A study of agitation, conflict and containment levels in association with change in ward physical environment

Oliver Jenkins¹, Stephen Dye¹, Chris Foy²

¹ Norfolk & Suffolk NHS Foundation Trust
² Gloucestershire Hospitals NHS Foundation Trust
Background

Old Ward

New Ward
To assess the impact of a changed ward environment on the levels of inpatient agitation and conflict on an NHS Psychiatric Intensive Care Unit.
Why important?

• 2007 National Audit of Violence (RCPysch): One third inpatients experienced violent or threatening behaviour

• Inpatient on acute psychiatric ward often ‘stressful and traumatic’ (Frueh et al, 2005)

• Negative impacts of seclusion and risks to physical and mental health (Sailas and Fenton, 2003)

• High rates of assaults and violence against staff reported especially on PICU
Antecedents of violence and aggression

• Gender, age, diagnosis, staff training, psychopathology and substance abuse

• Complex mix of factors relating to staff-patient interaction as well as patient, staff and environmental factors (Bowers et al, 2011)
Environmental factors

- **Overcrowding** (Ng et al., 2001)
- **Light** (Olver et al., 2009)
- **Views of nature, homely surroundings and open nursing stations** (Karlin and Zeiss, 2006)
- **Private space, comfort and better visibility** (Van der Schaaf, 2013)
August 2011: moved to new purpose-built PICU

- Both 10-bed facilities
- Staff largely unchanged
- Same Consultant and Ward Manager
- No significant changes in protocols or admission criteria
Method

• Two 3 month periods either side of the move: routine patient data was gathered to assess agitation, conflict and containment.

• Time periods: 6 and 3 months prior and 6 and 3 months post moving from the old ward to the new ward.
Measures

Discrete markers of agitation and conflict:

- **Seclusion**
  - Total duration of all seclusions
  - Number of seclusion episodes
  - Number of secluded patients

- **Observation**
  - Total hours of within eyesight observation

- **Incidents**
  - Number of recorded aggressive incidents
    (defined as ‘verbal and physical aggression to others and physical aggression to the environment’)

To elucidate differences in the data chi squared and independent samples t-tests were applied.
• More direct measures of agitation and conflict were taken from the Nursing Observed Illness Intensity Scale (NOIIS) scores. (Bowers et al, 2011a)

• 5-Item scale: agitation/activity, conflict, apathy and withdrawal, psychological distress, and cognitive accessibility

• Completed by nursing staff at end of every shift

• Good validity against Brief Psychiatric Rating Scale
## NOAA data

<table>
<thead>
<tr>
<th>Agitation and activity</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calm and relaxed all the time, no excessive movement or activity</td>
<td>1</td>
</tr>
<tr>
<td>Signs of restlessness from time to time (e.g., fidgeting, swinging of arms and legs, frowning, increased facial expressiveness, occasional gesticulations)</td>
<td>2</td>
</tr>
<tr>
<td>Brief episodes of pacing, of gross body movement or activity, with other signs of restlessness at other times, possibly with increased talking</td>
<td>3</td>
</tr>
<tr>
<td>Extended signs of restlessness, overactivity, agitation, tension or irritability, unable to concentrate, unable to keep still or remain seated half of the time</td>
<td>4</td>
</tr>
<tr>
<td>Patient agitated or overactive for nearly the whole time, constantly on the go, unable to keep still, and/or tense, irritable and hyper responsive to noises or to the actions of other, and/or interfering with others</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conflict (score the highest that applies)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient is fully compliant with ward rules and accepts all treatment and engages in therapeutic activities</td>
<td>1</td>
</tr>
<tr>
<td>Patient fails to comply with ward rules (e.g., smoking), and/or refuses to see workers, and/or to engage in activities, and/or wash, and/or get up and out of bed when asked, or refuses to go to bed, and/or is abusive</td>
<td>2</td>
</tr>
<tr>
<td>Patient refuses to accept treatment (e.g., medication), or is suspected (or known) to have consumed illegal drugs or alcohol</td>
<td>3</td>
</tr>
<tr>
<td>Patient attempts to or succeeds in absconding</td>
<td>4</td>
</tr>
<tr>
<td>Patient is aggressive to objects or others, or attempts or succeeds to harm self or others.</td>
<td>5</td>
</tr>
</tbody>
</table>
NOIIIS data

• NOIIIS scores were compared:

• Differences in total scores between wards overall and at specific times of the day (using the Mann-Whitney U test).

• Level in reduction of mean overall scores from the point of admission to two weeks later (univariate analysis of variance to measure significance)
The EAI is a 55-item inventory based on national guidelines and PICU research.

Provides quantitative data assessing the ward environment against National Minimum Standards (DoH).

A national survey using the EAI demonstrated its ‘validity and sensitivity to discriminate good and bad physical environments’ (Dix et al, 2005).
Environmental Assessment Inventory

- **Critical issues**: key important areas/aspects which critically affect the functioning of the unit

- **Difficult issues**: difficult to resolve as they require major work to the building

- **Serious issues**: serious and problematic but require less funding

- **Achievable issues**: achievable with modest funding
## Environmental Assessment Inventory

<table>
<thead>
<tr>
<th>Critical issues: Location, layout and facilities</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Is the unit purpose built or has it been adapted from an older building?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>2 Is the building listed and therefore limiting adaptation work?*</td>
<td>Yes - 0, No - 1</td>
</tr>
<tr>
<td>3 Is the unit only on one level?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>4 Is the unit on the ground floor?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>5 Are there less than 15 beds on the unit?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>6 Do bedrooms have en-suite facilities?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>7 Does the unit have separate Section 136 facilities?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>8 Do patients have access to an enclosed secure garden?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>9 Does the unit have available seclusion facilities which conform to DoH guidance?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>10 Are there gender specific areas?</td>
<td>Yes - 1, No - 0</td>
</tr>
<tr>
<td>11 Bathroom only?</td>
<td>Yes - 1, No - 0</td>
</tr>
</tbody>
</table>

### Example

**Critical issues**

Your total score - 8

Maximum score - 11

Percentage = 8/11 x 100 = 72%
Other variables

• To assess comparability of the two patient groups, age, sex, psychiatric diagnosis, Mental Health Act status and mean duration of stay were analysed.

• Other possible confounding factors were accounted for by comparing ward staffing and policies between the two the wards.
RESULTS
### Results: Patients

<table>
<thead>
<tr>
<th></th>
<th>Old Ward</th>
<th>New Ward</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Patients</strong></td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td><strong>Mean Age (yrs)</strong></td>
<td>40.2 (sd 12.7)</td>
<td>41.6 (sd 12.8)</td>
</tr>
<tr>
<td><strong>Male (%)</strong></td>
<td>83.4</td>
<td>100</td>
</tr>
<tr>
<td><strong>Primary Discharge Diagnosis (ICD-10)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia, schizotypal and delusional disorders (F20)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Mood disorders (F3)</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Behaviour and personality disorders (F6)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mental &amp; behavioural disorders due to psychoactive substances (F1)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>OCD (F42)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Detained under Mental Health Act (%)</strong></td>
<td>94.5</td>
<td>100</td>
</tr>
</tbody>
</table>
Results: Aggressive Incidents
## Results: Seclusion

<table>
<thead>
<tr>
<th></th>
<th>Old Ward</th>
<th>New Ward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Duration (mins)</td>
<td>2117</td>
<td>531</td>
</tr>
<tr>
<td>No Seclusion Incidents</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Mean Duration of Seclusion (mins)</td>
<td>153.3 (sd 98.1)</td>
<td>190.3 (sd 122.4)</td>
</tr>
<tr>
<td>No of Patients Secluded</td>
<td>11</td>
<td>3</td>
</tr>
</tbody>
</table>

- There was a significant (p<0.01; chi square) fall both in total duration and number of seclusion episodes from the old ward to the new in the time periods assessed.
Results: NOIIS

![Bar chart showing agitation/activity scores for different nursing shifts (AM, PM, Night, Total) on New Ward and Old Ward.](chart.png)
Results: NOIIS

- For *conflict* items NOIIS results showed no significant difference between wards, overall or for morning, afternoon or night time periods.

- When the data was analysed to look at the change in NOIIS scores for *agitation/activity* and *conflict* over the first 2 weeks of admission results did not show a significant difference in reduction between wards.
Results: Observations etc

- Both wards had 12 patients on within eyesight observations at any time period during the 3 months.

- **Total observation time**
  - Old Ward: 2356 hours
  - New Ward: 2259 hours

- **Staffing & Policies**
  - Organisational and admission policies identical
  - Continuity of staff from the old ward to the new ward
Results: Environment

Environmental Assessment Inventory Scores

<table>
<thead>
<tr>
<th>Issues</th>
<th>% satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>100</td>
</tr>
<tr>
<td>Difficult</td>
<td>90</td>
</tr>
<tr>
<td>Serious</td>
<td>80</td>
</tr>
<tr>
<td>Achievable</td>
<td>50</td>
</tr>
</tbody>
</table>

- **New Ward**
- **Old Ward**
DISCUSSION
Discussion

• Data revealed a significant fall in total duration and number of seclusion episodes as well as decrease in aggressive incidents from the old ward to the new ward.

• Principle indicator for within eyesight observations is self harm and suicide risk (Bowers et al, 2000) and such behaviour may be less likely to respond to environmental change. This is consistent with findings in this study.
Discussion

- Significant decrease in agitation (from NOIIS) in mornings on new ward important as incidents of violence on wards tend to peak between 0800 – 1200 (Bowers et al, 2011)

- Lack of differences in conflict item may be due to this scale measuring compliance with “ward rules” and engagement. This is more influenced by ward staff skills than environment.
Discussion

• **Environmental measure** (EAI) scores highlighted key changes on the new ward: increased space, more comfortable environment, more privacy (ensuite, individual bedrooms etc), better visiting area, better visibility

• Specific aspects of building design foster a sense of control and privacy that may reduce stress levels and in turn agitation and conflict (Ulrich et al, 2012).

  - “multi-faceted bundle of environmental features”
Discussion

• Increased availability of individual and private space:
  - decrease sense of institutionalisation
  - improved sense of control
  - ability to regulate social contact

• Greater access to designated activity space:
  - opportunity for therapeutic engagement

• Better visibility
  - patients feel more secure + staff able to anticipate escalating behaviour
This study supports the hypothesis that the physical environment of a PICU has an impact upon levels of agitation, aggressive incidents, and certain containment procedures used in management.
Study Strengths

• Uses an objective measure of environment alongside direct and indirect measures of agitation and conflict within a naturalistic setting.

• NOIIS data helped overcome impact of underreporting of incidents that can skew data on aggression.
Study Limitations

• Variable levels of recorded NOIIS data

• Significant changes in NOIIS data between the wards may not have been identified due to the study being under powered

• Not possible to identify which improved design features may be most important in reducing aggression and arousal

• Future studies could benefit from including other measures of patient arousal and aggression such as restraint, incorporating further measures of the ward environment such as the Ward Atmosphere Scale (Moos, 1974) and comparing longer timescales
Conclusions and implications for policy and research

• This research provides further evidence for optimising patient care by using objective standards to improve the environment of psychiatric wards.

• Good hospital design, based upon empirical evidence, can contribute to reducing levels of aggression and arousal.
References