Evaluating a major innovation in hospital design: impact on staff and patient experiences of the first 100% single bedroom NHS hospital in England

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overview

1 the design

2 the research

3 conclusions
• Maidstone and Tunbridge Wells NHS Trust

• Closed two old hospitals
  – Kent and Sussex
  – Pembury

• New Tunbridge Wells Hospital built at Pembury with 100% single rooms

• Opportunity for a natural experiment before and after research study
new hospital at Pembury
project background

- site of outstanding beauty
- high expectations
- focus on patient safety
- ... 100% single rooms occupancy
Tunbridge Wells Hospital at Pembury

- PFI new build
- £225 million
- Key design facts:
  - 512 single beds
  - 8+2 obstetric theatres
  - 37 outpatient rooms
  - Approx. 65,000 sqm

1st NHS Hospital with 100% single rooms in England
1. **3 clusters of 10 beds** for each peninsular ward

2. **Separation of flows** (patients/visitors/FM)

3. **Panoramic views** over the woodland

4. **Minimising staff travel distances** by dispersed nurse bases

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**Illustration:**
- Bed clusters are marked with numbers 1 to 4.
- The layout is designed to minimize staff travel distances by placing nurse bases in dispersed locations.

**Source:** Stantec
room design

patient experience
daylight and views from patient bed

patient safety
bed head close to the en-suite door to reduce risk of falls
clinical basin on entrance to ensure use

staff observation
patient head visible from corridor
staff touch down points on entrance to bedroom
the ward as built
the single room as built
Research aims and objectives

The overall aim of the project was to identify the impact of the move from ‘traditional’ facilities – comprising primarily open-plan ‘Nightingale’-style wards – to 100% single room accommodation in a newly built facility on:

1. care delivery & working practices
2. staff experience
3. patient experience
4. safety outcomes
5. capital and operational costs.
Research design

Kent and Sussex / Pembury Hospital
(old hospitals – before move)
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Tunbridge Wells Hospital at Pembury
(new hospital)

Steady state no move

Admissions ward
Patient / nurse interviews
Nurse survey
Pedometer data
Nurse shadowing

Surgical ward
Patient / nurse interviews
Nurse survey
Pedometer data
Nurse shadowing

Older people’s ward
Patient / nurse interviews
Nurse survey
Pedometer data
Nurse shadowing

Post natal ward
Patient / nurse interviews
Nurse survey
Pedometer data
Nurse shadowing

New build not 100% single rooms

Research design
<table>
<thead>
<tr>
<th>Data</th>
<th>Pre Move</th>
<th>Post Move</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholders - senior trust staff and ward managers</td>
<td>20 interviews</td>
<td>21 interviews and 1 focus group</td>
</tr>
<tr>
<td>Observations of clinical practice</td>
<td>118 hours</td>
<td>131 hours</td>
</tr>
<tr>
<td>Staff interviews</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Staff survey</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Travel distances</td>
<td>53 staff</td>
<td>56 staff</td>
</tr>
<tr>
<td>Patient interviews</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>
Key findings

- Single rooms **improved privacy, dignity and confidentiality** for patients and were better for visitors.
- Single rooms **facilitated communication with patients**, with reduced interruptions.
- Based on our data there appear to be **no strong economic or safety reasons** for choosing 100% single rooms in the UK.
- The new build did **not** result in **a significant change to the proportion of time spent on different activities**.
- Staff **walking distances increased** and **providing adequate patient surveillance** was challenging (older people’s and surgical wards and for RNs/RMs (3.74 to 4.86 miles)).
- **Handover and communication decreased significantly** - information exchange within teams and between professions perceived to be worse after the move.
- **Nurse staffing increased** to support 100% single room design.
- Staff facilities rated more highly but ratings for social interaction and natural light decreased.
Room design helped promote sleep/rest and support physical comfort

Single room favourably compared with a hotel/home environment

Control rarely featured in patients’ accounts of staying on open wards

In single rooms control was closely associated with privacy and freedom

Patients felt able to ‘open up’ to staff with enhanced privacy

Patients perceived the room as their own space
Isolation

- Interaction with other patients was largely absent from patient experiences in the new hospital
- Patients wanted the opportunity to socialise with other patients to counter this isolation
- Patients who felt little connection with staff were likely to report feeling isolated in single rooms
• 2/3 patients preferred single rooms - benefits of comfort and control outweighed disadvantages

• 1/3 patients struggled with the lack of interaction with other patients and a consequent sense of isolation

• 18% of staff indicated a preference for 100% single rooms

• Most staff would prefer a mix of single rooms and multi-bedded rooms on wards

is 100% the way forward?
nurse preferences

**Ward layout**

- All beds in single rooms
- More beds in single rooms than bays
- Half beds in single rooms
- More beds in bays than single rooms

**Frequency**

- Pre-move (n=55)
- Post-move (n=55)
Privacy, dignity and more personalised care for patients

Improved room design: improved care delivery - ensuite

Improved ward layout and design

Perceived reduced risk of infection

staff perceived advantages
Limited glazing and in board bathrooms reduced visibility

Visibility of patients more limited than staff had anticipated

Greatest challenge was monitoring patients re risk of falls

Staff could not see / find each other

Maintaining teamwork and communication

Social isolation real disadvantage for patients/staff
Staff preferred **double handed corridor** especially for cohorting patients at risk of falls.
disruption and reconstitution of work patterns

• Staff developed new ways of working and new processes of care

• Trial and error was a feature of innovations

• **Locating colleagues** to obtain information and assistance was one of the main difficulties - unresolved by new ways of working

• Tools to optimize single room working were largely underutilized

• Staff required different strategies for time management and prioritization on single room wards
One size fits all? Mixed methods evaluation of the impact of 100% single-room accommodation on staff and patient experience, safety and costs

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ABSTRACT
Background and objectives: There is little strong evidence relating to the impact of single-room accommodation on healthcare quality and safety. We explore the impact of all single rooms on staff and patient experience, safety outcomes, and costs.

Methods: Mixed methods protocol: ‘ MIX’ comparison within four nested case study wards in a single acute hospital with 100% single rooms: quasi-experimental before and after study with two control hospitals; analysis of capital and operational costs associated with single rooms.

Results: Two-thirds of patients expressed a preference for single rooms, with comfort and control outweighing any disadvantages (sense of isolation) left by some. Patients appreciated privacy, confidentiality and flexibility for visitors afforded by single rooms. Staff perceived improvements (patient comfort and confidentiality), but single rooms were worse for visibility, surveillance, teamwork, monitoring and keeping patients safe. Staff working distances increased significantly post move. A temporary increase of falls and medication errors in one ward was likely to be associated with the need to adjust work patterns rather than associated with single rooms per se. We found no evidence that single rooms reduced infection rates; building an all single-room hospital can cost 5% more with higher housekeeping and cleaning costs but the difference is marginal over time.

Conclusions: Staff need to adapt their working practices significantly and felt unprepared for new ways of working with potentially significant implications for the nature of teamwork in the longer term. Staff preference remained for a mix of single rooms and bays. Patients preferred single rooms.

BACKGROUND
Historically hospital design was based on Florence Nightingale’s nineteenth-century observations about the advantages of natural light, ventilation and cleanliness.1 Shared patient accommodation of 30 beds became the standard inpatient accommodation in hospitals globally.2 The suitability of such wards in modern hospitals is now questioned in terms of quality, safety and experience.3 Subdivisions of wards into smaller rooms and bays has become the norm, and internationally, the case is being made for more single-room accommodation in new hospital designs. Arguments for the abolition of all shared accommodation4 are based largely on the belief that patients prefer single rooms and benefit from improved patient outcomes compared with open hospital wards.5

Most current evidence derives from the USA and Scandinavia,6 while some evidence may be transferable, variation in financial, cultural and organisational systems means that generalisation should not be assumed. The available evidence is both weak and equivocal, suggesting a range of potential benefits for patients and staff but also potential disadvantages.

Potential advantages of single-room accommodation for patients include increased patient privacy, dignity, comfort and less disruption from other patients7 8 and also enhanced patient satisfaction.
Thank you

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