admissions per month (mean=139.37).
Separating seclusion rates for PICU wards and acute inpatient wards was made difficult by the small number of PICU studies in the review (n=3). There was no indication that PICUs had higher or lower seclusion rates than acute inpatient wards, so results are presented together.

Comparing rates by setting and country indicated that the UK had a higher average patient-based rate in forensic settings (mean=25.33) than acute ward/PICU settings (mean=19.41) and a lower average event-based rate in forensic settings (mean=83.37) than acute ward/PICU settings (mean=100.95). This means that more forensic patients were secluded than acute ward/PICU patients, but that seclusion was a more frequent event in acute ward/PICU settings than forensic settings. In contrast, the USA and Canada (the only countries with comparable data), showed that forensic settings had a higher average event-based rate than acute ward/PICU settings.

Lastly, although the data were from different studies, so clear comparisons were made difficult, it seems that patients in acute ward/PICU settings had a higher seclusion repeat rate compared to those in forensic settings. For instance, in the UK acute ward/PICU settings had a repeat rate of 5, whereas forensic settings had a repeat rate of 3. This supported the previous conclusion that fewer UK patients were secluded more times in acute ward/PICU settings, compared to forensic settings.

Analysis of seclusion rates (for both patient-based rates and event-based rates) by publication date did not deliver significant findings. According to the literature there was no pattern to suggest that earlier publications had a higher or lower seclusion rate. There was no indication of a trend by date within countries, either.

6. Seclusion duration

Some papers (n=29) reported the mean number of hours patients stayed in seclusion (see Table 3) and others (n=28) gave enough information to compare average duration of seclusion according to country and setting (see Table 4). Comparisons were made difficult because not all of the studies reported all of the information.

There was a big variation in duration of seclusion within and between countries (see Table 3). For example, Switzerland (mean=55.00 hours) and Canada (mean=39.81 hours) had the highest mean seclusion duration. In Canada there was a huge range between the lowest mean time in seclusion, 1.22 hours (de Cangas 1993) and the highest mean time spend in seclusion, 90.3 hours (Ahmed & Lepnurm 2001), while the Swiss study reported a minimum of 21.10 hours and a maximum of 87.50 hours (Martin et al. 2007).

Australia (mean=3.66 hours) and Germany (mean=7.40 hours) had the lowest mean duration of seclusion. Australian patients were secluded between 1.70 (Baxter, Hale, & Hafner 1989) and 9.00 (Tunde-Ayinmode & Little 2004) hours per episode. In Germany mean time spend in seclusion ranged from 4.10 to 11.00 hours (Martin, Bernhardsgrutter, Goebel, & Steinert 2007).
Table 3: Mean number of hours patients stayed in seclusion according to country (hours)

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>Acute ward/ PICU</th>
<th>N</th>
<th>Forensic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>5</td>
<td>3.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>3</td>
<td>12.26</td>
<td>2</td>
<td>81.15</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
<td>35.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>7.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>1</td>
<td>14.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>1</td>
<td>55.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>2</td>
<td>2.85</td>
<td>2</td>
<td>21.00</td>
</tr>
<tr>
<td>USA</td>
<td>10</td>
<td>16.21</td>
<td>1</td>
<td>10.50</td>
</tr>
</tbody>
</table>

When comparing acute wards or PICUs with forensic settings it is clear that the above mean rates were skewed by setting. Although patients in Canada spent an overall mean duration of 39.81 hours seclusion, patients secluded in an acute ward or PICU spend an average of 12.26 hours in seclusion compared to 81.15 hours in a forensic setting (see Table 4). In the UK patients spent an average of 10.06 hours in seclusion, but acute ward or PICU patients usually spent only 2.85 hours in seclusion, compared to 21.00 hours in a forensic setting.

Table 4: Mean number of hours patients stayed in seclusion according to country and setting (hours)

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>Acute ward/ PICU</th>
<th>N</th>
<th>Forensic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>5</td>
<td>3.66</td>
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<td>3</td>
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<tr>
<td>Finland</td>
<td>1</td>
<td>35.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>7.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
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<tr>
<td>Switzerland</td>
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<td>55.00</td>
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<td></td>
</tr>
<tr>
<td>UK</td>
<td>2</td>
<td>2.85</td>
<td>2</td>
<td>21.00</td>
</tr>
<tr>
<td>USA</td>
<td>10</td>
<td>16.21</td>
<td>1</td>
<td>10.50</td>
</tr>
</tbody>
</table>

Patients in forensic settings spent a longer time in seclusion in both Canada and the UK, but not in the USA (See Table 4). Although only one study in the USA gave information on the mean time patients in a forensic setting spend in seclusion, this was a longitudinal study where all incidents during a three-year period (form July 1998 to July 2001) were gathered in one medium secure unit consisting of four wards (Parkes 2003). Two of the USA studies conducted in acute inpatient wards or PICUs had an unusually high mean duration of seclusion. The first paper was conducted in one university hospital ward admitting only patients with schizophrenia over four months (Hammill 1987). The mean seclusion duration was 22 hours and patients were usually secluded on the day of admission. The second study was conducted in a 17-
bed inpatient ward over 11 weeks with a mean seclusion duration of 50.60 hours (Tooke & Brown 1992). Even when excluding these two outliers, forensic patients in the USA still spend shorter time in seclusion than those in acute wards or PICUs. Overall, Swiss patients in acute wards or PICUs spent the longest time in seclusion (mean=55.00 hours) (see Table 4).

The literature also indicated a variation in duration of seclusion by time of day or week. Two studies, both conducted in the USA in acute and forensic settings, indicated that seclusion was significantly longer during night shifts than day or evening shifts (Oldham, Russakoff, & Prusnolosky 1983; Smith et al. 2005). Maybe patients fell asleep during night shift seclusion episodes, so staff leave them there to rest, or patients were kept in seclusion for longer during the night not to disturb other patients’ sleep. The duration of seclusion was also significantly shorter during the week compared to weekends or holidays (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005).

Overall the seclusion literature indicated that Switzerland and Canada had the highest mean seclusion duration, and Australia and Germany the lowest mean duration of seclusion. When comparing rates by setting, patients in acute wards or PICUs in Finland and Switzerland spent the longest time in seclusion and Australian and UK patients the shortest time. Forensic patients in Canada spend the longest time in seclusion and those in the USA the shortest. Patients in acute wards or PICUs usually spent less time in seclusion than those in forensic settings, except in the USA. The literature also indicated that seclusion episodes were longer during the night, on weekends and during holidays. The reasons for this increased seclusion duration should be investigated and guidelines for clinical practice should be implemented.

7. Temporal ecology

Thirty papers reported some data on the time of day, week, month or year, as well as time during treatment period, seclusion took place. The majority (n=20) were conducted in acute wards or PICUs and in the United States (n=13). Almost all the papers were retrospective record analysis or observational data (n=24). Analysis of differences between countries and ward types (e.g. PICU or acute wards, forensic settings, general hospital wards, etc.) did not produce significant findings.

Time of day

The majority of the papers (9) indicated that seclusion was more prevalent during the day or day shift. Five of these studies concluded that seclusion was more prevalent during the day shift than the evening and night shift (Hammill 1987; Hammill et al. 1989; Kennedy, Williams, & Pesut 1994; Morrison & Lehane 1991; Plutchik et al. 1978) and four studies showed that more seclusion incidents happened during the day, not stating which shift was involved (Mason 1998; Thompson 1986; Thompson 1987). None of these studies supported their findings with statistics.

Two studies reported that most seclusion episodes occurred during day-time and evening. The first was conducted in an Australian PICU over a six month period in 1988 to 1989 (Baxter, Hale, & Hafner 1989). The majority (71%) of seclusions
occurred during the day and early evening from 07:00 to 19:00. The findings were not supported with statistical tests. The second study, conducted in the USA, examined official records over an 11 year period at 9 hospitals (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). There was a significant difference in seclusion episodes between shifts, with rates of seclusion lowest during the night shift (21:00-7:00), compared to the day (07:00-15:00) and evening (15:00-21:00) shift.

Five studies indicated that seclusion was more prevalent in the evening. All five were retrospective analysis of official records and indicated that seclusion took place more during the evening shifts or in the evening than at day or night (Binder 1979;El-Badri & Mellsop 2002;Ramchandani, Akhtar, & Helfrich 1981;Richardson 1987;Tunde-Ayinmode & Little 2004). No statistics were used to support these assertions.

Two other studies indicated that more seclusion episodes occurred after working hours or in the evening and at night. In the first study all seclusion episodes for 30 months (between Aug 1996 and Feb 1999) at a Canadian forensic psychiatric hospital were reviewed retrospectively (Ahmed & Lepnurm 2001). There were 144 (47%) seclusion episodes during working hours and 162 (53%) seclusion episodes after working hours. The other study was a retrospective analysis of secluded patients’ charts in a general hospital in the USA and showed that most seclusion incidents happened during the evening or night time, compared to day time (Ramchandani, Akhtar, & Helfrich 1981). The findings were not supported with statistical tests.

Two papers reported that seclusion was significantly more frequent during the night shift. A retrospective analysis of official records showed that almost twice as many patients were secluded during late night and early morning (Gerlock & Solomons 1983). This study was conducted in an acute care setting in the United States. Another retrospective study of seclusion incidents for 25 inpatients in a community mental health centre showed there were significant differences in seclusion rate between shifts, with most seclusions occurring during the night shift (Convertino, Pinto, & Fiester 1980). In contrast, Smith et al. (2005) (discussed earlier) found that rates of seclusion were the lowest during the night shift (p<0.05).

Four studies found no significant difference between shifts and seclusion incidents (El-Badri & Mellsop 2002;Salib, Ahmed, & Cope 1998;Schwab & Lahmeyer 1979;Soloff & Turner 1981). Two were observation studies in acute settings in New Zealand (El-Badri & Mellsop 2002) and the USA (Schwab & Lahmeyer 1979). The other study was a retrospective analysis of 5 years of official records from an UK forensic unit (Salib, Ahmed, & Cope 1998) and a survey of seclusion incidents in an acute setting in the USA (Soloff & Turner 1981).

Lastly, nine papers reported that more seclusion episodes occurred at times when there was increased ward activity, such as medicine rounds, staff handovers (Morrison 1990), and around meal times (Campbell, Shepherd, & Falconer 1982;Gerlock & Solomons 1983). Six studies were retrospective analysis of official records (Gerlock & Solomons 1983;Mason 1998;Morrison 1990;Russell, Hodgekinson, & Hillis 1986;Thompson 1986;Thompson 1987) and three were observation studies (Campbell, Shepherd, & Falconer 1982;El-Badri & Mellsop 2002;Schwab & Lahmeyer 1979).
Overall the majority of the literature indicated that seclusion episodes occurred mostly during the day or day shift and times when there was increased ward activity, fewer in the evening and least at night. This could be expected, because most patients are asleep during the evening and night and there are fewer ward activities, so the ward settles down.

**Time of week**

Three studies indicated that seclusion was more prevalent during weekdays than weekends (Ahmed & Lepnurm 2001; Soloff & Turner 1981; Tunde-Ayinmode & Little 2004). Two of these studies were retrospective analysis of official records in an Australian acute setting (Tunde-Ayinmode & Little 2004) and a Canadian forensic setting (Ahmed & Lepnurm 2001). The third study was a survey conducted in an acute setting in the USA (Soloff & Turner 1981), and also indicated that seclusion was more prevalent during weekdays, than weekends. In contrast, one survey study conducted in a forensic setting in the UK indicated that the majority of episodes of seclusion was on a Sunday (Mason & Whitehead 2001). Although none of the findings were supported by statistical tests, it seems that there was a trend to seclude patients more often during the week than weekend.

**Time of month**

Two studies examined seclusion episodes in conjunction with time of the month. In an UK observation study, seclusion incidence data were analysed in relation to the phases of the moon (Mason 1997). The phases of the moon were said to influence the severity of psychological symptoms, leading to increased violence and aggression in psychiatric patients, thus increased seclusion episodes. This study collected incident data in a forensic hospital over 12 months. No significant relationship was found between the use of seclusion and full or new moons.

Another study examined the risk of seclusion and the luteal phase of the menstrual cycle of 113 consecutively admitted female psychiatric patients in Belgium (Van Heeringen et al. 1995). Twenty-one patients (19%) were in the luteal phase of the menstrual cycle and 14 patients (12%) were secluded during the study period. No significant difference was found between the number of seclusions of luteal phase patients and patients in other phases of the menstrual cycle. There was no indication that patients in the luteal phase experienced more seclusion episodes.

**Time of year**

One study found seasonal variations in seclusion incidents (Salib, Ahmed, & Cope 1998). All seclusion episodes in one UK forensic unit over a 5 year period (1992-1996) were retrospectively analysed. More seclusion incidents occurred in winter (January) and less in summer (July). No statistics were reported to support this finding.
Time in treatment period

Eight papers reported some data on seclusion prevalence and patient admissions. Seven of these, four retrospective analysis of official records and three observational studies, indicated that most seclusion incidents occurred early after admission, e.g. within 24h or a week after admission compared to later in the treatment period (Binder 1979;El-Badri & Mell sop 2002;Hammill, McEvoy, Koral, & Schneider 1989;Kirkpatrick 1989;Oldham, Russakoff, & Prusnofsky 1983;Ramchandani, Akhtar, & Helfrich 1981;Thompson 1986). The majority of the studies were conducted in an acute setting in the USA. In addition, one Dutch survey study indicated that 22 acute inpatients (41%) were secluded straight on admission (Stolker, Nijman, & Zwanikken 2006), which could also indicate the differences in the practice of seclusion across countries. Although none of the findings were supported by statistical tests, there was a strong indication that seclusion was more prevalent early after admission.

8. Environment

Two papers examined the influence of the environment on secluded patients. The one paper investigated the influence of the seclusion room environment on secluded patients (Vaaler, Morken, & Linaker 2005). The study conducted in an acute setting in Norway, investigated the differences in development in symptoms, behaviours, treatment and patient satisfaction of those patients secluded in a traditional interior seclusion area (sparse furniture, grey paint, no curtains or paintings and a single lamp) and those secluded in an interior furnished like an ordinary home (multi-coloured wallpaper, paintings, flowers, good lighting and personal items from the patient’s room).

A naturalistic sample of 56 patients was consecutively allocated to the two different seclusion areas (27 patients per area) on admission. Symptoms of psychopathology (measured by The Positive and Negative Syndrome Scale for schizophrenia, The Broset Violence Checklist and the Global Assessment of Function split version scale), therapeutic steps taken (coded daily on a 23-item checklist), violent episodes (measured by Staff Observation Aggressi on Scale-Revised, SOAS-R), length of patient stay and patient satisfaction (recorded by an eight-item visual analogue scale) were recorded. There were no significant variations between the groups regarding diagnosis, age and length of stay.

There were no differences between the two groups in changes in scores on The Positive and Negative Syndrome Scale for schizophrenia, The Broset Violence Checklist or the Global Assessment of Function split version scale. Therapeutic steps taken, the number of violent episodes and length of patient stay was also similar. Patients showed no significant differences between groups for satisfaction with help with problems, feeling supported and quality of food. Two patients in the new area group and none in the traditional group were formally restricted in visit and telephone use (significant difference). These results showed that the environment had a limited influence on the secluded patients. The only difference was that female patients had a stronger preference for the new interior than men.
The other paper investigated the influence of the ward environment on secluded patients. A questionnaire survey of 54 secluded adult psychiatric inpatients in one locked ward in the Netherlands investigated patients’ views on seclusion in association with the number of beds per room the patient stayed in (Stolker, Nijman, & Zwanikken 2006). A significant association was found between being in a shared dormitory (three to four bedded rooms) before being secluded and a more positive experience of seclusion. Patients staying in a single room before seclusion had a more negative seclusion experience. The authors suggested that patients from dorm rooms find seclusion more attractive because of the lack of privacy in their own room.

These finding suggests that environmental factors may influence patients’ perception of seclusion. It may therefore contradict the traditional way of thinking that a sparsely decorated seclusion room is a method to reduce psychopathology or dangerous behaviours.

9. Ward location

One paper described the exact location within a ward where an incident occurred which resulted in seclusion (Morrison et al. 1997). The official seclusion records of one acute locked ward in the UK were retrospectively analysed over a 6 month period. Incidents leading to seclusion occurred in 10 different areas of the ward, but 65% of the incidents occurred in two distinct areas - the dining room (33%) and day room (32%). In this particular ward patients were limited to a small area, which include the day room and dining area, so this might account for the high incident rates in these areas.

10. Hospital setting

Two studies indicated that seclusion was more prevalent in smaller hospitals compared to larger hospitals (Crenshaw, Cain, & Francis 1997; Crenshaw & Francis 1995). A postal survey of 225 state psychiatric hospitals across the USA examined incidence of seclusion, restraint and injuries reported over a 12 month period in 1991. In general, smaller hospitals with shorter lengths of stay had higher rates of seclusion and restraint but there was large variations between hospitals (Crenshaw & Francis 1995). In a follow-up study, seclusion rates were examined at 124 state psychiatric hospitals during 1994 (Crenshaw, Cain, & Francis 1997). Again, the larger hospitals used significantly less seclusion than the smaller hospitals; however rates of violent incidents and hours in seclusion did not differ significantly by hospital size. The USA has a very different psychiatric care structure than the UK, so it is difficult to generalise these findings.

11. Antecedents of seclusion

Forty-seven studies reported the antecedents of seclusion. The majority (n=33) were conducted in acute wards or PICUs. More than half (n=24) of the studies were conducted in the United States, 12 in the UK, seven in Australia, two in Canada and one each in France and New Zealand. Analysis of differences between countries and ward types (e.g. PICU or acute wards, forensic settings, general hospital wards, etc.) did not produce significant findings.
The most prevalent reason why patients were secluded was because of aggression. Of the 47 studies reporting the antecedents of seclusion, 28 stated that physical aggression to objects was reasons for seclusion, e.g. patients were secluded because of violence towards property (Ahmed & Lepnurm 2001), destruction to property (Mattison & Sacks 1978), damage to property (Russell, Hodgekinson, & Hillis 1986), aggression towards objects (Heyman 1987) or property damage (Oldham, Russakoff, & Prusnofsky 1983).

Twenty-three papers indicated that patients were secluded because of verbal aggression. Seven of those studies stated that the threats or verbal abuse was directed at patients, e.g. patients were secluded because of verbal abuse of other patients (Campbell, Shepherd, & Falconer 1982), verbal threats towards other patients (Soloff & Turner 1981) and threat of violence to patient (Mason & Whitehead 2001). Thirteen papers indicated that the threats or verbal abuse was directed at members of staff. For instance, patients were secluded because of verbal abuse of staff (Campbell, Shepherd, & Falconer 1982), threats to staff (Russell, Hodgekinson, & Hillis 1986), because they made sarcastic or rude remark towards staff or yelled at staff (Binder 1979) or they made a verbal threat towards staff with no physical contact (Soloff & Turner 1981). A further 15 studies did not indicate towards whom the threats or verbal abuse was directed (Campbell, Shepherd, & Falconer 1982; Daffern, Ogloff, & Howells 2003; Hammill, McEvoy, Koral, & Schneider 1989; Kirkpatrick 1989; Mattison & Sacks 1978; Morrison, Lehane, Palmer, & Meehan 1997; Norris & Kennedy 1992; O’Brien & Cole 2004; Oldham, Russakoff, & Prusnofsky 1983; Parkes 2003; Redmond 1980; Salib, Ahmed, & Cope 1998; Schwab & Lahmeyer 1979; Sullivan, Wallis, & Lloyd 2004; Thompson 1987).

Twenty-two papers indicated that patients were secluded because their aggression was directed at themselves. Thirteen papers indicated that patients were secluded because of threats of self-harm or actual self-harm (Ahmed & Lepnurm 2001; Campbell, Shepherd, & Falconer 1982; Mason & Whitehead 2001; Morrison & Lehane 1991; Morrison & Lehane 1995b; O’Brien & Cole 2004; Oldham, Russakoff, & Prusnofsky 1983; Parkes 2003; Russell, Hodgekinson, & Hillis 1986; Soloff & Turner 1981; Thompson 1987; Wynaden et al. 2001). Five studies indicated that the reason patients were secluded was because they were suicidal or at risk of suicide (Ahmed & Lepnurm 2001; Lavoine & Friard 2008; Norris & Kennedy 1992; Ramchandani, Akhtar, & Helfrich 1981; Repo-Tiihonen et al. 2002). Eight papers indicated that patients were secluded if they posed a danger to themselves, but did not clearly indicate the extent to which patients were a danger to themselves, for instance, patient were secluded because they were dangerous to themselves (Mattison & Sacks 1978), self-destructive (Norris & Kennedy 1992), because they displayed aggression towards themselves (Heyman 1987), were violent towards themselves (Hammill 1987) or posed a risk to themselves (Hafner et al. 1989).

Twenty of the 47 studies indicated that patients were secluded because of physical aggression to others. There were 13 papers indicating that physical aggression directed at other patients will lead to seclusion. These incidents were reported as physical aggression towards other patients (Plutchik, Karasu, Conte, Siegel, & Jerrett 1978), physical violence to other patients (Campbell, Shepherd, & Falconer 1982), physical assault to patient (Russell, Hodgekinson, & Hillis 1986) or patients attacking other patients (Ramchandani, Akhtar, & Helfrich 1981). Fourteen papers indicating
that physical aggression directed at staff will lead to seclusion. These behaviours were reported as physical aggression towards staff (Plutchik, Karasu, Conte, Siegel, & Jerrett 1978), physical assault to staff (Russell, Hodgkinson, & Hillis 1986), attempted to hit staff (Binder 1979), attacking staff (Ramchandani, Akhtar, & Helfrich 1981), physical attack on staff with physical contact (Soloff & Turner 1981), actual violence to staff (El-Badri & Mellsop 2002; Salib, Ahmed, & Cope 1998; Sullivan, Wallis, & Lloyd 2004) and hitting a staff member (Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). Eight studies did not differentiate between aggression directed at staff or patients, so reported that physical aggression against others led to seclusion (Daffern, Ogloff, & Howells 2003; Kirkpatrick 1989; Morrison, Lehane, Palmer, & Meehan 1997; Norris & Kennedy 1992; Redmond 1980; Schwab & Lahmeyer 1979; Sullivan, Wallis, & Lloyd 2004; Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001).

Some studies (n=23) did not clearly indicate whether the aggression were physically or verbally, towards whom it was directed or they listed a range of aggressive behaviour as one reason for seclusion, e.g. patients were secluded because of aggressive acts (Lavoine & Friard 2008), assaultiveness (Oldham, Russakoff, & Prusnofsky 1983) or risk to others (Hafner, Lammersma, Ferris, & Cameron 1989). One study indicated that violence towards non-staff also led to seclusion, but did not define what was implied by non-staff (O'Brien & Cole 2004).

Surprisingly, in a study examining aggressive behaviours in an Australian forensic psychiatric hospital over six months, there was no significant difference between the severity of the patient’s aggression and the likelihood of that patient being secluded for either aggression against property, verbal aggression or physical aggression (Daffern, Ogloff, & Howells 2003). There was also no significant difference in the number of aggressive behaviours recorded in the week leading to an aggressive incident between aggressive behaviours resulting in seclusion and in those that did not. According to this paper aggressive incidents leading to seclusion were difficult to predict.

According to the literature, the second most common reason why patients were secluded was because of their psychological disorder. Twenty eight papers indicate that patients were secluded because of their symptoms. In some cases patients were delusional, disorientated or confused (Binder 1979). In other cases patients were psychotic (Ahmed & Lepnurm 2001; Hafner, Lammersma, Ferris, & Cameron 1989; O'Brien & Cole 2004), disturbed (Campbell, Shepherd, & Falconer 1982; Gerlock & Solomons 1983; Morrison & Lehane 1991; Russell, Hodgkinson, & Hillis 1986), had agitated behaviour (Convertino, Pinto, & Fiester 1980; Kirkpatrick 1989), or experienced acute excitement or escalating behaviour (Schwab & Lahmeyer 1979; Soloff & Turner 1981).

The third most prevalent reason why patients were secluded was because they were disruptive. Ten papers stated that patients were secluded because their behaviour was disruptive to the therapeutic environment. The majority (n=8) of the papers did not define “disruptive behaviour” and only reported that patients were disrupting the therapeutic milieu (O'Brien & Cole 2004), or their behaviour was disruptive to the therapeutic environment (Mattison & Sacks 1978), they had disruptive behaviour (Convertino, Pinto, & Fiester 1980) or they were secluded because of disruptiveness
(Oldham, Russakoff, & Prusnofsky 1983). Only two of the ten papers gave examples of disruptive behaviour. In the first a female patient was disruptive by ripping down curtains and smearing body fluids on herself (Fitzgerald & Long 1973) and in the second patients disrupted ward rules or routine (Campbell, Shepherd, & Falconer 1982).

Fourthly, nine papers indicated that patients were being secluded because they were at risk of absconding. For some the most common reasons for secluding a patient were to prevent them from absconding from unlocked wards (Plutchik, Karasu, Conte, Siegel, & Jerrett 1978), to prevent escape attempts (Norris & Kennedy 1992), to hold involuntary patients who were considered at high risk for elopement in the ward (Tooke & Brown 1992), or they secluded patients because they had an intention to abscond (Morrison, Lehane, Palmer, & Meehan 1997).

The fifth most prevalent reason why patients were secluded was because they refused to take their medication or to give them medication (n=6). In four of these studies patients refused to take medication, but the reason why they were secluded because of this refusal was not explained (Binder 1979; Campbell, Shepherd, & Falconer 1982; Gudjonsson, Rabe-Hesketh, & Szmukler 2004; Kirkpatrick 1989). In another study the reason why a patient was secluded because of refusal to take medication was stated more clearly. The patient was secluded due to his mania and refusal to take medication (Fisher 1995), so his symptoms may have warranted some form of containment, but the patient did not want to take medication, so was secluded instead. In the last study uncooperative patients were secluded to give them psychotropic medication (Soloff & Turner 1981). How secluding a patient assisted staff to give psychotropic medication to patients was not explained.

Seclusion was also utilised as treatment or because a patient requested to be secluded. Four papers indicated that seclusion was used as a form of treatment, e.g. some papers reported that patients were secluded to provide specific treatment (Mason & Whitehead 2001), for timeout (Ahmed & Lepnurm 2001), to give time for medication to take effect or during assessment (de Cangas 1993) as well as for destimulation (Schwab & Lahmeyer 1979). Four studies also indicated that patients were secluded because they requested it. Two of these were conducted in the UK (Morrison, Lehane, Palmer, & Meehan 1997; Morrison & Lehane 1995b) and indicated that 3% to 6% of patient requested self-seclusion, while in two studies conducted in the United States (Oldham, Russakoff, & Prusnofsky 1983; Soloff & Turner 1981), only 1% to 2% of the secluded patients requested to be secluded. All four studies were conducted in acute wards or PICUs.

In three studies uncooperativeness was cited as a reason to seclude patients (Convertino, Pinto, & Fiester 1980; Gesler et al. 2004; O’Brien & Cole 2004). This was the seventh most prevalent reason for the use of seclusion. None of the studies explained what behaviour was classified as “uncooperative”, so it was difficult to draw any conclusions. Patients were also secluded because they were intoxicated (Norris & Kennedy 1992; Riley 1996) or had a history of violence (Binder 1979; O’Brien & Cole 2004). Six studies gave other reasons for patients being secluded, e.g. patients were secluded because of anger (Binder 1979), the breakdown in staff-patient relationships, for sullenness, crying, stealing, lying or inciting other patients against staff and disturbing others at night (Campbell, Shepherd, & Falconer
1982), for inappropriate sexual behaviour (Soloff & Turner 1981; Tooke & Brown 1992) or because a patient did not want to put on clothes (Redmond 1980).

A cross-sectional survey of conflict behaviours and containment measures used in 238 two-week admissions in 12 acute psychiatric inpatient wards indicated which conflict behaviour was associated with seclusion in London, England (Bowers, Simpson, & Alexander 2003). Factor analysis revealed seven types of conflict behaviours. These were angry-absconder (physically aggressive against objects and other and attempted to or absconded), absconding-misuser (misused substances and attempted to or absconded), angry-refuser (verbally and physically aggressive against others and refused PRN or regular medication), protester (smoked in a no-smoking area, refused to get out of bed, and refused to see workers), self-harmer (physical aggressive against themselves and attempted suicide), abstainer (refused to eat or drink) and medication-ambivalent (refused or demanded PRN medication). Angry-absconder and angry-refuser were the only conflict behaviour factors that significantly correlated with seclusion episodes. This indicated that verbal or physical aggression against objects or other, attempting to or absconding and refusing PRN or regular medication were all strongly associated with seclusion in London wards.

From the literature it was clear that the most prevalent reason for seclusion was aggression. Patients were mostly secluded because of aggression towards objects, then because of verbal aggression, aggression against self (e.g. self harm) and lastly because of physical aggression towards others. The three successive reasons for secluding patients were because of their mental health and concurrent symptoms, because of disruptive behaviour or because they wanted to abscond.

Reasons for seclusion according to patients

Eleven papers reported reasons for seclusion according to patients. The reasons reported by patients were mostly comparable to those given by staff. For instance, ten of the 11 papers indicated that behaviours such as threatening or attacking staff or others (Binder & McCoy 1983; Norris & Kennedy 1992), violent and aggression towards other patients or property (Hammill 1987; Heyman 1987; Meehan, Bergen, & Fjeldson 2004; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Tooke & Brown 1992), aggressive patient behaviours (Hammill, McEvoy, Koral, & Schneider 1989; Meehan, Bergen, & Fjeldson 2004; Tooke & Brown 1992) and combativeness (Kennedy, Williams, & Pesut 1994) would all lead to seclusion. Aggression towards self, such as suicidal or self-destructive behaviour (Hammill 1987; Kennedy, Williams, & Pesut 1994; Norris & Kennedy 1992; Richardson 1987) and disruptive, agitated and uncontrolled behaviour, e.g. loud shouting (Binder & McCoy 1983; Hammill 1987; Hammill, McEvoy, Koral, & Schneider 1989; Heyman 1987; Kennedy, Williams, & Pesut 1994; Meehan, Bergen, & Fjeldson 2004; Norris & Kennedy 1992; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978) also contributed to being secluded. Patients reported that they think uncooperativeness, e.g. refusing to do something staff requested, refusing medication or ignoring verbal limits (Binder & McCoy 1983; Heyman 1987; Meehan, Bergen, & Fjeldson 2004; Norris & Kennedy 1992; Richardson 1987; Tooke & Brown 1992) and inappropriate sexual behaviour (Tooke & Brown 1992) would lead to seclusion. Some patients reported that they were secluded because of their symptoms, e.g. they were hallucinating (Kennedy, Williams, & Pesut 1994) or to prevent them from absconding (Meehan, Bergen, &
Seven of the 11 papers indicated that there were also a few other reasons patients reported on being secluded. Some patients said they asked to see the doctor and were secluded (Heyman 1987). Seemingly minor disturbances such as swearing were also perceived to lead to seclusion (Meehan, Bergen, & Fjeldson 2004). Patients reported that fighting or acting crazy, using bad or loud language, embarrassing or tormenting staff, smoking cigarettes or throwing things (Richardson 1987) would all lead to seclusion. There were also a few patients who said they were misunderstood or did not know why they were secluded (Norris & Kennedy 1992), a few said they did nothing wrong (Hammill 1987) or had false ideas of why they were secluded (Binder & McCoy 1983). Some patient denied any behaviour that might justifiable lead to seclusion, or they didn't remember or gave peripheral answers (Hammill, McEvoy, Koral, & Schneider 1989). There were also some patients who thought staff maliciously used seclusion (Hammill, McEvoy, Koral, & Schneider 1989). One study, however, indicated that patients generally knew why they were placed in seclusion, and most agreed with staff on reasons for their containment (Sagduyu et al. 1995).

The literature indicated that the majority of reasons patients reported for being secluded compared to those reported by members of staff. A few patients also thought they were secluded because staff wanted to punish them, for minor disturbances or were unsure why they were secluded. Staff could explain the reasons for secluding a patient more clearly to eliminate confusion and false ideas.

12. Patient behaviour during seclusion

Seven papers, the majority conducted in acute inpatient settings in the USA, described patients’ behaviour while they were in seclusion. Six of the seven papers reported that patients were sleeping, lying down, were settled or were praying (Campbell, Shepherd, & Falconer 1982; Gerlock & Solomons 1983; Kennedy, Williams, & Pesut 1994; Kirkpatrick 1989; Richardson 1987; Sagduyu, Hornstra, Munro, & Bruce-Wolfe 1995). Three papers indicated that patients were destructive to property or banging on doors, windows or walls (Campbell, Shepherd, & Falconer 1982; Mattison & Sacks 1978; Richardson 1987).

Other patient behaviours included pacing, crying or being remorseful (Campbell, Shepherd, & Falconer 1982; Richardson 1987), being assaultive or violent (Kirkpatrick 1989; Mattison & Sacks 1978), physically deteriorating, e.g. urinated on themselves or walking around nude (Campbell, Shepherd, & Falconer 1982; Mattison & Sacks 1978); refusing medication, trying to abscond, being verbally abusive (Campbell, Shepherd, & Falconer 1982), exercising (Richardson 1987), mentally deteriorating, self-harming (Mattison & Sacks 1978), disruptive or being agitated (Kirkpatrick 1989).

The majority of papers indicated that patients were subdued while secluded; however some patients became more disruptive, deteriorated physically and mentally, or self-harmed. The literature indicated that although seclusion had a positive effect most of the time, it is not always the best strategy for every patient. Staff could make a note of
those patients who do not improve with the use of seclusion, so other strategies could be implemented.

13. Patient behaviour after seclusion

Six studies reported patients’ behaviour after seclusion. All of the papers indicated that seclusion had a settling effect on patients or that patients were calmer and less disturbed after seclusion, e.g. patients were quiet, engaged in constructive activities, patients went off by themselves, got back into their usual routine or went to their rooms after seclusion (Baxter, Hale, & Hafner 1989; Campbell, Shepherd, & Falconer 1982; Gerlock & Solomons 1983; Kirkpatrick 1989; Muir-Cochrane 1996; Richardson 1987). Other behaviours included apologising, being demanding, agitated or upset, requesting medication or lying down, attempting violence, abasing, being argumentative, attempting self-injury (Campbell, Shepherd, & Falconer 1982), being abusive (Campbell, Shepherd, & Falconer 1982; Kirkpatrick 1989) or were accompanied outside for a cigarette before returning to the main ward areas (Muir-Cochrane 1996). Again, the literature indicated that although seclusion had a positive effect on most patients, it did not always have the desired results. None of the papers investigated reasons why patients were still displaying negative behaviour after seclusion.

14. Interventions used before seclusion

Five studies described interventions used by staff prior to seclusion (El-Badri & Mellsop 2002; Kirkpatrick 1989; Mason & Whitehead 2001; Tunde-Ayinmode & Little 2004; Wynaden et al. 2002). All of these included verbal interventions, such as counselling, the primary nurse or other member of staff talking to the patients, trying to de-escalate a situation by trying to calm a patient down or discussions with others (El-Badri & Mellsop 2002; Kirkpatrick 1989; Mason & Whitehead 2001; Tunde-Ayinmode & Little 2004; Wynaden, Chapman, McGowan, Holmes, Ash, & Boschman 2002). Staff also gave patients medication (usually PRN medication) (El-Badri & Mellsop 2002; Kirkpatrick 1989; Tunde-Ayinmode & Little 2004), provided a quiet area, such as suggesting the patient rest in their room or put the patient in time-out (El-Badri & Mellsop 2002; Mason & Whitehead 2001; Tunde-Ayinmode & Little 2004), and some reported holding a patient (El-Badri & Mellsop 2002). There were only a small number of papers investigating the use of other interventions before secluding a patient, the majority indicating that staff mostly used verbal interventions.

15. Medication and seclusion

The literature on medication and seclusion was varied (n=22). The majority of the studies (n=14) were conducted in acute wards or PICUs and the United States (n=13). Analysis of differences between countries and ward types (e.g. PICU or acute wards, forensic settings, general hospital wards, etc.) did not produce significant findings.

Three studies indicated that the majority of secluded patients received medication while secluded (Hammill, McEvoy, Koral, & Schneider 1989; Morrison & Lehane 1996; Wells 1972). In contrast, three studies found that the minority of secluded patients received some kind of medication while secluded (Kirkpatrick 1989; Ramchandani, Akhtar, & Helfrich 1981; Sagduyu, Hornstra, Munro, & Bruce-
Wolfe 1995). These studies did not indicate if the medication given was PRN medication or not. Three studies reported that the majority of secluded patients received PRN medication while being secluded (Mann, Wise, & Shay 1993; Salib, Ahmed, & Cope 1998; Thompson 1986). In contrast two studies conducted in acute setting in the USA showed that the minority of patients received PRN medication while secluded (Kennedy, Williams, & Pesut 1994; Richardson 1987).

Four case-control studies using retrospective analysis of official records investigated the relationship between medication and seclusion. According to Gerlock (1983) there was a highly significant difference between secluded and non-secluded patients regarding first medication - 42% of the non-secluded patients were not on medication compared to 16% of the secluded patients. Repo-Tiihonen (2002) stated that traditional neuroleptics and atypical neuroleptics were used significantly more often among the secluded cases than the control cases. Tunde-Ayinmode (2004) found that secluded patients were more likely to be administered medication immediately on admission compared to non-secluded patients, and that secluded patients were significantly more likely to receive PRN medications than non-secluded patients with 61% of secluded patients receiving three or more PRN medications per day compared to 26% of the non-secluded patients. Lastly, LeGris (1999) stated that secluded patients received a significantly higher mean daily dose of medication, including PRN medication, than the non-secluded group. These studies indicated that secluded patients received more medication than non-secluded patients.

A few intervention studies looked at specific medication such as risperidone and clozapine. One study conducted in the USA found that risperidone had a positive impact on seclusion in a state-hospital psychiatric population. There was a significant decrease in seclusion duration and seclusion episodes per person per month during risperidone treatment, compared to the pre-risperidone treatment period (Chengappa et al. 2000). Three studies conducted in the USA found that Clozapine decreased the use of seclusion (Chengappa et al. 2002; Mallya, Roos, & Roebuck-Colgan 1992; Ratey et al. 1993). Significantly fewer patients were put in seclusion during and after receiving clozapine than before the treatment (Mallya, Roos, & Roebuck-Colgan 1992), the amount of hours spend in seclusion decreased (Ratey, Leveroni, Kilmer, Gutheil, & Swartz 1993) and there was a statistically significant reduction in seclusion rates from the total pre-clozapine treatment period to the mirror-image clozapine treatment period (Chengappa, Vasile, Levine, Ulrich, Baker, Gopalani, & Schooler 2002). Lastly, a retrospective study of patient records for a one year period, indicated that secluded patients were more likely to receive anti-psychotic drugs (64% of patients) as first medication compared to the non-secluded patients (42% of patients), and that the control group were more likely to receive antidepressants (17% of patients) as first medication compared to the secluded group (5% of patients) (Gerlock & Solomons 1983). One intervention study replaced haloperidol with oral olanzapine as PRN medication, because it is an oral atypical antipsychotics that dissolves more rapidly (Simpson, Thompson, & Beckson 2006), but there was no difference in seclusion rates before and after the replacement.

According to the literature secluded patients received more medication than non-secluded patients overall. Secluded patients also received more PRN medication and anti-psychotic medication, such as risperidone and clozapine, both of which effectively reduced seclusion rates.
16. Profile of patients

Age

Thirty six papers gave information on the age of secluded patients. Thirteen of the 36 papers indicated that the mean age of patients being secluded ranged between 28.7 years old (Gerlock & Solomons 1983) and 38 years old (Wells 1972). The median age of secluded patients did not differ that much from the mean. One study indicated a median of 37 years old (Stolker, Hugenholtz, & Heerdink 2005) and another indicated that the median age of secluded patients decreased from 35 years old before an intervention to 29 years old after (Sullivan, Wallis, & Lloyd 2004).

Seven more studies reported that secluded patients were usually “younger”, with the majority indicating that patients younger than 35 accounted for the greatest number of seclusions (Binder 1979; LeGris, Walters, & Browne 1999; Meehan, Bergen, & Fjeldson 2004; Russell, Hodgkinson, & Hillis 1986; Salib, Ahmed, & Cope 1998; Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005; Soloff & Turner 1981). These results were not supported by statistics.

Although five of the 16 case-control studies comparing secluded patients with non-secluded patients found no age difference between the two groups, 11 found secluded patients to be significantly younger than non-secluded patients. The most comprehensive study was a retrospective analysis of data collected from 1997 till 1999 from a sample of 996 patients admitted to three general psychiatric hospital wards in The Netherlands (Stolker, Hugenholtz, & Heerdink 2005). When the secluded patients (n=285) were compared to the non-secluded patients (n=771), young age (16-30 years old) was significantly associated with seclusion.

In contrast one study using regression analysis indicated that age had no significant influence on seclusion (Korkeila et al. 2002) and one retrospective record analysis study, conducted over five and a half years, indicated that 51% of secluded patients were males, 60-79 years old (Wynn 2002). Most papers of the 36 papers only included patients of working age (18-60 years old), so these outlying results could not be adequately compared to the rest of the studies. Overall, the literature suggested that secluded patients were in their late twenties and thirties and younger than non-secluded patients.

Gender

Most (n=14) descriptive studies reported that female and male patients were secluded in nearly equal amounts, although a few others (n=10) suggested that male patients were more likely to be secluded and 8 studies showed that female patients were more likely to be secluded. None of these studies reported significant results. All of the case-control studies (n=7) comparing secluded patients with non-secluded patients indicated that there was no differences according to gender between secluded and non-secluded patients (Convertino, Pinto, & Fiester 1980; Hammill 1987; Hammill, McEvoy, Koral, & Schneider 1989; Mattison & Sacks 1978; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Schwab & Lahmeyer 1979; Sullivan, Wallis, & Lloyd 2004). Gender had no apparent influence on seclusion.
Ethnicity

The literature on ethnicity and its influence on seclusion rates were varied. Overall 17 papers gave information on the influence of ethnicity on seclusion. Six of these studies (all conducted in the USA) indicated that the majority of secluded patients were white, but did not indicate how this related to the overall hospital population or compared to the non-secluded population (Binder 1979; Binder & McCoy 1983; Norris & Kennedy 1992; Oldham, Russakoff, & Prusnofsky 1983; Ramchandani, Akhtar, & Helfrich 1981; Richardson 1987).

Five of the 17 studies indicated that black or ethnic minority (BME) patients were secluded more often. One of these, a case-control study conducted in New Zealand, reported that patients who were Maori and non-European were significantly more likely to be secluded compared to European patients (El-Badri & Mellsop 2002). The four other studies conducted in the USA showed that black patients were overrepresented in the secluded sample (Soloff & Turner 1981), the rate of seclusion was greater for ethnic minority patients (4.3 episodes per 1000 patient days) compared to white patients (2.5 episodes per 1000 patient days) (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardenstine, & Kopchick 2005), black and Asian patients were secluded more often than would be expected based on their percentages in the total population (Price, David, & Otis 2004) and that the majority of a small sample of secluded patients were black (Kennedy, Williams, & Pesut 1994).

The Healthcare Commission examined the seclusion rates in England and Wales over a four year period, and identified the same emerging pattern (Healthcare Commission 2008). The seclusion rate was higher than average for the Other Black group in all four censuses (2005-2008). Seclusion was higher for the Black Caribbean group in 2005, 2007 and 2008, higher for the Black African group in 2005 and 2008 and higher for the Other White group in 2007 and 2008. Although the specific group of black or ethnic minority patients changed over the years, it was still always a BME group that was secluded more often than average.

In contrast, six case-control studies (five conducted in the USA and one in New Zealand) indicated that there was no difference in race between secluded and non-secluded patients (Convertino, Pinto, & Fiester 1980; Hammill 1987; Hammill, McEvoy, Koral, & Schneider 1989; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Schwab & Lahmeyer 1979) and that Maori patients were not more likely to be secluded than non-Maori patients (Kumar et al. 2008).

Even though a number of smaller USA studies indicated that there was a tendency to seclude patients from ethnic minority populations more often, more comprehensive studies from the USA reported that there was no difference in race between secluded and non-secluded patients. The literature also indicated contradictory results for seclusion rates of Maori patients in New Zealand. Overall the literature indicated that ethnicity has little to no impact on seclusion rates in the USA and New Zealand, but maybe some influence in England and Wales.

Diagnosis
Forty (40) studies gave some information on diagnosis and seclusion. The relationship between seclusion and diagnosis was difficult to assess because of the use of different terminology and diagnostic systems between studies. Twenty nine (29) were descriptive studies reporting the frequencies of different mental disorders in the secluded populations and 10 were case control studies comparing secluded patients with non-secluded patients.


Twenty (n=20) papers stated that secluded patients were diagnosed with mood disorders (e.g. depression, bipolar disorders, affective disorders) (Ahmed & Lepnurm 2001; Baxter, Hale, & Hafner 1989; Binder & McCoy 1983; Chengappa, Levine, Ulrich, Parepally, Brar, Atzert, Brienz, & Gopalani 2000; El-Badri & Mellsop 2002; Fitzgerald & Long 1973; Gerlock & Solomons 1983; Hoekstra, Lendemeijer, & Jansen 2004; Mann, Wise, & Shay 1993; Norris & Kennedy 1992; Richardson 1987; Russell, Hodgkinson, & Hillis 1986; Sagduyu, Hornstra, Munro, & Bruce-Wolfe 1995; Salib, Ahmed, & Cope 1998; Stolker, Hugenholtz, & Heerdink 2005; Stolker, Nijman, & Zwanikken 2006; Sullivan, Wallis, & Lloyd 2004; Thompson 1986; Thompson 1987; Tooke & Brown 1992; Wells 1972), although one study indicated that secluded patients were less likely to be depressed (Binder 1979).


Five reported that some secluded patients were diagnosed with personality disorders (Ahmed & Lepnurm 2001; Baxter, Hale, & Hafner 1989; Repo-Tiihonen, Paavola, Halonen, & Tiitonen 2002; Salib, Ahmed, & Cope 1998; Stolker, Nijman, & Zwanikken 2006).

Other papers indicated that secluded patients were diagnosed with mental retardation (Ahmed & Lepnurm 2001; Gerlock & Solomons 1983; Thompson 1986; Thompson 1987), organic related disorders (Ahmed & Lepnurm 2001; KaltialaHeino, Korkeila, Tuohimaki, Tuori, & Lehtinen 2000; Richardson 1987; Russell, Hodgkinson, & Hillis 1986; Thompson 1987), acute paranoid reaction disorder (Binder & McCoy 1983), neurosis (Thompson 1987), dissociative disorders (Sullivan, Wallis, & Lloyd 2004),
adjustment disorder (Ahmed & Lepnurm 2001) or paraphilia and gender identity disorder (Ahmed & Lepnurm 2001). One study reported that secluded patients were more likely to be classified as “mentally ill”, opposed to psychopathic disordered, severe mentally ill, etc., under the Mental Health Act (1983) Classification (Mason 1998).

Although two of the ten case-control studies indicated no significant diagnostic differences between secluded and non-secluded patients (Convertino, Pinto, & Fiester 1980; Soloff & Turner 1981), others reported results comparable to the descriptive data. Some of the case-control studies (n=4) indicated that secluded patients were significantly more often diagnosed with schizophrenia than non-secluded patients (Mattison & Sacks 1978; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Ramchandani, Akhtar, & Helfrich 1981; Tunde-Ayinmode & Little 2004), however one study conducted with 85 psychotic patients, consecutively admitted over 8 month period to a single inpatient unit in a general hospital in Canada, stated that there were equal amount of patients diagnosed with schizophrenia in the secluded and non-secluded group (LeGris, Walters, & Browne 1999). Secluded patients also had significantly higher scores on positive symptoms of the Positive and Negative Syndrome Scale (PANSS) than the non-secluded group (Nakajima, Terao, & Nakamura 2003). The PANSS scale is used for measuring symptom severity of patients with schizophrenia.

Regarding mood disorders, three case-control studies indicated that secluded patients were significantly more often diagnosed with bipolar disorders (Mattison & Sacks 1978; Oldham, Russakoff, & Prusnofsky 1983; Schwab & Lahmeyer 1979), and another stated that depressed patients were secluded significantly less often than non-secluded patients (Ramchandani, Akhtar, & Helfrich 1981). Lastly, two papers indicated that character disorders and personality disorders were significantly more often diagnosed with secluded patients (Mattison & Sacks 1978; Ramchandani, Akhtar, & Helfrich 1981), which was also comparable with the descriptive papers. Lastly, one paper indicated that secluded patients had a significantly earlier age of illness onset and appeared clinically more ill at baseline than the non-secluded group (LeGris, Walters, & Browne 1999). Overall it seems that patients diagnosed with schizophrenia, bipolar disorder, and personality disorders were more likely to be secluded than those with other mental disorders, especially depression.

**Employment status**

Two case-control studies reported on the association of employment with seclusion. In the one Canadian study secluded patients were significantly more often employed or full-time students compared to non-secluded patients (p=0.024) (LeGris, Walters, & Browne 1999). In the other Australian study employment status did not affect seclusion rates when compared to non-secluded patients (Tunde-Ayinmode & Little 2004). No clear conclusion about seclusion and employment status can be drawn from the literature.

**Legal status**
Five case-control studies showed that secluded patients were more likely admitted to hospital through involuntary court commitment, compared to non-secluded groups (Hammill 1987; Oldham, Russakoff, & Prusnofsky 1983; Stolker, Hugenholtz, & Heerdink 2005; Thompson 1986; Tunde-Ayinmode & Little 2004). The majority of descriptive studies (n=8) also indicated that most secluded patients were legally detained, although two other studies indicated the opposite. Overall the majority of studies indicated that secluded patients were more likely to be legally detained.

**Marital status**

Two case-control studies indicated that secluded patients were significantly more likely to be single compared to a non-secluded sample (Oldham, Russakoff, & Prusnofsky 1983; Thompson 1986). In contrast, one case-control study found no difference between secluded patients and non-secluded patients with regards to their marital status (Mattison & Sacks 1978; Tunde-Ayinmode & Little 2004) and a regression analysis showed that marital status had no significant influence on seclusion (Korkeila, Tuohimaki, Kaltiala-Heino, Lehtinen, & Joukamaa 2002). No clear conclusion about seclusion and marital status can be drawn from the literature.

**Socio-economic status**

One Finnish study, consisting of a 6 months retrospective chart review of an admission sample, reported the relationship between socio-economic status and seclusion rates (Korkeila, Tuohimaki, Kaltiala-Heino, Lehtinen, & Joukamaa 2002). Using regression analysis, the authors indicated that socio-economic status had no significant influence on seclusion rates.

**Substance misuse**

A retrospective chart review of 85 patients with psychosis, consecutively admitted over an 8 month period to a single inpatient unit in a general hospital in Canada, found that secluded patients had a significant history of drugs and/or alcohol use (LeGris, Walters, & Browne 1999). Patients, who used drugs or alcohol in the past, were secluded significantly more often than those patients without a prior history of substance misuse.

**Previous admissions**

Five studies reported on the relationship between a patient’s previous admissions and subsequent seclusion episodes, but the results were inconclusive. One descriptive study indicated that the risk of seclusion was significantly predicted by previous commitments (Korkeila, Tuohimaki, Kaltiala-Heino, Lehtinen, & Joukamaa 2002). Two case-control studies also reported a trend that secluded patients were more likely to have previous hospital admissions than non-secluded patients (Oldham, Russakoff, & Prusnofsky 1983; Tunde-Ayinmode & Little 2004), but these trends were not significant. One longitudinal case-control study conducted in the UK over 4 years showed that previous admissions were unrelated to seclusion (Thompson 1986) and another conducted in the USA reported that secluded patients had fewer previous hospital stays compared to non-secluded patients (Hammill 1987), but there was no statistical evidence to support this. No clear conclusion could be drawn from these
results, although it does appear that previous admissions have little to no impact on subsequent seclusions.

Repeaters

There were 21 papers reporting information on multiple seclusions, indicating that most patients were not secluded repeatedly. For example, 18 studies indicated that the majority of patients were secluded only once (Ahmed & Lepnurm 2001; Binder 1979; El-Badri & Mellor 2002; Gerlock & Solomons 1983; Kirkpatrick 1989; LeGris, Walters, & Browne 1999; Mann, Wise, & Shay 1993; Mason & Whitehead 2001; Morrison & Leroux 1987; Oldham, Russakoff, & Prusnofsky 1983; Ramchandani, Akhtar, & Helfrich 1981; Richardson 1987; Salib, Ahmed, & Cope 1998; Schwab & Lahmeyer 1979; Soliday 1985; Soloff & Turner 1981; Thompson 1986; Tunde-Ayinmode & Little 2004) and only two studies showed that the majority of secluded patients were secluded more than once (Baxter, Hale, & Hafner 1989; Russell, Hodgekinson, & Hillis 1986).

A census in England and Wales during 2005 also found that secluding patients repeatedly was uncommon, and became even more infrequent as the number of repeats increased (Healthcare Commission 2005a). The minority (3%) of inpatients had experienced one or more periods of seclusion, even less (0.3%) experienced five or more episodes and only 0.1% had experienced ten or more episode of seclusion within the last three months of their stay (Healthcare Commission 2005a). A retrospective study of seclusion use in psychiatric units in the Newcastle area between 1981 and 1985 showed that although the majority of patients were secluded only once, previous seclusions were associated with subsequent seclusion. Of all those patients secluded once, 43% were secluded again, of those secluded twice before, 64% were secluded again, of those secluded three times, 81% will be secluded again (Thompson 1987).

One retrospective study of official records (July 1977 till June 1978) in one adult psychiatric unit in the USA investigated the differences between patients secluded only once and those secluded multiple times (Gerlock & Solomons 1983). Patients secluded just once had significantly shorter hospital stays (23.8 days) compared to multiple secluded patients (30.6 days). More men than women were secluded overall, but more men were secluded only once (only 27% of the male patients were secluded more than once, compared to 56% of women). Patients secluded only once, tend to have longer seclusion duration (mean=17.6 hours) than repeaters (mean=7.3 hours). The authors found no differences in diagnosis or medication for patients secluded only once and those secluded repeatedly (Gerlock & Solomons 1983).

According to the literature the majority of patients were secluded only once. The more times patients were secluded, the more likely they were of being secluded again, although multiple seclusions were uncommon, and got even more uncommon as the number of repeats increased. Repeaters were usually female, had shorter seclusion durations and longer hospital stays (however patients staying longer in hospital have more chances of being secluded).

Length of stay
Eleven case-control studies indicated that secluded patients had a significantly longer length of stay compared to non-secluded patients (El-Badri & Mellsop 2002; Hafner, Lammersma, Ferris, & Cameron 1989; Hammill 1987; Hammill, McEvoy, Koral, & Schneider 1989; LeGris, Walters, & Browne 1999; Mattison & Sacks 1978; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Ramchandani, Akhtar, & Helfrich 1981; Repo-Tiihonen, Paavola, Halonen, & Tiihonen 2002; Schwab & Lahmeyer 1979; Soloff & Turner 1981). In contrast, two other case-control studies (Gerlock & Solomons 1983; Oldham, Russakoff, & Prusnofsky 1983) and one descriptive study reported that there were no difference between secluded patients and non-secluded patients regarding length of stay (Wells 1972). One retrospective study of official records in an adult psychiatric unit in the USA indicated that patients secluded just once had a significantly shorter length of stay compared to multiple secluded patients (Gerlock & Solomons 1983). According to the literature the majority of studies indicated that secluded patients spent longer time in hospital than those patients not secluded or those secluded only once. This could be because patients who stayed longer have more chances of being secluded, were more unwell or were the more risky patients.

Two papers examined the reasons why patients stay longer in hospital. Data collected from chart reviews of 85 patients with psychosis, consecutively admitted over an eight month period to a single inpatient unit in a general hospital in Canada found that the strongest predictor of length of hospital stay was early medication response (LeGris, Walters, & Browne 1999). The quicker patients responded to their medication (preferably within the first week) the sooner they were discharged. A six month retrospective chart review of an admission sample in three Finnish university hospitals found that length of stay did not differ significantly between voluntary patients and those sectioned under the heading “harmful to others” (physical or verbal threats to others) on admission. If, however a patient received the “harmful to others” criterion while detained in hospital, their treatment episode was significantly longer (69 vs. 46 days, p=0.003) (Tuohimaki et al. 2003).

So it seems that patients who become threatening to others while in hospital or psychotic patients who have difficulty with their medication, will have a longer stay in hospital and would experience more seclusion episodes.

**Global assessment of functioning**

One study identified that the scale, Global Assessment of Functioning (GAF), could be used as a possible determinant of seclusion in the Netherlands (Stolker, Hugenholtz, & Heerdink 2005). A GAF scale indicates the social, occupational and psychological functioning of adults in numeric term. For instance, a GAF score between 91 and 100 indicate advanced functioning in a wide range of activities and the person experience no symptoms. A GAF score between 51 and 60 indicates moderate symptoms or some difficulty in social or occupational functioning, and a GAF score between 1 and 10 indicates a constant danger that the person may hurt themself or others. Data were retrospectively collected over the years 1997-1999 from a consecutive sample of 996 patients hospitalised on adult psychiatric admission wards. According to the researchers, secluded patients had a significantly lower GAF score than non-secluded patients. GAF scores below 55 were strongly associated with seclusion, and GAF score below 35 was even stronger associated with seclusion.
Psychopathy

One study investigated the relationship between psychopathy, according to the Dutch version of Hare's Psychopathy Checklist-Revised (PCL-R), and various types of disruptive behaviour during forensic inpatients’ psychiatric treatment (Hildebrand, De-Ruiter, & Nijman 2003). Ninety-two male participants were included in the sample. Not surprisingly, there was a correlation between PCL-R scores and frequency of seclusion. PCL-R total, PCL-R Factor 1 and PCL-R Factor 2 were all significantly associated with seclusion, but PCL-R Factor 2 (socially deviant lifestyle) was more strongly associated with seclusion than PCL-R Factor 1 (aggressive narcissism). Factor 2 is associated with reactive anger, criminality, and impulsive violence, so a stronger correlation could be expected.

Total serum cholesterol and prolactin levels

Two studies investigated the relationship between total serum cholesterol and prolactin levels of patients and seclusion episodes. A Finish study conducted in a forensic setting found that total serum cholesterol levels for secluded patients were significantly lower than the total serum cholesterol levels of non-secluded patients. Low total serum cholesterol concentrations are associated with violent and suicidal behaviour among psychiatric patients as well as the general population. The optimal cut-off point for total serum cholesterol levels to differentiate secluded patients from non-secluded patients was 5.30mmol/l. Patients with a total serum cholesterol level lower than the cut-off point would be secluded more often (Repo-Tiihonen, Paavola, Halonen, & Tiihonen 2002).

A Japanese study conducted in an acute setting found that the frequency of seclusion was negatively associated with serum prolactin levels (p=0.04) (Nakajima, Terao, & Nakamura 2003). Low prolactin levels, therefore would lead to high incidents of seclusion. Higher dosage levels of antipsychotics could reduce seclusion incidents, because antipsychotic medication produces higher prolactin levels.

According to the literature total serum cholesterol levels and prolactin levels could act as indicators for seclusion. If a patient’s serum cholesterol levels drop below 5.30mmol/l or the patient has low prolactin levels, nurses could observe those patients more closely to identify earlier opportunities to intervene to reduce the use of seclusion, or increase the dosage levels of that patient’s antipsychotic medication. Whether it is practical to take blood samples from patients on a regular basis to monitor total serum cholesterol levels and prolactin levels should be investigated.

17. Other interactions

Some papers not only gave information on the relationship between seclusion and a single variable, but showed the interaction between seclusion and multiple variables, such as seclusion rates and gender and age of secluded patients, or seclusion rates and diagnosis and antecedents of seclusion (because of this some of the results discussed will be presented more than once). The majority of these interaction relationships were not supported with statistical tests, so will only be discussed briefly.

Seclusion incidence
Seclusion was used more frequently on wards where there was more aggression directed at staff (Daffern, Ogloff, & Howell 2003) and were significantly used more often when there was physical aggression towards staff (Parkes 2003), compared to physical aggression towards others or objects. It seemed that staff were quicker to seclude a patient when the aggression was directed at them (staff). This disproportionate use of seclusion could make patients resentful, which would lead to more aggression against staff and even higher rates of seclusion.

**Seclusion duration**

According to the literature, patients secluded only once had longer seclusion durations than those secluded multiple times (no statistics to support this claim) (Gerlock & Solomons 1983) and white patients spend significantly longer average time in seclusion than Asian, black or Hispanic patients (Price, David, & Otis 2004). There was also an indication (although not significant) that male patients had a longer seclusion duration and that older patients stay significantly longer in seclusion than younger patients (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). Another study indicated that there was no significant relationship between the type of assault, target of assault and length of seclusion prescribed (Mason & Whitehead 2001). Overall the literature indicated that older white male patients, who were secluded only once, had longer seclusion durations.

**Environment**

In a study comparing a traditional interior seclusion room with one furnished like an ordinary home, the length of time secluded patients stayed in hospital were not significantly different between those patients assigned to the traditional room or those assigned to the homely room (Vaaler, Morken, & Linaker 2005). These results showed that the seclusion room environment had no influence on the length of a patient's stay.

**Seclusion authorisation**

A retrospective study of official records of seclusion in one acute psychiatric unit over an 18 month period in the UK, showed that male patient seclusions were authorised by one or two different staff members, while female patient seclusions were authorised by three or more different members of staff (Morrison 1990). Seclusion of female patients were authorised by more staff than males seclusions, which means that female patients presented a managerial problem to more nurses in charge of the ward than male patients.

**Patient population levels**

One retrospective study of seclusion incident data in a maximum secure psychiatric hospital in the USA during 1979, showed that reasons for seclusion varied according
to patient population levels (Dietz & Rada 1983). When the hospital was crowded, more patients were secluded because of self-harm incidents. When the hospital was not overcrowded more patients were secluded for physical aggression, verbal aggression or because of disorderly conduct. It could be that a crowded hospital had fewer staff available for observation, so seclusion was reserved for high risk cases, such as patients who wanted to harm themselves.

Age

According to the literature, male patients who were secluded were significantly younger than female patients (Kirkpatrick 1989), female patients had a slightly higher seclusion age (38.4 years old) than males (30.2 years old) (Mann, Wise, & Shay 1993) and older female patients (between 60 and 79 years old) were secluded more times than men or younger female patients (Wynn 2002). Older patients also stayed significantly longer in seclusion than younger patients (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). Overall, the literature indicated that secluded male patients were younger than female patients and older female patients were secluded more times and had longer hospital stays.

Gender

According to the literature, secluded male patients were significantly younger than female patients (Kirkpatrick 1989) and female patients had a slightly higher seclusion age (38.4 years old) than male patients (30.2 years old) (Mann, Wise, & Shay 1993). There was also an indication (although not significant) that male patients had a longer seclusion duration (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005) and were mostly secluded only once (Gerlock & Solomons 1983) compared to female patients.

There was a trend (although not significant) that female patients were involved in more physical attacks on staff before seclusion than male patients (Soloff & Turner 1981), and that seclusion occurred more with older females than males or younger females, and most with females suffering from non-organic psychotic disorders compared to males or females suffering from other disorders (Wynn 2002). The seclusion of female patients were also authorised by more staff than the seclusion of male patients (Morrison 1990). Another study found no differences between secluded male and female patients and their length of stay in the hospital (Mann, Wise, & Shay 1993).

According to this, secluded female patients were older, had shorter seclusion durations, were mostly secluded more than once, were involved in more physical attacks on staff before seclusion and were mostly diagnosed with non-organic psychotic disorders than secluded male patients.

Ethnicity

One paper indicated a trend (although not significant) that white patients were responsible for more physical attacks and escalating behaviour before seclusion than
black patients (Soloff & Turner 1981). White patients also had a significant longer hospital stay compared to black patients (Soloff & Turner 1981) and white patients spend significantly longer average time in seclusion than Asian, black or Hispanic patients (Price, David, & Otis 2004). The literature indicated that white patients were responsible for more aggression before seclusion, had significant longer hospital stays and seclusion durations than Asian, black or Hispanic patients

**Diagnosis**

In a retrospective study of official records over a five year and six months period, seclusion occurred most with female patients diagnosed with non-organic psychotic disorders compared to males or females suffering from other disorders (Wynn 2002). Another study investigated the reasons for secluding patients diagnosed with different disorders (Thompson 1986). Although no statistics were presented to support the findings, there was an indication that non-psychotic disordered patients were mostly secluded because of violence towards staff, bi-polar affected disordered patients were mostly secluded because of being generally disturbed and patients suffering from schizophrenia were mostly secluded because of non-violent threats (Thompson 1986). Although no significant conclusions could be drawn from these results, it does appear that the gender of secluded patients and the reasons for seclusion were influence by the diagnosis of the patients.

**Repeaters**

A retrospective study of official records over a one year period in the USA, indicated that patients secluded only once had longer seclusion durations than those secluded multiple times and male patients were mostly secluded only once compared to female patients (no statistics presented) (Gerlock & Solomons 1983). The literature indicated that female patients were more likely to be secluded repeatedly, but had shorter seclusion durations.

**Length of stay**

In a study comparing a traditional interior seclusion room with one furnished like an ordinary home, the length of time secluded patients stayed in hospital were not significantly different (Vaaler, Morken, & Linaker 2005). Another study found no differences between secluded male and female patients and their length of stay in the hospital (Mann, Wise, & Shay 1993). White patients had a significant longer hospital stay compared to black patients (Soloff & Turner 1981). According to the literature the environment and gender did not have an influence on the length of time a patient stay in hospital, but ethnicity did, with white patients having a longer hospital stay compared to black patients.

**Antecedents of seclusion**

Seclusion was significantly used more often when there was physical aggression towards staff (Parkes 2003) and on the ward where there was more aggression
directed towards staff (Daffern, Ogloff, & Howells 2003). There was a trend (although not significant) that female patients were involved in more physical attacks on staff before seclusion than male patients (Soloff & Turner 1981). One paper indicated a trend (although not significant) that white patients were responsible for more physical attacks and escalating behaviour before seclusion than black patients (Soloff & Turner 1981).

There was also an indication that non-psychotic disordered patients were mostly secluded because of violence towards staff, bi-polar affected disordered patients were mostly secluded because of being generally disturbed and patients suffering from schizophrenia were mostly secluded because of non-violent threats (Thompson 1986). Another study indicated that there was no significant relationship between the type of assault, target of assault and length of seclusion prescribed (Mason & Whitehead 2001). A retrospective study of seclusion incident data in a maximum secure psychiatric hospital in the USA during 1979, showed that reasons for seclusion varied according to patient populations (Dietz & Rada 1983). Patients in this hospital were usually secluded because of self-harm, physical aggression, verbal aggression or because of disorderly conduct (e.g. making noise, disobedience, psychotic behaviour). When the hospital was crowded, more patients were secluded because of self-harm incidents. When the hospital was not overcrowded more patients were secluded for physical aggression, verbal aggression or because of disorderly conduct.

It seemed that antecedents of seclusion varied according to diagnosis and patient population, but overall physical aggression, usually carried out by white female patients suffering from a non-psychotic disorder, were the most prevalent reason for seclusion.

18. Staff characteristics

Staff gender

Four papers indicated that the gender of members of staff on duty influenced the number of seclusion episodes occurring (Convertino, Pinto, & Fiester 1980; Janssen et al. 2007; Kirkpatrick 1989; Morrison & Lehane 1995b). A review of official records of seclusion used in one psychiatric hospital over a two year period (1989-1991) in the UK showed that as the number of female staff on duty increased, the number of seclusions decreased dramatically (Morrison & Lehane 1995b). Two other retrospective analyses, one conducted in 10 inpatient wards in four mid-sized general hospitals in the Netherlands (Janssen, Noorthoorn, Linge, & Lendemeijer 2007) and one in a community centre in the United States (Convertino, Pinto, & Fiester 1980), indicated that female dominated teams secluded significantly more patients than male dominated teams. A Canadian paper reported that on shifts with predominantly male staff, seclusions were twice as likely to occur as shifts with an all female staff, however the number of incidences were too small for statistical significance (Kirkpatrick 1989). No clear conclusion could be drawn from these results.

Staffing level

Eight studies commented on the impact of staffing levels on seclusion incidents (Campbell, Shepherd, & Falconer 1982; Convertino, Pinto, & Fiester 1980; de Cangas
Five of the eight papers indicated that lower staffing levels led to more seclusion episodes and higher staffing levels to lower seclusion rates (Convertino, Pinto, & Fiester 1980; de Cangas 1993; Janssen, Noorthoorn, Linge, & Lendemeijer 2007; Morrison & Lehane 1995a; Morrison & Lehane 1995b; Soloff & Turner 1981). The most comprehensive paper was a retrospective case-control study of seclusion incidents for 25 inpatients in a locked psychiatric crisis care programme in a community mental health centre for 5 weeks (Convertino, Pinto, & Fiester 1980). Analysis of case notes showed that there was a significant relationship between staff-patient ratios and the use of seclusion. When there was high staffing levels, seclusion was used less often. Janssen et al. (2007) found that the increase in staffing levels could be at permanent staff level or bank staff level. In this retrospective analysis study, seclusion incidents decreased significantly when both permanent staff numbers and temporary staff numbers increased in long-stay wards (Janssen, Noorthoorn, Linge, & Lendemeijer 2007).

In contrast, a retrospective study of seclusion records in one acute psychiatric unit in the UK showed that three or more episodes of seclusion occurred with higher staffing levels (5 or more), and one or two seclusion episodes were observed with lower staffing levels (less than 5 staff) (Morrison 1990). Additionally, two other studies found that seclusion was used more frequently on days when staff numbers were stable or nursing staff patterns were optimal (Campbell, Shepherd, & Falconer 1982; Soloff & Turner 1981), although there were no statistical data to support these findings.

There was an indication in the literature that lower staffing levels might lead to more seclusion episodes and higher staffing levels to fewer seclusion episodes. This increase in staffing level could be with temporary or permanent staff.

**Staff education**

One study indicated that staff education had some influence on seclusion incidence. The study was conducted in the Netherlands and suggested that higher educated staff on duty led to lower levels of seclusion (Janssen, Noorthoorn, Linge, & Lendemeijer 2007). This was only true for long-stay wards, were the use of seclusion was more likely if less educated staff were present (e.g. nurses aids and student nurses), and not on admission wards where there were no significant relationship between education and seclusion (Janssen, Noorthoorn, Linge, & Lendemeijer 2007).

**Staff experience**

Two retrospective analysis of official records (Janssen, Noorthoorn, Linge, & Lendemeijer 2007; Morrison & Lehane 1995b) and one observation paper (Morrison & Leroux 1987) showed that seclusion was more frequent when less experienced staff were on duty. Two of these papers only found an association or trend between lower level of clinical experience and greater use of seclusion, and one found a significant relationship between work experience and seclusion on long stay and admission wards (Janssen, Noorthoorn, Linge, & Lendemeijer 2007). This paper also indicated that variability in the team's work experience (i.e. more and less experienced staff on duty on the same shift) significantly reduced seclusion in both admission wards and long
stay wards (Janssen, Noorthoorn, Linge, & Lendemeijer 2007). In contrast, one paper reported that staff experience had no influence on seclusion rate (Schwab & Lahmeyer 1979). In a six month prospective study of the uses and frequency of seclusion in a general hospital psychiatric unit in Chicago, 19 staff members initiated seclusion and seven did not. Of the 19 staff, 12 (63%) had less than one year of psychiatric nursing experience, but there were no correlation found between psychiatric experience and frequency they initiated seclusion. Overall, the literature supported the idea that lower levels of staff experience might lead to an increase in seclusion episodes.

19. Patient attitudes


In an unusual study, the meaning patients ascribed to their treatment periods were analysed through pictures painted by patients diagnosed with acute schizophrenia (Wadeson & Carpenter 1976). Sixty-two patients were evaluated on their art work over a three year period. Patients were not asked to draw a picture about a seclusion
room experience, but a third (n=20) did. Pictures about seclusion could be divided into four categories: 40 were about hallucinations or delusions while in seclusion, 12 portrayed intense distresses associated with seclusion and five drawings focused on a member of staff present at seclusion. Some hallucinations were frightening scenes, and delusions were consistently painted as unpleasant, often terrifying. Seclusion was perceived as punishment and many patients thought they were in prison. The majority of the patients expressed intense negative feelings about seclusion, e.g. feeling sad, angry, miserable, frustrated, scared and isolated. These negative experiences are supported by the findings from the previous papers and showed that the seclusion episode stood out from the rest of the treatment period as a distinct negative incident.

An intervention project for reducing patients' perception of felt coercion while in hospital, initiated in two acute psychiatric wards located in a rural part of Northern Norway, also showed the big impact seclusion had on patients (Sorgaard 2004). The intervention included engagement of the patients in the formulation of the treatment plan, frequent and regular joint patient and staff evaluations and the renegotiation of treatment plans if it was necessary. Overall, the intervention resulted in no change in felt coercion and only marginal changes in two of eight parameters for satisfaction. The main predictor of felt coercion, however, was experiencing seclusion (seclusion accounted for 46% of the explained variance of felt coercion). Therefore patients who experienced seclusion will feel more coerced while in hospital, regardless of their involvement with their treatment plan or staff-patient contacts.

Patients labelled the experience of being taken into a seclusion room, having clothing and belongings removed, dressing in hospital pyjamas and being locked in as awful (Norris & Kennedy 1992). The majority of patients did not like being touched by staff when taken into seclusion and were unhappy to be taken to the bathroom (Norris & Kennedy 1992). More patients than not reported that they did not receive adequate explanation as to why they were secluded (Hammill 1987) or said they were not informed about what behaviour would lead to seclusion, so were at greater risk of being secluded (Meehan, Vermeer, & Windsor 2000).

Patients felt the seclusion room was too cold (Kennedy, Williams, & Pesut 1994; Martinez, Grimm, & Adamson 1999; Norris & Kennedy 1992), stark (Binder & McCoy 1983; Meehan, Vermeer, & Windsor 2000), smelly and lacked ventilation (Kennedy, Williams, & Pesut 1994; Martinez, Grimm, & Adamson 1999). Secluded patients also described the environment around them as too small, claustrophobic (Norris & Kennedy 1992), dirty, hard and lacking in privacy (Martinez, Grimm, & Adamson 1999).

Patients reported varied feelings regarding staff observation while being secluded. In one paper the majority of patients said the presence of nurses outside the room was helpful (Hammill, McEvoy, Koral, & Schneider 1989), in another the majority of patients perceived the 15 min observation checks negatively (Norris & Kennedy 1992) and in yet another, almost half of the patients said staff had spent important time with them during seclusion, and the other half said they felt 'watched' by nurses which was detrimental to their state of mind (Hammill 1987). Patients were not always aware that they were observed. One study reported that only two of the 24 patients were aware that staff were observing them every 15 minutes (Binder &
McCoy 1983) while another reported that 16 out of 17 patients recalled being observed by staff during seclusion (Hammill, McEvoy, Koral, & Schneider 1989).

Not all patients experienced negative feelings while being secluded. A few patients reported that they felt safe and protected while secluded (Heyman 1987; Kennedy, Williams, & Pesut 1994; Mann, Wise, & Shay 1993; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Richardson 1987; Stowers, Crane, & Fahy 2002; Tooke & Brown 1992), and some felt calmer (Fitzgerald & Long 1973; Heyman 1987; Meehan, Bergen, & Fjeldson 2004; Norris & Kennedy 1992; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Tooke & Brown 1992), relieved and more in control (Tooke & Brown 1992). A few papers reported some patient attitudes after seclusion and indicated that although most patients resisted being secluded, many felt differently afterwards. One patient said seclusion helped him a great deal, another patient with hypomania said that his behaviour on admission had required seclusion for his own sake and that of the ward and a woman with schizophrenia indicated appreciation that staff cared enough to stop her destructive behaviour (Wells 1972). In another study the majority of patients said that staff and other patients changed in a positive way towards them after seclusion, and the majority of secluded patients said they changed positively towards other patients as well (Richardson 1987).

A patient’s history of seclusion had an impact on the patients’ perception of seclusion. Patients who had never been secluded reported more positive feelings about seclusion, such as seclusion was helpful, fair, good and not humiliating to patients (Martinez, Grimm, & Adamson 1999; Soliday 1985). Patients who had never been secluded also said it made them feel safe when they saw staff secluding other patients, that staff were doing a good job and that secluded patients got what they deserved for misbehaving (Plutchik, Karasu, Conte, Siegel, & Jerrett 1978). Patients with a previous history of seclusion had negative reactions when they saw other patients being secluded (Binder & McCoy 1983) and said they felt angry or were afraid of being secluded again (Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Wise, Mann, & Murray 1988). The ward environment also had an impact on the patients’ perception of seclusion. A questionnaire survey of 54 secluded adult psychiatric inpatients in one locked ward in the Netherlands investigated patients’ views on seclusion in association with the number of beds per room the patient stayed in (Stolker, Nijman, & Zwanikken 2006). A significant association was found between being in a shared dormitory (three to four bedded rooms) before being secluded and a more positive experience of seclusion. Patients staying in a single room before seclusion had a more negative seclusion experience. The authors suggested that patients from dorm rooms find seclusion more attractive because of the lack of privacy in their own room.

Two related studies indicated that patients without a previous history of being secluded indicated stronger negative feelings towards being secluded, particularly regarding the physical characteristics of the seclusion room (Wise, Mann, & Leibenluft 1989; Wise, Mann, & Murray 1988). Almost 200 consecutively admitted patients were sent to either an unlocked PICU where seclusion rooms were out of the view of patients, or an unlocked psychiatric unit where two seclusion rooms were part of the unit, openly visible to all patients and staff on the open ward and used as open bedrooms when not used for seclusion. Patients with no history of seclusion admitted to the PICU (seclusion rooms out of sight) had a more stereotypical perception of the seclusion room, i.e. a seclusion room is like a padded cell and there will be no
windows, than patients with a history of seclusion (Wise, Mann, & Murray 1988). Patients admitted to the “visible” unit more often felt that patients were cured in seclusion rooms than those admitted to the PICU, regardless of their seclusion history (Wise, Mann, & Leibenluft 1989). Another survey study, investigating staff and patient perceptions of different containment techniques for managing distressed patients (Harris, Rice, & Preston 1989), showed the same. The study was conducted in a maximum secure psychiatric hospital in Canada. The questionnaire described four separate scenarios to which participants were asked to match appropriate actions from nine choices of containment techniques (ranging from asking the patient to go to their room to mechanical restraint). Patients (and staff) who had direct experience of these techniques consistently accepted heavier containment methods for the various scenarios and rated them as less restrictive, than inexperienced subjects.

According to the literature, seclusion made patients feel angry, lonely, sad, hopeless, punished and vulnerable. Not only did the majority of papers indicate that seclusion provoked negative feelings from patients, it also showed that the seclusion episode stood out from the rest of the treatment period as a distinct negative incident. Patients did not like the procedure of being taken into the seclusion room and thought the room was to cold, hard and small. Patients had mixed feeling about being observed, with some experiencing observation as comforting and others experiencing observation as intruding. Some patients did feel calmer or safer in seclusion and had a more positive perception of seclusion after being seclude, however the majority of patients thought seclusion was a negative experience. The literature also indicated that patients without a previous history of seclusion had more positive feelings about seclusion, but a distorted image of the physical characteristics of the seclusion room. Patients staying in a ward with a visible seclusion room thought seclusion was an effective treatment. Although patients with a prior history of seclusion still feared being secluded and did not like seeing other patients being seclude, experiencing seclusion made patients shed distorted perceptions about the severity and restrictiveness of seclusion and the seclusion room. Visible seclusion rooms will improve the image and reduce the mystery surrounding seclusion, so patients could form a realistic perception of the seclusion experience.

**Improvement suggestions**

When asked how the seclusion room could be improved, the majority of the papers reported that patients would prefer more interaction between staff and patients, such as better communication and staff staying with patients to give them more support while in seclusion (Hammill 1987; Meehan, Vermeer, & Windsor 2000; Norris & Kennedy 1992). Usually seclusion rooms were bare with only a mattress and a bed, but patients would like more comfortable furniture and some decorations (Hammill 1987; Heyman 1987; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Tooke & Brown 1992). In three studies patients reported that music, a radio or a television would improve their seclusion experience (Hammill 1987; Heyman 1987; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978) and two papers suggested including a punching bag (Hammill 1987; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978).

Patients would like the seclusion room to be available for self-seclusion (Meehan, Vermeer, & Windsor 2000; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978), for the seclusion door to be kept unlock (Hammill 1987; Tooke & Brown 1992) and for
patients to wear their own clothes while secluded (Norris & Kennedy 1992). Patients also suggested that a debriefing session after seclusion would make their experience better (Norris & Kennedy 1992). Limiting the number of times a patient may be secluded in a day, or only secluding dangerous patients, would also be a big improvement (Tooke & Brown 1992).

Even though the majority of patients do not like being secluded, so the suggested improvements were biased, the literature did indicate that patients would prefer more contact with staff during seclusion. They would also like the seclusion room to be more comfortable and available for self-seclusion. Patients would prefer a limit on the amount of times a patient can be secluded in a one day and suggested organising debriefing sessions after seclusion was terminated.

### 20. Staff attitudes

Twenty-one studies reported staff attitudes towards seclusion. The majority of staff believed that seclusion was largely beneficial for patients, that secluding patients helped run the ward more smoothly, but felt guilty and disappointed that the crisis was not resolved differently (Exworthy et al. 2001; Heyman 1987; Lemonidou et al. 2002; Meehan, Bergen, & Fjeldson 2004; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Stowers, Crane, & Fahy 2002; Tooke & Brown 1992; Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). Most staff denied having punitive intent or any feelings of satisfaction associated with instigating seclusion (Heyman 1987; Meehan, Bergen, & Fjeldson 2004; Tooke & Brown 1992).

Some staff felt pressure from colleagues regarding the way they handled seclusion (Fisher 1995; Mason & Whitehead 2001). Staff indicated that they felt external pressures to terminate seclusion prematurely or indicated that they were discriminated against if they suggested a lesser form of containment (such as talking to the patient), when the rest of the team decided on a more controlling intervention (such as seclusion). Staff did not want to disagree with one another, but also wanted to do what was best for their patient.

The majority of papers indicated that staff thought seclusion had a therapeutic effect on patients. Staff said that the relative peace and quiet of a seclusion room permit the patient to calm down, gain control and change the way they behave through the reduction of sensory stimulation and frustrating social interactions (Heyman 1987; Muir-Cochrane 1996; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Soliday 1985; Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). For other nurses, the seclusion room taught the patient to respect physical limits, it was a space to rebuild, to settle a patient and to create safety in the ward (Alty 1997; Lavoine & Friard 2008; Muir-Cochrane & Harrison 1996). Seclusion also influenced the use of other interventions. A questionnaire was send to 150 consultants and non-training grade doctors in 3 maximum security hospitals, as well as to all consultants working at medium-secure units in southern England. More than half of the respondents thought seclusion helped avoid the use of excessive medication (Exworthy, Mohan, Hindley, & Basson 2001).

Five studies indicated that the majority of staff believed that the unit could not operate effectively without seclusion and that seclusion is necessary to maintain a therapeutic
milieu (Alty 1997; Muir-Cochrane & Harrison 1996; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978; Tooke & Brown 1992; Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). Some nurses, however, were concerned that seclusion could be abused, e.g. that patients may be left in the room too long or that seclusion might be used to compensate for low staffing levels (Alty 1997). Although another reported that the majority of staff didn't think that extra resources, such as more staff or more experienced medical staff would reduce seclusion (Meehan, Bergen, & Fjeldson 2004).

When thinking about the secluded patient’s feelings, staff thought seclusion made patients feel angry or frustrated, scared, helplessly, confused, depressed or sad (Heyman 1987). Staff also thought patients felt punished (Heyman 1987; Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001), disempowered, controlled by others, out of control, or relieved (Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). Some said patients felt safe (Heyman 1987; Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001) and relieved (Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). This is an accurate illustration of patients’ feelings about seclusion.

Three studies compared staffs’ views on seclusion and mechanical restraint. When comparing the use of seclusion with the use of restraint, the majority of staff preferred using seclusion (Lemonidou, Priami, Merkouris, Kalafati, Tafas, & Plati 2002) because seclusion allowed the patient more freedom of movement to release more energy (Klinge 1994; Terpstra et al. 2001). Seclusion was also better than restraint because it decreased external stimuli, allowed the patient to have more control over their own behaviour or taught the patient self-control with minimum restriction, but in a safe environment (Klinge 1994; Terpstra, Terpstra, Pettee, & Hunter 2001). Staff also thought seclusion was less demeaning and humiliating and more physically comfortable than restraint (Klinge 1994).

Staffs’ perception of the effectiveness of seclusion compared to other interventions was influenced by the availability of a seclusion room (Cashin 1996). When two hospital based psychiatric units, in adjoining health service areas in Australia, were compared, staff at the unit with a seclusion room perceived seclusion to be significantly more effective in resolving an emergency than staff at the unit with no seclusion facilities perceived their interventions to be effective. The author did not explain what other interventions were used, but the results indicated that the presence of a seclusion room influenced staff to believe that seclusion was an effective strategy. Staffs’ perception of the effectiveness of seclusion was also influenced by experience. In a survey study, describing four separate scenarios to which participants were asked to match appropriate actions from nine choices of containment techniques (ranging from asking the patient to go to their room to mechanical restraint, with forced medication and special observation), staff who had direct experience of these techniques consistently accepted heavier containment methods for the various scenarios and rated them as less restrictive, than inexperienced staff (Harris, Rice, & Preston 1989). Inexperienced staff rated heavier containment techniques as less effective than experienced staff, but overall staff would have liked to use much heavier containment techniques than they were actually using. The availability of a seclusion room made staff believe they were providing more effective care, but the
use of seclusion made staff become accustomed to the effects of containment so they rate it as less intrusive to patients, than staff who had never secluded a patient.

The literature indicated that the majority of staff believed that seclusion was largely beneficial for patients, that secluding patients helped run the ward more smoothly, but regretted that the crisis was not resolved differently. Some staff felt pressure from colleagues regarding the way they handle seclusion. The majority of papers indicated that staff thought seclusion had a therapeutic effect on patients and believed that the unit could not operate effectively without seclusion. Staff gave accurate descriptions of patients’ feeling while secluded, e.g. safe, depressed or sad. When comparing seclusion with restraint, some staff preferred seclusion because seclusion allowed the patient more freedom, decreased external stimuli more effectively, and taught the patient self-control.

**Improvement suggestions**

Some papers reported improvement suggestions by staff, very similar to those suggested by patients. Staff thought that the seclusion room should be unlocked and available for patients who would like to be alone for a while or for patients who requested to be secluded (Heyman 1987; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978). The seclusion room should be more comfortable (Heyman 1987; Plutchik, Karasu, Conte, Siegel, & Jerrett 1978), should include a punching bag, access to music and should be painted to have a calming effect on secluded patients (Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). Some nurses also wanted secluded patients to be allowed access to the open unit activities and want a member of staff to stay with the secluded patients (Tooke & Brown 1992). Some psychiatrist working in medium and maximum security hospitals in southern England suggested there should be an upper time limit to the use of seclusion and a stricter review procedures (Exworthy, Mohan, Hindley, & Basson 2001).

Not all members of staff agreed however. In a survey of nurses' perceptions of seclusion, in three psychiatric settings in Western Australia, the majority disagreed that patients should be able to listen to music or that reading material should be provided for patients in seclusion (Wynaden, Orb, McGowan, Castle, Zeeman, Headford, Endersbee, & Finn 2001). The majority of these nurses also felt that the seclusion rooms do not have to be more comfortably furnished. This could be because seclusion is used as a low-stimuli environment, and books and music would be counterproductive. More comfortable furniture or a punching bag could increase risk, because it could be used to harm staff coming into the seclusion room or the patients could use it to harm themselves.

A comprehensive survey study investigated the use of seclusion and seclusion policies and procedures used in 39 medium and high secure units in England, Scotland & Wales (Cormac, Russell, & Ferriter 2005). Although all seclusion policies used the Code of Practice guidelines (MHA 1983) regarding decision-making, observation and documentation of seclusion, a few additional guidelines to the Mental Health Act Code of Practice were included in the different seclusion policies. A number of policies recommended increased privacy and dignity for patients (i.e. patients should be provided with appropriate clothing and observation should be restricted to only appropriate staff), better observation panels should be implemented so all angles of
the room was visible to staff, proper ventilation and adjustable temperature and light intensity should be installed, a clock should be visible from the patient’s bed, adequate toilet and shower facilities should be provided, improved physical health records should be kept, targets for terminating seclusion should be clearly described before the patient was secluded so both staff and patients will know what should be achieved before termination, patients should be allowed to contact significant others to say they were secluded and to request a visit.

Some staff wanted more seclusion rooms per ward. A cross-sectional survey regarding containment measures and procedures were send to 86 psychiatric admission wards in German speaking Switzerland in September 2001 (Needham et al. 2002). The majority (82%) of the wards had one or more seclusion rooms, but almost half of the staff reported that there were not enough seclusion rooms. Half of the wards had one seclusion room, 27% had two and some had six. Some staff were upset that they had to manage dangerous patients by transferring them to adjacent wards.

The literature indicated that staff would prefer the seclusion room to be more available to patients, that there should be an upper time limit on seclusion and that a member of staff should stay with the secluded patients. The literature was inconsistent regarding the introduction of more comfortable furniture or entertainment into the seclusion room, but listed many more improvement suggestions. Maybe a more comfortable seclusion environment with a member of staff to supervise the patients at all times would be a solution; however that would put the designated member of staff at increased risk.

21. Intervention studies

Fifteen studies reported outcomes for programmes or interventions designed to reduce the incidence of seclusion. All the studies were conducted in the USA, except for two from the UK (Mistral, Hall, & McKee 2002; Templeton, Gray, & Topping 1998) and one from Australia (Sullivan, Wallis, & Lloyd 2004). Half (n=8) of the studies were conducted in acute wards, one in a forensic setting and one in a PICU in a general hospital (five papers did not indicate a specific setting). Only seven of these studies used statistical analyses to measure changes in seclusion rates (Carlson & Holm 1993; Chengappa, Levine, Ulrich, Parepally, Brar, Atzert, Brienzo, & Gopalani 2000; Chengappa, Vasile, Levine, Ulrich, Baker, Gopalani, & Schooler 2002; Hellerstein, Staub, & Lequesne 2007; Mallya, Roos, & Roebuck-Colgan 1992; Sullivan, Wallis, & Lloyd 2004; Templeton, Gray, & Topping 1998). The study periods varied a great deal between studies, from 90 days to 11 years.

There were varying results reported for these intervention studies. Seven studies reported a reduction in seclusion episodes (Chengappa, Levine, Ulrich, Parepally, Brar, Atzert, Brienzo, & Gopalani 2000; Chengappa, Vasile, Levine, Ulrich, Baker, Gopalani, & Schooler 2002; Mallya, Roos, & Roebuck-Colgan 1992; Mistral, Hall, & McKee 2002; Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005; Taxis 2002; Templeton, Gray, & Topping 1998), one study showed no difference in seclusion episodes (Sullivan, Wallis, & Lloyd 2004) and one study indicated an increase in seclusion episodes after the intervention (Morrison et al. 2002). Nine studies reported a reduction in seclusion duration after the intervention (Carlson & Holm 1993; Chengappa, Levine, Ulrich, Parepally, Brar, Atzert, Brienzo, & Gopalani
Five of the fifteen studies (Chengappa, Levine, Ulrich, Parepally, Brar, Atzert, Brienzo, & Gopalani 2000; Mallya, Roos, & Roebuck-Colgan 1992; Ratey, Leveroni, Kilmer, Gutheil, & Swartz 1993; Simpson, Thompson, & Beckson 2006) used medication as a form of intervention and will be discussed separately from those using more comprehensive strategies (multi-faceted interventions).

Multi-faceted interventions

Ten of the fifteen intervention studies used complex interventions. All of the studies used descriptive analysis of seclusion rates before and after the implementation of an intervention as evidence for the effects of the different intervention strategies. Comparisons were made difficult by studies reporting seclusion rates differently, e.g. seclusion episodes per month (Craig, Ray, & Hix 1989; Mistral, Hall, & McKee 2002; Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002; Taxis 2002), episodes per 1000 patient days (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005), or median rates (Sullivan, Wallis, & Lloyd 2004). Because of these limitations, the effectiveness of different interventions was difficult to compare. To overcome this problem the percentage of change in seclusion episodes, seclusion duration and number of patients secluded were calculated as a measure to compare the different studies (see Addendum 3).

There were a few commonalities between the different interventions, but with varied outcomes. For instance, six studies indicated that risk training (including de-escalation skills and early assessment of disruptive behaviour) decreased seclusion episodes by between 67% to 85% (Mistral, Hall, & McKee 2002; Taxis 2002), decreased seclusion duration between 68% and 36% (Hellerstein, Staub, & Lequesne 2007; Sullivan, Wallis, & Lloyd 2004), decreased the number of patients involved in seclusion with 94% (Hellerstein, Staub, & Lequesne 2007), increased seclusion duration with 98% (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996) or had no effect on seclusion episodes (Sullivan, Wallis, & Lloyd 2004).

Five papers indicated that administrative or ward policy changes were part of the intervention. These included the improvement in incident management systems, the developed of ward expectations for patients, medication procedures, clarifying expectations regarding staff positions, more frequent staff rotations, reduced seclusion durations, evaluation of patients with two or more consecutive seclusions and increased escorted off-unit activities. Again, the results were inconclusive, with some studies indicating a decrease in seclusion episodes by 85% to 96% (Smith, Davis,
Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005; Taxis 2002), a decrease in seclusion duration by 68% and a 94% decrease in the number of patients secluded (Hellerstein, Staub, & Lequesne 2007). Others indicated no change in seclusion episodes but a 36% decrease in seclusion duration (Sullivan, Wallis, & Lloyd 2004) or showed a massive increase in both seclusion episodes and duration (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002).

Four studies developed aggression management plans, assault programmes and other individualised care plans as part of their intervention to reduce seclusion rates. The most recent of the four interventions designed a Coping Agreement Questionnaire to assess newly-admitted patient's preferences for dealing with agitation (Hellerstein, Staub, & Lequesne 2007) and staff used the patient's coping preferences to deal with emotional upsets. One of these studies experienced a 450% increase in seclusion episodes and 1122% increase in seclusion duration (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002), two reported a 85% reduction in seclusion episodes (Taxis 2002), a 68% reduction in seclusion duration and a 94% decrease in the number of patients secluded (Hellerstein, Staub, & Lequesne 2007). The last study found no difference in seclusion episodes before and after the intervention, but did experience a 36% decrease in seclusion duration (Sullivan, Wallis, & Lloyd 2004). Again the literature showed inconsistent findings.

Three studies included refurbishment of the ward environment as part of their intervention. Two of the studies experienced a 67% to 85% reduction in seclusion episodes (Mistral, Hall, & McKee 2002; Taxis 2002) and another indicated a 54% reduction in seclusion duration (Craig, Ray, & Hix 1989).

Two papers indicated that increased staffing, decreased unit size and decreased patient-to-staff ratios were part of the intervention (Craig, Ray, & Hix 1989; Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). Both of these papers experienced a 54% to 88% decrease in seclusion duration and one a 96% decrease in seclusion episodes, after the interventions. Although none of these studies measured the effects of increased staffing levels or decreased unit size directly, the literature does suggest that staffing levels may play an important part in the reduction of seclusion levels.

Improved communication was also part of two intervention studies which reported a 67% to 85% decrease in seclusion episodes (Mistral, Hall, & McKee 2002; Taxis 2002). Both focussed on improved communication feedback within staff teams and between management and staff teams. The first intervention included an evaluation system by which every event of seclusion was evaluated according to specific guidelines. A quarterly report was compiled and distributed between the charge nurses so all in the team would be aware of the rate of containment and least-restrictive measures used (Taxis 2002). Staff were also asked to attend regular ward management meetings in which practical problems were addressed e.g. pay. Staff were expected to attend monthly meeting between community staff and ward staff and lastly they were expected to attend weekly meetings facilitated by an outsider on group-dynamic principles and to explore the cause and possible solutions to ward problems. The last paper focussed on improving staff-patient communication (Mistral, Hall, & McKee 2002). Staff and patients had to have community meetings on a daily basis where staff and patients could voice their concerns. Staff were also encourage to communicate
regularly with their assigned patients to discuss care plans (Mistral, Hall, & McKee 2002). Improved communication was consistently associated with reduced seclusion.

Lastly, two more intervention studies formed psychiatric emergency response teams or special management teams, which were security guards used to either manually restrain at risk patients or with a show of force and some conflict management techniques, resolve dangerous situations (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002; Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). These security guards usually worked in a team of seven and were bleeped to the emergency location. The effectiveness of these teams were inconclusive, with one study reporting a 96% decrease in seclusion episodes and the other a 450% increase.

Other intervention elements which were associated with a reduction in seclusion rates included clarifying aims and structure (ward rules), giving staff personal alarms and getting more police involvement (67% reduction in seclusion episodes) (Mistral, Hall, & McKee 2002), writing a new seclusion policy modelled on the Department of Health Code of Practice for Seclusion (62% reduction in seclusion episodes and 46% reduction in seclusion duration) (Templeton, Gray, & Topping 1998), increased interdisciplinary involvement (54% reduction in seclusion duration) (Craig, Ray, & Hix 1989), getting support from leadership (e.g. deputy secretary and chief psychiatrist), forming advocacy groups led by families and former patients, increased the quantity and quality of treatment (96% reduction in seclusion episodes and 88% reduction in seclusion duration) (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005), using occupational therapy (46% reduction in seclusion duration) (Carlson & Holm 1993) and educating patients to empowered them to collaborate with the staff (85% reduction in seclusion episodes) (Taxis 2002). One paper included external factors, namely a change in state policy which encouraged a reduction in the use of seclusion and the development of second-generation anti-psychotics (96% reduction in seclusion episodes and 88% reduction in seclusion duration) (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). Interventions which showed an increase in seclusion rates was scheduling staff meetings to review the implementation of the intervention strategies (98% increase in seclusion duration) (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996) and appointing a nurse consultant (450% increase in seclusion episodes and 1122% increase in seclusion duration) (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002). None of these intervention components was used by any other study, so comparisons were impossible and it is unclear whether the inclusion of these components will have the same effect on seclusion rates in different settings.

From the literature it seems that although the majority of the studies indicated a decrease in seclusion rates, the correct component of a successful intervention is still uncertain. Only the refurbishment of the ward environment, improved staffing levels, and improved communication had an overall positive effect on seclusion rates.

Maybe it is not individual components, but rather the whole intervention programme that should be used as a measure for the effectiveness of reducing seclusion rates. The biggest reduction in both seclusion duration and episodes were reported by an 11 year retrospective record analysis study (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). Seclusion episodes were reduced with 96% (from
7.20 episodes per 1000 patient days in 1991 to 0.30 episodes per 1000 patient days in 2000) and seclusion duration was reduced with 88% (from 10.83 mean hours per year to 1.31 mean hours per year). The intervention was supported by key leadership (e.g. deputy secretary and chief psychiatrist), advocacy groups against containment were initiated (led by families and former patients), a psychiatric emergency response teams was formed, an improved incidence management system was developed, there was an increase in the quantity and quality of treatment and a decreased in unit size and patient-to-staff ratios. Some factors that influenced the reduction in seclusion rates were external such as the change in state policy to reduce the use of seclusion and the development of second-generation anti-psychotics. No statistical tests supported these results.

Examining the paper reporting the biggest increase in seclusion episodes and duration, (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002), however, identified some of the same strategies. After the intervention, which included nursing administrative changes (developed ward expectations for patients, medication procedures and clarified expectations regarding staff positions), a special management team (security guards outfitted with helmets, face shields, protective gloves, knee, chest and shin pads and Kevlar sleeves), aggression management plans and the appointment of a nurse consultant, the number of seclusion episodes increased by 450% and seclusion duration increased by 1122% over the year.

Both these interventions included administrative or system changes and the initiation of a special response team, but reported vastly varied results. The one study was conducted in an acute inpatient setting in nine state hospitals over an 11 year period and coincided with a external state policy change to reduce seclusion and the development of second generation anti-psychotic medication (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005). The other study was a local intervention in a forensic setting in one maximum secure psychiatric hospital over a 12 month period (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002). The variance in seclusion rates could indicate that the setting, study period and whether the intervention included any external factors could be important predictors of intervention outcomes. Maybe an aggressive intervention approach was ineffective in a forensic setting and can positive change only be achieved over a longer period of time.

Seclusion rates were not the only measure used to determine the effectiveness of the different intervention strategies. Mechanical restraint rates before and after the intervention were also measured (Carlson & Holm 1993;Craig, Ray, & Hix 1989;Hellerstein, Staub, & Lequesne 2007;Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002;Richmond, Trujillo, Schelzer, Phillips, & Davis 1996;Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005;Taxis 2002). Just like seclusion rates, mechanical restraint rates provided weak support for the different interventions, because changes in rates cannot be attributed to the effects of the interventions strategies.

Other studies reported some observation data, but with no supporting evidence (Craig, Ray, & Hix 1989) or gave results from an audit of documentation, but did not indicate the exact changes included in the renewed policy intervention (Templeton, Gray, & Topping 1998). Again, these papers did not measure the intervention outcomes.
effectively, and very few took into account other factors that could influence the intervention. Only 3 papers reported demographic or clinical data concerning the intervention groups. All of the studies indicated no significant differences in the demographic or clinical data between the before and after intervention groups (Carlson & Holm 1993; Mistral, Hall, & McKee 2002; Sullivan, Wallis, & Lloyd 2004), except for Haloperidol which decreased significantly in the post-intervention group of one study (Sullivan, Wallis, & Lloyd 2004).

Four studies did measure additional intervention outcomes to some extent or indirectly. In the first study, discussed in detail earlier, aggressive and violent incidences (194 incidents in June to 144 incidents in December) and staff injuries decreased (46 incidents from January till June, and 40 incidents from July till December) (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002). This decrease could be attributed to the use of aggression management plans and the use of a special management team wearing protective clothing for restraining at-risk patients. However, both seclusion and restraint rates increased greatly.

The second intervention study using additional measures included staff training (risk assessment and alternative containment methods), the development of a Coping Agreement Questionnaire to assess newly-admitted patient's preferences for dealing with agitation and ward policy changes (decreased seclusion duration from four hours to two hours, instructed security guards to use de-escalation techniques instead of automatic restraint and seclusion, evaluated patients with two or more consecutive seclusions and increased/encouraged escorted off-unit activities) (Hellerstein, Staub, & Lequesne 2007). The 68% decrease in seclusion duration and 94% decrease in the number of patients secluded could be attributed to the instruction of security guards to use de-escalation techniques instead of mechanical restraint and seclusion and the training of staff to use alternative methods of containment, however there were no significant reduction in number of patients mechanically restrained and duration of restraint. The number of absconds per month decreased significantly which could be attributed to the increased encouragement of escorted off-unit activities such as smoke breaks or going to the shops, but it is not clear. The significant decrease in patient-related staff injuries per month could be because of the staff training and the development of a coping agreement indicating patient's preferences for dealing with agitation, however overall the number of patients involved in fights per month did not decrease significantly.

The third intervention study using additional measures included training staff to do early assessments of disruptive behaviour and to use least restrictive alternatives instead of seclusion and restraint, with improved teamwork when seclusion and restraint was required (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996). Staff meeting were organised as part of the intervention to review the implementation. During the study period 773 incidents of the 873 disruptive incidents were managed with least restrictive alternatives such as one-to-one verbal interaction (33%), PRN medication (28%), decreasing stimulation (21%), time-out (10%), physical activities (5%), relaxation (2%) and other (1%). Total mechanical restraint hours also decrease from 3388 per year to 1812 per year, but total seclusion hours increased with 98%. From this paper it is clear that as the use of restraint decreased, the use of seclusion increased, which could indicate that some containment measures can be substituted for other forms of containment. As there was no baseline data reported for the least
restrictive measures, it is not clear whether the use of fewer restraint was substituted by the increase use of least restrictive alternative methods of containment or the effect of this intervention on overall levels of containment.

Lastly, one intervention study included improved communication (between staff and patients and staff and management), the clarification of aims and structure and improved safety by conducting risk training, giving staff personal alarms, and increasing police involvement in the ward (Mistral, Hall, & McKee 2002). Semi-structured interviews conducted with members of staff before and after the intervention, indicated that staff felt there were was an improvement in communication, better team cohesiveness, a better relationships with management and improved clarity and structure. There was also a significant increase in staffs' self-esteem, skills and knowledge which could be attributed to the risk training. The 62% reduction in short-term staff illness over a two year period could be a result of the introduction of personal alarms and increased police involvement, if this short-term illness included staff taking time off because of injury or emotional distress caused by a patient. There was no significant difference in the admission sample over the study period and seclusion episodes decreased by 67%. Mistral et al. (2002) was the only recent paper, conducted over a reasonable length of time (2 years and 9 months), reporting a reduction in seclusion rates with supporting evidence for the intervention strategies used, which include the refurbishment of the ward and improved communication.

**Medication interventions**

Five studies investigated seclusion rates before and after the introduction of different medications or the change of medication on a ward. These types of medication interventions usually involved retrospective record analysis comparing outcomes for a period before and after the intervention.

All of the studies used descriptive analysis of seclusion rates before and after the implementation of the intervention as evidence for the effects of the medication intervention strategy. As with the multi-faceted intervention studies, comparisons were made difficult by studies reporting seclusion rates differently ((e.g. mean seclusion episodes per month (Burns 1993) or number of patients secluded (Simpson, Thompson, & Beckson 2006), etc.) so the percentage of change in seclusion episodes, seclusion duration and number of patients secluded was calculated again as a measure to compare the different studies (see Addendum 4). Four studies reported a reduction in seclusion episodes and seclusion duration. One study showed no difference in the number of patients secluded before and after the intervention (Simpson, Thompson, & Beckson 2006).

Four studies used the anti-psychotic medication risperidone (Chengappa, Levine, Ulrich, Parepally, Brar, Atzert, Brienzo, & Gopalani 2000) and clozapine (Chengappa, Vasile, Levine, Ulrich, Baker, Gopalani, & Schooler 2002;Mallya, Roos, & Roebuck-Colgan 1992;Ratey, Leveroni, Kilmer, Gutheil, & Swartz 1993) to reduce seclusion rates. All four studies were conducted in the USA and reported a 64% to 83% reduction in seclusion episodes and 22% to 88% reduction in seclusion duration. All of these papers also reported a decrease in restraint rates, with one including case study data to show increased level of functioning in the whole sample (n=5 patients),
a 24% decrease in frequency of using chemical restraint for four patients, a 32% reduction in assaults in 4 patients, 65% decrease in self-abusive behaviour in four patients and 48.50% decrease in agitation and verbal aggression in all five patients (Ratey, Leveroni, Kilmer, Gutheil, & Swartz 1993). From the literature it seems that risperidone and clozapine had a positive effect on containment rates and conflict rates.

One intervention study replaced haloperidol with oral olanzapine as PRN medication, because it is an oral atypical antipsychotics that dissolves more rapidly (Simpson, Thompson, & Beckson 2006). There was no difference in seclusion rates: 16 patients were secluded before the intervention and 16 patients were secluded after the intervention. There was also no difference in mechanical restraint rates (13 patients were restrained before and 12 after the intervention). As in the multi-faceted studies, seclusion and mechanical restraint rates provided weak support for these interventions, because changes in rates cannot be attributed solely to the effects of the medication. The durations of the before and after periods only ranged between six and 12 months. None of these papers took into account other factors that could influence the intervention outcomes, so it was difficult to draw sound conclusions.

22. Seclusion and the working model

Evidence for and against the working model

Four studies demonstrated the relationship between emotional regulation and seclusion rates. In the first study, 557 forms documenting incidents of control and restraint, completed over a four-year period by nurses in a UK psychiatric hospital, were content analysed (Leggett & Silvester 2003). Forms were coded "controllable-staff" when the incident was attributed to a cause that the member of staff were normally expected to influence without effort (e.g. a review of the patient’s treatment may have improved the situation). "Uncontrollable-staff" were coded when the member of staff would be unlikely to control the causes (e.g. the patient’s aim to achieve physical harm made it impossible for the member of staff to avoid the situation). Forms were coded "controllable-patient" when the incident was attributed to a cause that the patient was normally expected to influence without effort (e.g. refusal of medication). "Uncontrollable-patient" was coded when patients would be unlikely to influence the causes (e.g. delusional behaviour). Forms were coded "neither controllable nor uncontrollable" when there were no clear indication of controllability.

The paper reported that staff secluded patients more often when they think patients had control over the situation ("controllable-patient") and when they felt they had no control over the situation ("uncontrollable-staff"). When staff do not understand the difficult behaviour of patients in a psychological way, they could become angry and increasingly use seclusion as punishment. When staff feel they have no control over a situation, they may become afraid and use seclusion as a means of self-defence, rather than as a type of therapy designed to allow patients time to regain control of their behaviour. So if staff were unable to regulate their emotions, they may use seclusion as a form of punishment or in self-defence to regain a feeling of control over difficult incidents.
In the second, interviews with 18 nurses on two locked inpatient units in a large medical centre in the USA, indicated that they would choose more controlling interventions, such as seclusion, rather than time-out or talking to patients, when they thought their safety were in jeopardy (Fisher 1995). The literature indicates that there was a relationship between staffs’ fear and the use of seclusion. In the same study (Fisher 1995), staff indicated that they desired a therapeutic relationship with patients, but were concerned for their personal safety and felt they needed to keep a distance between themselves and patients. They want to care for the patient, but fear made them cautious which could result in poor therapeutic care.

The third and forth studies also showed a connection between emotional regulation and seclusion rates. In the one study seclusion was used more frequently on the ward where there was more aggression towards staff (Daffern, Ogloff, & Howells 2003) and in the other seclusion was used mostly when aggression was directed at staff, especially physical aggression towards staff (Parkes 2003). Again, it seemed that staff were less tolerable if they felt threatened and would use seclusion more often.

Overall the literature indicated that if staff were unable to regulate their emotions, they may use seclusion as punishment or in self-defence, especially if the aggression was directed at them. Emotional regulation, however, was not the only factor responsible for increased seclusion rate associated with aggression directed towards staff. It could be that the frequent use of seclusion may have impaired the relationship between staff and patients, leading to aggression or the frequent use of seclusion exposed staff to a greater likelihood of aggression during the process of seclusion. De-escalation techniques could also have been less effective when aggression was directed towards staff than when a patient’s anger was directed towards other patients or themselves, in which case they have no hostility towards the source of verbal intervention. So instead of staff not regulating their fearful emotions, the increased seclusion rates associated with aggression directed towards staff could be the result of patients harbouring angry feelings, the general risk of the seclusion procedure or the ineffectiveness of other de-escalation techniques.

Six intervention studies demonstrated the relationship between technical mastery and seclusion rates. Staff training such as de-escalation techniques and one-on-one discussions with patients (Taxis 2002), prior intervention techniques (no definition was given for prior intervention techniques) (Craig, Ray, & Hix 1989), workshops where staff were taught to use verbal de-escalation to defuse potential violent situations (Sullivan, Wallis, & Lloyd 2004), risk training (Hellerstein, Staub, & Lequesne 2007;Mistral, Hall, & McKee 2002), and the use of least restrictive alternatives, such as one-to-one verbal interaction, instead of seclusion and restraint (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996), unfortunately showed varied results. Training decreased seclusion episodes by between 67% to 85% (Mistral, Hall, & McKee 2002;Taxis 2002), decreased seclusion duration between 68% and 36% (Hellerstein, Staub, & Lequesne 2007;Sullivan, Wallis, & Lloyd 2004), increased seclusion duration with 98% (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996) or had no effect on seclusion episodes (Sullivan, Wallis, & Lloyd 2004). In one study 773 incidents of the 873 disruptive incidents were managed with least restrictive alternatives and total restraint hours decrease from 3388 per year to 1812 per year, but total seclusion hours increased with 98% (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996). As there were no baseline data reported for the least restrictive
measures, it is not clear whether the use of fewer restraints and more seclusion was substituted by the increase use of least restrictive alternative methods of containment or the effect of this intervention on overall levels of containment. Although the evidence was poor because most of the intervention studies did not measure their outcomes effectively, the majority of papers indicated that technical mastery decreases seclusion rates.

A few intervention studies mentioned the effect of teamwork skills, especially sharing the burden of care. None of these papers reported teams sharing the burden of routine tasks, but rather helping each other in high risk situations. For instance, the first intervention incorporated staff training to improve their teamwork when seclusion and restraint was required (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996). Unfortunately, seclusion duration increased with 98%. Another intervention study concluded that, although it was not a specific target area, semi-structured interviews conducted with members of staff indicated that staff felt there were improved team cohesiveness after the multi-faceted intervention (consisting of improved communication, refurbishment, improved safety and clarity of aims and structure) was completed (Mistral, Hall, & McKee 2002). The paper only reported that conflict and staff division decreased, and did not give concrete examples of improved teamwork, but seclusion episodes decrease with 67%. Although it was difficult to attribute the changes in seclusion rates to any one variable, the literature showed there was a relationship between teamwork and seclusion rates. The effectiveness of this relationship, however, was still unclear.

Five papers showed how effective structure could influence seclusion rates, especially policy clarity, ward rules and ward procedures. One intervention study implemented a new seclusion policy modelled on the Department of Health Code of Practice for Seclusion (Templeton, Gray, & Topping 1998). Although the paper reported no information on the exact changes or the policy, seclusion episodes decreased by 62% and seclusion duration by 46%. Smith et al. (2005) also indicated that, although it was an external factor, the state policy changed to reduce the use of seclusion contributed to their intervention reducing seclusion episodes by 98% and seclusion duration by 88% (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005).

Stability around rules for patient conduct was incorporated in two interventions. One intervention study included the clarification of aims and structure in the ward (Mistral, Hall, & McKee 2002). All the patients knew the sanctions and rules of the ward and seclusion episodes reduced by 67%. The other paper indicated that the developed of ward expectations and medication procedures for patients were part of the intervention (Morrison, Mormon, Bonner, Taylor, Abraham, & Lathan 2002), but showed a massive increase in seclusion episodes and duration. Although the evidence was poor because most of the intervention outcomes were not measured effectively, the majority of papers did indicate that effective structure decreased seclusion rates.

Lastly one paper demonstrated a relationship between organisational support and seclusion rates. Organisational support entailed a management that is deeply integrated into clinical care or had a presence on the ward. Although there were no evidence to suggest that the management team were integrated into clinical care, semi-structured interviews conducted with members of staff before and after an
intervention which reduced seclusion episodes by 67%, indicated that staff enjoyed a better relationship with management (Mistral, Hall, & McKee 2002).

Nine studies gave evidence to support the working model and four studies gave ambiguous support or were against the working model. According to the literature, emotional regulation, technical mastery, effective structure and organisational support could decrease the use of seclusion. The relationship between teamwork skills and seclusion rates was still unclear. The evidence to support these findings was poor because changes in seclusion rates could not always be attributed to the different intervention strategies. Most of the interventions were multi-faceted and outcomes were not measured effectively.

Evidence against the working model

One paper showed an interaction between conflict and containment. A retrospective analysis of records of two PICUs in South Australia, one with a seclusion room and one without, showed an association between higher levels of seclusion and lower levels of conflict (Hafner, Lammersma, Ferris, & Cameron 1989). In the financial year 1986 to 1987 there were 22 injuries to staff in the ward with no seclusion room and 17 injuries to staff in the ward with a seclusion room. After adjusting for bed numbers and occupancy rates it became evident that there were 55% more cases of staff injuries caused by patients on the ward with no seclusion room, than the ward with a seclusion room. The seclusion rate in the PICU with the seclusion room was 3.51 seclusions per bed per month. This evidence seems to suggest that higher levels of containment is associated with lower levels of conflict, so achieving lower levels of containment and lower levels of conflict is not possible.

One study demonstrated a relationship between different containment methods. The intervention included training staff to do early assessments of disruptive behaviour and to use least restrictive alternatives instead of seclusion and restraint (Richmond, Trujillo, Schelzer, Phillips, & Davis 1996). During the study period 773 incidents of the 873 disruptive incidents were managed with least restrictive alternatives such as one-to-one verbal interaction (33%), PRN Medication (28%), decreasing stimulation (21%), time-out (10%), physical/diversional activities (5%), relaxation (2%) and other interventions (1%). Total restraint hours decrease from 3388 per year to 1812 per year, but total seclusion hours increased with 98%. From this paper it is clear that as the use of restraint decreased, the use of seclusion increased, which could indicate that some containment measures can be substituted for other forms of containment, so an overall low containment rate is not achievable. As there were no baseline data reported for the least restrictive measures, it is not clear whether the use of fewer restraint was substituted by the increase use of least restrictive alternative methods of containment or the effect of this intervention on overall levels of containment.

One paper demonstrated how psychiatric philosophy, especially the belief in the efficacy of treatment producing improvement in patients, could drive the decision to seclude a patient (Exworthy, Mohan, Hindley, & Basson 2001). A questionnaire, designed to survey attitudes to and views of the practice of seclusion, was sent to consultants and non-training grade doctors in the three maximum-security hospitals in England and to consultants at medium-security units in southern England. Those psychiatrist who saw the use of seclusion as therapeutic, would use seclusion
significantly more than those who do not think seclusion has any therapeutic benefits. The literature showed that psychiatric philosophy influenced the use of seclusion, but that the belief in the efficacy of treatment would not necessarily lead to a decrease in seclusion rates.

One paper showed an interaction between effective structure and containment rates. A natural experiment examined the effects of the merger of two formerly separate neuropsychiatric evaluation units into one (Gray & Diers 1992). Interviews with staff identified the month in which the two units merged (month 1) as a chaotic period, because staff were confused about their role in the new structure, wanted to keep the identity of the old teams and did not have enough time for patient care. Staff identified months three to four and eight to 12 as times of low stress, because the unit pulled together. The authors suggested that staff went through two phases: a personal recovery from the merge (month 3 and 4) and a team recover from the merge (month 8 to 12). In the personal recovery period, staff started to re-established ward control, although they still functioned individually. In the second phase staff re-established team structure, e.g. all staff using the same rules and handling patients more consistently. Seclusion was used most often in the second and fourth month after the merge, and then decreased to slowly increase again, peaking at its highest level in just under a year (month 11) after the merge. The literature indicated that seclusion was used more frequently when individual staff members and the team established effective structure. The evidence to support these findings was poor. Staff stress was not measures statistically or defined and other factors such as environmental changes, leadership changes and patient population changes were not taken into account.

Lastly, one paper indicated how the support of co-workers (teamwork skill) can have a negative impact on the interaction with patients (Fisher 1995). Interviews with 18 nurses on two locked inpatient units in a large medical centre in the USA indicated that some nurses felt pressured by co-workers to use more severe methods of containment. These nurses were victimised or labelled inexperienced if they suggested a lesser form of containment (such as talking to the patient), when the rest of the team decided on secluding the patient. Staff did not want to disagree with the rest of the team, but also want to do what is best for their patient. Usually getting on with colleagues took priority over patient care, because staff depend on each other during violent situations.

Four studies gave evidence against the working model. Overall the literature indicated that lower levels of conflict can only be achieved with higher levels of containment and that different containment methods can be substituted for others, so the level of containment will stay constant. There was also some evidence to suggest that psychiatric philosophy, effective structure and teamwork skills will increase the use of seclusion, instead of decreasing seclusion rates. Again, the evidence to support these results was weak.

Points the working model has missed

Seven papers reported intervention strategies the working model missed. Four of these papers used strategies that either had no clear influence on seclusion rates or showed an increase in seclusion rates. These were administrative changes (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002; Smith, Davis, Bixler, Lin, Altenor, Altenor,
Hardentstine, & Kopchick 2005; Sullivan, Wallis, & Lloyd 2004; Taxis 2002), the
development of aggression management plans (Morrison, Morman, Bonner, Taylor,
Abraham, & Lathan 2002; Sullivan, Wallis, & Lloyd 2004; Taxis 2002) and appointing
a nurse consultant (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002).
As indicated in the intervention study section, administrative and ward policy changes
included an improvement in incident management systems, the clarification of
expectations regarding staff positions, more frequent staff rotations and an improved
audit tool to evaluated seclusion episodes to give direct feedback to staff member
regarding containment rates. Aggression management plans included assault
programmes and other individualised care plans to control aggressive patients. Both
of these strategies showed inconsistent findings, with some papers indicating a
decrease in seclusion rates and others an increase in seclusion rates. The appointed
nurse consultant was an advocate for staff and worked on decreasing violence in the
ward (Morrison, Morman, Bonner, Taylor, Abraham, & Lathan 2002), but this
intervention caused a 450% increase in seclusion episodes and 1122% increase in
seclusion duration. These studies indicated a relationship between administrative
changes, the development of aggression management plans, the appointment of a
nurse consultant and seclusion rates, but the effectiveness of the strategies was
inconclusive or was detrimental to the reduction of seclusion rates.

Six papers reported 13 intervention strategies the working model missed which
showed a reduction in seclusion rates. These strategies were all discussed in detail in
the intervention studies section, so will only be mentioned here. They were:

- Refurbishment of the ward environment (Craig, Ray, & Hix 1989; Mistral, Hall, &
  McKee 2002; Taxis 2002).
- Increased staffing levels (Craig, Ray, & Hix 1989; Smith, Davis, Bixler, Lin,
  Altenor, Altenor, Hardentstine, & Kopchick 2005).
- Improved communication (between staff, patients and management) (Mistral, Hall,
  & McKee 2002; Taxis 2002)
- Patient education and involvement (empower patients to collaborate with staff,
  especially in the management of the patient during times of crises so staff will use
  the patient's coping preferences to deal with emotional upsets) (Hellerstein, Staub,
  & Lequesne 2007; Taxis 2002).
- Giving staff personal alarms and getting more police involvement (Mistral, Hall, &
  McKee 2002).
- Instructing security guards to use de-escalation techniques instead of automatic
  restraint and seclusion (Hellerstein, Staub, & Lequesne 2007).
- Getting support from key leadership (e.g. deputy secretary and chief psychiatrist)
  (Smith, Davis, Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005).
- Forming advocacy groups (led by families and former patients) (Smith, Davis,
  Bixler, Lin, Altenor, Altenor, Hardentstine, & Kopchick 2005).
- Increased and encouraged escorted off-unit activities (e.g. smoke breaks)
  (Hellerstein, Staub, & Lequesne 2007).
- Increased the quantity and quality of treatment (Smith, Davis, Bixler, Lin, Altenor,
  Altenor, Hardentstine, & Kopchick 2005).
- Evaluation of patients with two or more consecutive seclusions by the clinical
director (Hellerstein, Staub, & Lequesne 2007).
- Included occupational therapy in the ward (Carlson & Holm 1993).
• Decreased seclusion duration from four hours to two hours (Hellerstein, Staub, & Lequesne 2007).

According to the literature, the inclusion of these strategies in the working model would lead to lower levels of containment. As all of the points the working model has missed came from multi-faceted intervention studies, and outcomes were not measured effectively, it was difficult to attribute any change in seclusion rates to only one strategy. It is also unknown if incorporating all of these in a single intervention, or combining them in smaller different intervention, would have the same positive effects on seclusion rates. Again, the evidence to support these findings was poor and no clear conclusion can be drawn.

23. Discussion

Summary

After an extensive literature search, 115 empirical studies were identified and included in this review of seclusion. The majority of the studies (n=58) were retrospective analyses of official records, conducted in an acute ward or PICU setting (n=75) in the United States (n=48) and the United Kingdoms (n=27).

Seclusion incidence data was collected across different samples and for different lengths of time. The majority of studies reporting seclusion rates collected incidence data for a year (12 months), with a range of between one month and 11 years. Sample sizes varied between ten patients involved in seclusion or 50 patients admitted to a ward to 268 patients involved in seclusion or 7040 patient admissions. The number of incidents described ranged from 11 to 3227.

The literature indicated that, apart from the Netherlands, Canada and Finland had the highest patient-based rate for seclusion and the UK and the USA had the highest event-based rate for seclusion. Comparing patient-based rates with event-based rates indicated that most countries (e.g. Australia, Canada, New Zealand, UK and USA) secluded patients more than once. Patients in the UK experienced four repeated seclusion episodes compared to the USA with an average of six. In contrast, papers describing the profile of secluded patients indicated that the majority of patients were secluded only once and the more times patients were secluded, the more likely they were secluded again. This could indicate that seclusion rates in the seclusion literature were biased. The data also came from different studies so proper comparisons of this nature were difficult to make. Patients who were secluded more than once were usually female and had shorter seclusion durations. Secluded patients had a significantly longer length of stay compared to non-secluded patients. These patients became threatening to others while in hospital or were psychotic and had difficulty with their medication. Forensic settings generally had fewer seclusion episodes compared to acute inpatient wards or PICUs, but had longer seclusion durations (except in the USA). Switzerland and Canada had the highest mean seclusion duration, and Australia and the UK the lowest mean duration of seclusion. The literature also indicated that seclusion episodes were longer during the night, on weekends and holidays. The reasons for this increased seclusion duration should be investigated and guidelines for clinical practice should be implemented.
Seclusion episodes occurred mostly during the day or day shift and at times of increased ward activity. Although none of the findings were supported by significant statistics, it seems that there was also a trend to seclude patients more often during the week than weekend, more often in winter (January) than in summer (July) and early after admission compared to later in the patient’s treatment period.

Secluded patients were in their late twenties and thirties and younger than non-secluded patients. They were more likely to be legally detained and diagnosed with schizophrenia, bipolar disorder, and personality disorders and less likely to be diagnosed with depression. Patients with a prior history of substance misuse and lower global assessment of functioning (GAF) scores were secluded more often. The literature indicated that ethnicity had no impact on seclusion rates in the USA and New Zealand; however BME groups were more likely to be secluded in England and Wales. According to the literature gender and socio-economic status had no influence on seclusion and no clear conclusion about the influence of employment status, marital status and previous admissions on seclusion could be drawn.

Seclusion was mostly used in the management of aggressive patient behaviour. It could be aggression directed towards objects, verbal aggression, aggression directed toward themselves (self-harm) or physical aggression towards others. It was not surprising that all the factors of Hare's Psychopathy Checklist, especially factor 2, was significantly associated with seclusion. The second most prevalent reason for using seclusion was because of the patient’s mental health and concurrent symptoms. Patients were also secluded because they were disruptive, wanted to abscond, refused medication, as a form of treatment or self-seclusion or because they were uncooperative. The majority of reasons patients reported for being secluded compared to those reported by members of staff, although a few patients also thought they were secluded because of minor disturbances.

Overall, the literature indicated that lower levels of staff experience and less educated staff on duty led to an increase in seclusion episodes and higher staffing levels led to a decrease in seclusion episodes. This increase in staffing level could be with temporary or permanent staff. The influence of staff gender on seclusion rates was still unclear. Only a small number of papers indicated that staff used other interventions before secluding a patient, verbal interventions being the most common. Patients were usually settled during and after seclusion, although a few became more disruptive or agitated. Secluded patients received more medication than non-secluded patients, especially anti-psychotic medication. This could be a reflection of the secluded patients’ diagnoses. Because the majority of secluded patients were diagnosed with psychotic disorders it is more likely that they would have received anti-psychotic medication.

According to the literature, seclusion made patients feel angry, lonely, sad, hopeless, punished and vulnerable. Not only did the majority of papers indicated that seclusion provoked negative feelings from patients, it also showed that the seclusion episode stood out from the rest of the treatment period as a distinct negative incident. The literature indicated that the majority of staff believed that seclusion was largely beneficial for patients, that secluding patients helped run the ward more smoothly, but regretted that the crisis was not resolved differently.
The influence of the environment on secluded patients’ perceptions, seclusion rates and behaviour varied. Patients felt the seclusion room was too cold and stark, and thought more comfortable furniture, decorations and entertainment would improve their experience. Staff were divided on their opinion of a more comfortable seclusion room, although they included refurbishment of the ward environment as part of three intervention studies. In the first study the whole ward was painted, carpeted and bedrooms and bathrooms refurbished (Mistral, Hall, & McKee 2002). The second intervention transformed a cold and sterile quiet room into a tranquil environment where patients could practice relaxation techniques (Taxis 2002). Lastly, a ward was redesigned to incorporate a special suite with one room especially designed for seclusion, one especially designed for restraint, an anteroom and bathroom (Craig, Ray, & Hix 1989). All of these intervention studies experienced a dramatic reduction in seclusion rates (Craig, Ray, & Hix 1989; Mistral, Hall, & McKee 2002; Taxis 2002). In contrast, one study indicated that the seclusion room environment had no influence on the secluded patients (Vaaler, Morken, & Linaker 2005). There were no difference in symptoms, violent episodes, length of patient stay or patient satisfaction between patients secluded in a traditional interior seclusion area and those secluded in an interior furnished like an ordinary home. One last paper showed a significant association between being in a shared dormitory (three to four bedded rooms) before being secluded and a more positive experience of seclusion (Stolker, Nijman, & Zwanikken 2006). Seclusion was also significantly more prevalent in smaller hospitals compared to larger hospitals. The hospital, ward or seclusion room environment definitely influenced patients’ perception of seclusion and maybe also seclusion rates. Despite staff disagreeing, there was no evidence to indicate that a more comfortable seclusion room would be detrimental to patients.

There were 15 intervention studies aimed at reducing seclusion rates. Ten of the fifteen intervention studies used multi-faceted interventions. There were a few commonalities between the different interventions, but with varied outcomes. Only the refurbishment of the ward environment, improved staffing levels, and improved communication had an overall positive effect on seclusion rates. The intervention with the biggest reduction in seclusion episodes and duration had similar intervention component than the intervention with the biggest increase in seclusion rates. The variance in seclusion rates could indicate that the setting, study period and whether the intervention included any external factors could be important predictors of intervention outcomes.

Some intervention studies measured additional outcomes, but none measured these outcomes effectively or directly, so it was difficult to ascribe the outcomes to the different strategies. The most comprehensive intervention study included improved communication, the clarification of ward aims and structure and the improvement of safety by conducting risk training, giving staff personal alarms, and increasing police involvement in the ward (Mistral, Hall, & McKee 2002). Seclusion episodes decreased with 67%, semi-structured interviews conducted with members of staff before and after the intervention, indicated that staff felt there were an improvement in communication, better team cohesiveness, a better relationships with management, improved clarity and structure, a significant increase in staffs' self-esteem, skills and knowledge, and a 62% reduction in short-term staff illness over a two year period.
Five of the 15 intervention studies investigated seclusion rates before and after the introduction of different medications or the change of medication on a ward. Four studies reported a reduction in seclusion episodes and seclusion duration after risperidone and clozapine were introduced into the wards, but the replacement of haloperidol with oral olanzapine as PRN medication showed no difference in the number of patients secluded before and after the intervention.

**Lessons for future research**

Although this was a comprehensive review of seclusion, there are a few suggestions for future research. The majority of studies were conducted in the United States (42%), so more studies are needed to improve our understanding of seclusion practices in the UK and other parts of the world. More research needs to be conducted in PICU and forensic settings. The majority of studies were conducted in acute ward settings. The small number of studies conducted in PICUs made it difficult to separate these findings from the acute setting and there were fewer seclusion episodes in forensic settings than in acute ward/PICU settings, but none of the studies investigated the basis for this difference. It is important to investigate the distinction in seclusion rates between settings and the reasons for it.

There was no consistent definition of seclusion or seclusion practices, so comparisons between different studies were difficult. There should be a uniform way of reporting seclusion rates to make comparisons easier. A universal event-based rate and incident-based rate system could be the solution. There is a need for national studies on seclusion rates, because incidence data in the seclusion literature may be biased.

There were many reasons for secluding patients, but definitions for different terminologies varied across studies and countries. Some of the reasons for secluding a patient were vague, e.g. if patients were secluded because they became assaultive, does that mean they were physically aggressive or verbally aggressive? If a patient was secluded because of disruptive behaviour, does that mean the patient ignored ward rules, was shouting and screaming or refused to listen to staff? Defining the exact patient behaviour leading to seclusion is very important to draw sensible conclusions. The relationship between seclusion and diagnosis was also difficult to assess because of the use of different terminology and diagnostic systems between studies. A uniform way of reporting diagnosis will make comparisons across studies and countries more meaningful.

There were only a few papers reporting that staff used some sort of intervention before initiating seclusion. There was very little evidence that staff tried to calm patients down or that they used less restrictive containment measures, so it is important to do more research on this area. This review excluded all paper that did not distinguish between seclusion and manual or mechanical restraint (n=48). Although we potentially excluded some valuable information (especially about interventions used before seclusion), not all seclusions are preceded by restraint. The practices of seclusion and restraint must be recorded and reported separately and it is important to investigate these containment measures separately.
Not all patients “improved” while secluded. Some got more agitated or violent. Although they were in the minority, none of the studies investigated this patient group. If there exist differences between secluded patients who were calmed down and those that were not, it is important to know. Maybe the effectiveness of seclusion was influenced by patient or staff variables or by the seclusion procedures used.

There was no clear conclusion on the effects of patient ethnicity, employment status, marital status and previous admissions on seclusion rates. The literature was also inconclusive on the effect of staff gender on seclusion rates. Further research is needed to understand these relationships. There was a few of multiple variable interactions. Although not all of these interaction relationships were significant, further investigation is needed to test whether these were true relationships or not.

Although there were 15 intervention studies, none of them measured their outcomes effectively and only two of the 15 papers were conducted in the UK. Standardised and tested outcome measures should be used and more local studies should be conducted. Not many studies took into account other variables that might influence the outcomes, such as patient variables, management styles, staffing variables, etc. There were no randomised control trials, although there were 27 studies that compared secluded patients with non-secluded patients (trials with controls) and ten studies with before and after comparisons (trials without controls). Almost half of the studies reported some descriptive data from retrospective official records on seclusion. Randomised control trials are needed, because they eliminate bias and false causality. More studies involving members of staff are needed. Only a third of the studies were conducted with members of staff, and two thirds involved patients. All of the mechanism underlying the working model involves staff variables, so it is important to investigate the effects of staffs’ psychiatric philosophy, moral commitments, cognitive-emotional self-management, technical mastery, teamwork skills and organisational support on seclusion rates.
References


Healthcare Commission 2007b, Count Me In. Results of the 2006 National Census of Inpatients in Mental Health Hospitals and Facilities in England and Wales.


Richardson, B. K. 1987, "Psychiatric Inpatients' Perceptions of the Seclusion Room Experience", *Nursing Research*, vol. 36, no. 6, pp. 234-238.


Thompson, P. 1987, "Trends in seclusion practice in the Newcastle area", *Bulletin of the Royal College of Psychiatrists*, vol. 11, pp. 82-84.


### Addendum 1

**Patient-based rate per country per 100 admissions per month**

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<th>Country</th>
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<th>Max</th>
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**Event-based rate per country per 100 admissions per month**

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## Addendum 2

### Average Patient-based rate per country per 100 admissions per month according to country and setting

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### Average Event-based rate per country per 100 admissions per month according to country and setting

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### Addendum 3

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<th>Setting</th>
<th>Methodology</th>
<th>Intervention</th>
<th>Seclusion rates</th>
<th>Seclusion outcomes</th>
<th>Other outcomes</th>
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<tbody>
<tr>
<td>Poulton et al. (2004) AUSTRALIA</td>
<td>Australia</td>
<td>PICU in general hospital</td>
<td>Retrospective record analysis of seclusion rates over 12 months. The intervention was gradually implemented over the study period.</td>
<td>1) Staff duties rotation within the ward. 2) Daily nursing assessment: assessed mental state and risk of patients, develop an individual service plan for next 24 hours. 3) Training (verbal de-escalation).</td>
<td>No differences in number of seclusion episodes (z=-4.10, p&lt;0.001). Reduction in the duration of seclusion from 5.3 median hours to 3.5 median hours. (z=0.30, p=0.76).</td>
<td>0% -36%</td>
<td>No significant differences in demographic data, clinical data, reason for seclusion or medication given between intervention groups, except for Haloperidol which decreased significantly in the post-intervention group.</td>
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<tr>
<td>Sullivan et al. (2004) USA</td>
<td>USA</td>
<td>1 PICU in general hospital</td>
<td>Retrospective record analysis of seclusion rates six-months before and six-months after the intervention was implemented over a 12 month period between the data collection periods.</td>
<td>1) Nursing administrative changes: developed ward expectations for patients, medication procedures and clarify expectations regarding staff positions. 2) Special management team: security technicians for restraining at-risk patients. 3) Aggression management plans 4) Appointed a nurse consultant</td>
<td>Number and duration of episodes increased over the year. In January there were 4 seclusion episodes and patients were secluded for a total of 3.2 hours. In December there were 22 seclusion episodes and patients were secluded for a total of 39.1 hours. (z=0.30, p=0.76).</td>
<td>450% +1122%</td>
<td>Number and duration of episodes for mechanical restraint increased initially but then declined over the year. Rates were higher at the end of study than the beginning. In January there were 17 restraint episodes and patients were secluded for a total of 22.2 hours. In December there were 27 restraint episodes and patients were restraint for a total of 69.9 hours. Aggressive and violent incidences decreased from 194 incidents in June to 144 incidents in December. Staff injuries decreased slightly with 46 incidents from January to June, and 40 incidents from July to December.</td>
</tr>
<tr>
<td>Morrison et al. (2002) USA</td>
<td>USA</td>
<td>1 Forensic Hospital</td>
<td>Retrospective record analysis of seclusion rates over 12 months. The intervention was gradually implemented over the study period.</td>
<td>1) Improved communication (between staff and patients and staff and management) 2) Refurbishment 3) Improved safety: risk training, personal alarms, police involvement 4) Clarity of aims and structure</td>
<td>Reduction in seclusion episodes from almost 3 events per month in 1996 to only 0.7 events per month in 1997. (z=-2.58, p=0.001) as measured by the Staff Attitude Measure, increased significantly. Patients' involvement in day to day social functioning (z=3.32, p=0.002) and practical orientation to face the world outside (z=-2.02, p=0.05), as measured by the Ward atmosphere scale, increased significantly. Semi-structured interview showed improvement in communication, team cohesiveness, relations with management, clarity and structure and quality of patient care. 52% reduction in short-term staff illness over 2 years, from 210 days/months to 97 days/months.</td>
<td>Staff self-esteem in the work (z=2.04, p=0.05) and skills and knowledge adequacy (z=-2.58, p=0.001) as measured by the Staff Attitude Measure, increased significantly. Patients' involvement in day to day social functioning (z=3.22, p=0.002) and practical orientation to face the world outside (z=-2.02, p=0.05) as measured by the Ward atmosphere scale, increased significantly. Semi-structured interview showed improvement in communication, team cohesiveness, relations with management, clarity and structure and quality of patient care.</td>
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<tr>
<td>Trotman et al. (2002) UK</td>
<td>UK</td>
<td>1 Acute inpatient ward</td>
<td>Retrospective record analysis of seclusion rates over 2 years and 9 months. The intervention was gradually implemented over the first study year.</td>
<td>1) Improved communication (between staff and patients and staff and management) 2) Clarity of aims and structure</td>
<td>Reduction in seclusion episodes from almost 0.3 events per month in 1996 to only 0.18 events per month. (z=0.10, p=0.001) as measured by the Staff Attitude Measure, increased significantly. Non-significant reduction in number of patients restrained, duration of restraint and number of patients involved in fights per month.</td>
<td>Staff self-esteem in the work (z=2.04, p=0.05) and skills and knowledge adequacy (z=-2.58, p=0.001) as measured by the Staff Attitude Measure, increased significantly. Patients' involvement in day to day social functioning (z=3.32, p=0.002) and practical orientation to face the world outside (z=-2.02, p=0.05), as measured by the Ward atmosphere scale, increased significantly. Semi-structured interview showed improvement in communication, team cohesiveness, relations with management, clarity and structure and quality of patient care. 52% reduction in short-term staff illness over 2 years, from 210 days/months to 79 days/months. No significant differences in admission sample over 2 years.</td>
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### Addendum 4

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<th>Study</th>
<th>Country</th>
<th>Setting</th>
<th>Methodology</th>
<th>Intervention</th>
<th>Seclusion rates</th>
<th>Seclusion outcomes</th>
<th>Other outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortensen et al. (2007)</td>
<td>USA</td>
<td>3 inpatient wards in 1 academic psychiatric hospital</td>
<td>Retrospective record analysis of seclusion rates 20 months before and 67 months after a gradual implementation of the intervention in the second study year.</td>
<td>1) Policy changes: decreased seclusion duration from 4 hours to 2 hours, security guards to use other de-escalation techniques (i.e. not automatic restraint and seclusion), clinical director evaluated patients with 2 or more consecutive seclusions, escorted off-unit activities were increased/encouraged (e.g. smoke breaks). 2) Staff training: risk assessment, alternative containment methods. 3) Coping Agreement Questionnaire: assessed newly-admitted patient’s preferences for dealing with agitation. Families gave input and staff used the patient’s coping preferences to deal with emotional agitation.</td>
<td>The mean number of patients secluded decreased significantly from 3.1 (SD=1.4 ) to 1.0 (SD=1.1) patients per month. The mean seclusion duration decreased significantly from 41.6 (SD=52.0) hours per month.</td>
<td>-68% -94%</td>
<td>Patient-related staff injuries per month (from 0.7 (SD=1.0) to 0.18 (SD=0.42) per month) and number of absconding per month (1.05 (SD=1.2) to 0.42 (SD=0.7) per month) decreased significantly. Non-significant reduction in number of patients restrained, duration of restraint and number of patients involved in fights per month.</td>
</tr>
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<td>Setting</td>
<td>Methodology</td>
<td>Intervention</td>
<td>Seclusion rates</td>
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</table>
| Taxis (2002)              | USA      | 1 Psychiatric hospital         | Record analysis of seclusion rates over 3 years and 6 months. The intervention was gradually implemented over the study period. | 1) Developed an assault programme and other individualised care plans.  
2) Staff education (extensive curriculum)  
3) Patient education (stress management, anger reduction strategies)  
4) Refurbishment  
5) Improved communication feedback (evaluation system for appropriateness, etc. of containment episodes)  
6) Administrative and programmatic changes (programs were adapted to address the needs of specific patients) | 94% reduction in seclusion and restraint rates overall. Seclusion rates decreased from 20 episodes in 3 months to 3 episodes in 3 months. | -85%  
Mechanical restraint rates decreased from 45 episodes in 3 months to 1 episode in 3 months. |
| Templeton et al. (1998)   | UK       | 3 Acute inpatient wards        | Retrospective record analysis of seclusion rates 12 months before and after the intervention (which was implemented over a 12 month period between the data collection periods). | A new seclusion policy was written and implemented modeled on the Department of Health Code of Practice for Seclusion. No information on the exact changes. | Seclusion rates decreased from 18 patient involved in 29 seclusion episodes per year to 10 patients involved in 11 episodes per year (p=0.0014). No significant difference in the mean duration of seclusion (from 12 hours in 1993-1994 to 6.5 hours in 1995-1996). | -62% -46%  
Audit of documentation: significantly more legible staff name on seclusion record, suitable previous intervention recorded and appropriate plan for seclusion given. Not sig improvement were doctor present within 5 min and Acceptable reason for seclusion given, but they were almost always reportar anyway. |
| Richmond et al. (1996)    | USA      | 4 Acute inpatient wards in 1 medical centre | 12 months before and after retrospective record analysis of 873 disruptive incidents. | 1) Training: early assessment of disruptive behaviour, the use of intervention with the least restrictive alternatives instead of seclusion and restraint and teamwork.  
2) Staff meeting to review implementation | Seclusion duration increased from 398.55 hours to 788.2 hours per year. | +98%  
During the study period 773 incidents of 873 disruptive behaviour were managed with least restrictive alternatives such as verbal intervention (33%), PRN Medication (28%), decreased stimulation (21%), time-out (10%), physical/diversional activities (5%), relaxation (2%) and other (1%). Total restraint hours were reduced from 3388 per year to 1812 per year. |
| Carlson et al. (1993)     | USA      | Acute inpatient wards in 1 state hospitals | Retrospective record analysis of seclusion rates over 90-day inpatient period. 120 patients (60 patients in control group and 60 patients in experiment group). | Occupational therapy | No difference in seclusion episodes: 28 patients were secluded in the control group and 28 patients were secluded in the experiment group.  
No difference in seclusion duration: 5.3 mean hours for the control group and 5.9 mean hours for the experiment group (F1,113 =1.512, p<.22). | -46% 0%  
Small difference in number of patients restraint: 16 patients were secluded in the control group and 10 patients were secluded in the experiment group.  
No difference in restraint duration: 24.1 mean hours for the control group and 9.5 mean hours for the experiment group (F1,113 =852, p<.38).  
No significant differences in demographic data and clinical data between the two groups. |
| Craig et al. (1989)       | USA      | 1 Acute inpatient ward         | 12 months before and after analysis of seclusion rates (the intervention was gradually implemented over the first study year). | 1) Structural changes: structural changes, based on an intensive care unit, were made to the ward to incorporate a special suite with one room especially designed for seclusion, one especially designed for restraint, an anteroom and bathroom.  
2) Increased staffing levels on ward  
3) Training: crisis intervention  
4) Interdisciplinary involvement | Seclusion duration initially increased from 231 to 260 hours per month, but then decreased to 107 hours per month. | -54%  
Mechanical restraint duration reduced from 1030 hours per month to 408 hours per month. Authors observed some improvement in behaviour management plans and patient participation, better staff attitudes, and an increased in communication because of increased staffing levels and multi-disciplinary teams. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Setting</th>
<th>Methodology</th>
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<td>Simpson et al. (2006)</td>
<td>USA</td>
<td>1 PICU in 1 state psychiatric hospital</td>
<td>6 months before and after retrospective record analysis of seclusion rates 352 inpatients.</td>
<td>Replacement of haloperidol with oral olanzapine as p.r.n. medication.</td>
<td>No difference in seclusion episodes: 16 patients were secluded before the intervention and 16 patients were secluded after the intervention.</td>
<td>0% No difference in mechanical restraint episodes: 13 patients restrained in before group and 12 in after group.</td>
</tr>
<tr>
<td>Chengappa et al. (2002)</td>
<td>USA</td>
<td>1 State psychiatric hospitals</td>
<td>Retrospective record analysis of seclusion rates of 42 patients up to 12 months before and after.</td>
<td>Clozapine treatment started.</td>
<td>Reduction in seclusion episodes from 0.44 (SD=0.46) seizures per patient-month to 0.16 (SD=0.32) seizures per patient-month (Z=3.91, p&lt;0.001).</td>
<td>-64% Reduction in mechanical restraint episodes from 0.34 (SD=0.47) restraints per patient-month to 0.08 (SD=0.23) restraints per patient-month (Z=2.27, p=0.032).</td>
</tr>
<tr>
<td>Chengappa et al. (2000)</td>
<td>USA</td>
<td>1 State psychiatric hospitals</td>
<td>Retrospective record analysis of seclusion rates of 74 patients up to 12 months before and after.</td>
<td>Risperidone treatment started.</td>
<td>The mean number of seclusion episodes per person per month during risperidone treatment decreased from 0.23 (SD 0.59) to 0.05 (SD 0.14) (t=2.92, df=73, p=0.005).</td>
<td>-78%</td>
</tr>
<tr>
<td>Ratey et al. (1993)</td>
<td>USA</td>
<td>1 Specialist unit for severely aggressive inpatients in a state hospital</td>
<td>Retrospective record analysis of seclusion rates of 5 patients over 12 months.</td>
<td>Clozapine treatment started.</td>
<td>3 of the 5 patients were secluded and hours spent in seclusion decreased by an overall of 22.2% in 2 of the 3 patients who required this intervention.</td>
<td>-22% Time spent in mechanical restraints reduced by 79% for 3 restrained patients. Frequency of using chemical restraint decreased by 24.2% for 4 patients. 31.8% reduction in assaults in 4 patients. Self-abusive behaviour decreased with 65% in 4 patients. Agitation and verbal aggression decreased by 48.5% 5 patients. Case study data were presented to show increased level of functioning.</td>
</tr>
<tr>
<td>Mallya et al. (1992)</td>
<td>USA</td>
<td>8 State psychiatric hospitals</td>
<td>Retrospective record analysis of seclusion rates 6 months before and 7 months after.</td>
<td>Clozapine treatment started.</td>
<td>Seclusion rate decreased from 1.351 mean episodes per month (SD=3.059) to 0.223 mean episodes per month (SD=0.582) (p&lt;0.001).</td>
<td>-83% Mechanical restraint episodes decreased from 0.938 mean episodes per month (SD=1.083) to 0.083 mean episodes per month (SD=0.240) (p&lt;0.001). Duration of mechanical restraint decreased from 15.7 mean hour per month (SD=8.01) to 5.38 mean hours per month (SD=20.80) (p&lt;0.001).</td>
</tr>
</tbody>
</table>