Ward design: implications for work practices, care quality and patient safety

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Background

• Since 1997, DH best practice guidance has advised that new healthcare buildings should provide a minimum of 50% single-bed rooms

• Drivers include perceived patient preference, improved infection control, provision of same-sex accommodation although evidence-base limited and conflicting

• Little is known about impact on staff efficiency, quality of care, nursing costs and patient satisfaction across different patient groups

• NNRU undertaking research project looking at a Trust moving from old accommodation to a new hospital development with 100% single-bed rooms
A ‘before and after’ study

September 2009
Study design

• Focus of presentation is on ‘before’ data
• Need to understand nursing work practices and staff and patient experience in old accommodation
• In-depth case studies to understand practices and experience before the move
  • Four ward areas selected to include a range patient groups and levels of acuity
Theoretical approach

• Difficult to look at the physical environment of healthcare in isolation from the work that needs to be done, who performs the work, and how the work is organised

• Requires a holistic or ‘whole system’ approach

• Human factors and systems engineering approaches useful for describing nursing work, its interaction with the physical environment and resulting outcomes
  • Staff and patient safety, satisfaction and well-being
  • Operational efficiency
SEIPS ‘work system’ model

Physical environment

Organisation
Tools & technology
Tasks

Individual

WORK SYSTEM
CARE PROCESS
OUTCOMES

National Nursing Research Unit
**Data collection methods**

- Mixed qualitative and quantitative methods to produce a rounded picture of the issues
  - Observation of nursing work practices and processes (30 hrs staff shadowing per case study ward using PDA to collect time-motion data)
  - Staff travel distances (pedometers worn by nursing staff during observation session)
  - Staff survey (n=50)
  - In-depth interviews with staff (n=24) and patients (n=32)
  - Staff reflexive photography
  - Analysis of routinely collected data
Advantages in old accommodation

• Observation, interviews and survey data revealed staff and patients valued the following:
  • Proximity of staff and patients (visual and aural)
    • Monitoring patients
    • Teamwork
    • Social contact between patients
  • Implications for staff and patient safety and well-being
Staff photographs – visibility and social contact
“I can just lay in bed and watch everything go on around me and I’m quite happy... At the end of the ward there’s a little canteen or something, I’m not sure what it is, or a shortcut from somewhere, but there’s always people going past into there and coming back out again...You never felt as though you were isolated.” [Patient interview, male surgical ward]
Disadvantages in old accommodation

• Observation, interviews and survey data revealed challenges with following:
  • **Space to deliver care at patient bedsides**
  • Noise levels and temperature of patient care areas
  • Patient privacy and dignity
  • Patient toilets/bathroom facilities
  • **Staff rest areas and toilet facilities**
  • Complying with infection control protocols
  • Space and IT equipment at staff bases
  • **Location and size of ward support areas**
  • Vertical and horizontal links with other areas
Staff photographs – space at patient bedsides
“The lady next to me had had part of her bowel removed... they [nursing staff] were there for her, but she had quite a few accidents... I just felt so sorry for her and not to put too fine a point on it, it splashed under the curtains between us. We were that close, the smell and everything else, it was just horrid.” [Patient interview, female surgical ward]
Staff photographs – staff facilities
Staff photographs – location and size of ward support areas
## Time-motion data – staff activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mean % time spent (SD)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Maternity (RM$s$)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Direct care</strong></td>
<td>27 (7)</td>
<td>29 (10)</td>
</tr>
<tr>
<td><strong>Documentation</strong></td>
<td>30 (9)</td>
<td>6 (3)</td>
</tr>
<tr>
<td><strong>Indirect care</strong></td>
<td>8 (1.5)</td>
<td>13 (2)</td>
</tr>
<tr>
<td><strong>Medication tasks</strong></td>
<td>5 (4)</td>
<td>11 (6)</td>
</tr>
<tr>
<td><strong>Personal/social</strong></td>
<td>2 (.5)</td>
<td>11 (2)</td>
</tr>
<tr>
<td><strong>Professional communication</strong></td>
<td>22 (2)</td>
<td>21 (4)</td>
</tr>
<tr>
<td><strong>Ward-related</strong></td>
<td>9 (4.5)</td>
<td>8 (2)</td>
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</tbody>
</table>

**Total time observed (hh:mm)**  
14:48 19:13

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1. Excluding main shift report/handover & main meal breaks
## Staff travel distances

<table>
<thead>
<tr>
<th>Unit</th>
<th>No. staff/hrs</th>
<th>RM/RNs Mean steps per hour (SD)</th>
<th>HCAs/CSWs Mean steps per hour (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maternity</strong></td>
<td>11 staff/79 hrs</td>
<td><strong>475</strong> (94)</td>
<td><strong>786</strong> (126)</td>
</tr>
<tr>
<td><strong>Surgical</strong></td>
<td>14 staff/123 hrs</td>
<td><strong>574</strong> (92)</td>
<td><strong>767</strong> (153)</td>
</tr>
<tr>
<td><strong>Elderly care</strong></td>
<td>11 staff/105 hrs</td>
<td><strong>471</strong> (81)</td>
<td><strong>737</strong> (112)</td>
</tr>
<tr>
<td><strong>MAU (Medical Assessment Unit)</strong></td>
<td>8 staff/78 hrs</td>
<td><strong>728</strong> (183)</td>
<td><strong>949</strong> (29)</td>
</tr>
</tbody>
</table>
Next steps

- Repeat data collection in the new hospital (approx 6-months post-move) using work system model / whole system approach to:

  - **Assess impact of key design features** (e.g. single rooms; centralised ward support facilities; decentralised staff bases; distributed work stations; wireless communication system with integrated nurse call; pneumatic tube system; vertical and horizontal links/flows)

  - **Understand disruption and reconstitution of care processes including overcoming potential challenges** (e.g. monitoring patients; falls prevention; patient isolation; teamwork; staff safety)