

The Effects of Unit Design on Intensive Care Nurses

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MSc Advanced Healthcare Practice

April 2009







ICU Design

- ICU design requires –
- Space for bulky equipment at bedspaces
- Large numbers of personnel 24 hours/day
- Accessibility to patients in emergencies
- Adequate, controlled lighting and temperature
- Storage of drugs, supplies, equipment
- Office and administration spaces
- Staff rest areas
- Provision for relatives/visitors
- **Single room accommodation**

DOH Recommendations (2006)

- New hospitals should have 50-100% single room accommodation
- **ICUs should have 50% single rooms**
- ICUs to have larger bedspaces – 20m²
- Increased handwashing facilities
- Increased storage and utility spaces
- Positive and negative pressure ventilation
- ICUs to follow HBN 57 guidelines (NHS Estates 2005)

Literature Review

- Single room accommodation (Van de Glind, 2007)
- Reduction of infection (Chaudhury, 2005; Jolley, 2005; Cepeda et al, 2005; Dettenkofer et al 2004)
- The ICU environment (Dyson, 1999; Almerud 2007; Christensen, 2007)
- Privacy and Dignity (Altimier,2004; Ulrich, 1991)
- Effects of Isolation on patients (Gammon, 1998; Davies & Rees, 2000)
- Effects of Isolation on staff (Walsh, 2006; Brown, 2001; Richardson, 2007)

Single Rooms

Advantages

- Increased patient satisfaction
- Reduction of infection
- Quieter, peaceful, private
- Less sensory overload
- Improved quality of sleep
- Less anxiety
- Most studies on general pts. not ICU pts.

Disadvantages

- Decreased visibility and access to patients
- Difficult to manage
- Decreased communication
- Less direct contact with medical teams
- Nursing staff dissatisfaction and anxiety
- Patient anxiety, boredom and depression

Open Plan Areas

Advantages

- Increased visibility
- Easier access to patients
- Communication and teamwork increased
- Management easier
- Stimulation for patients
- Sense of security and support for inexperienced staff

Disadvantages

- Noisy
- Busy environment
- Scary environment
- Decreased concentration
- Sensory overload for patients and staff

Rationale for Study

- Are nurses affected by their working environment, if so, how?
- Will future design of ICUs affect recruitment and retention ?
- How do nurses feel about working in open-plan ICUs and in single rooms?

Aim of the Study

- To examine the effects of ICU design on its nurses by exploring the perceptions and experiences of nurses who work in open-plan areas and single rooms within ICU for a significant length of time.

Objective of the Study

- To discover how the emergent themes may inform decision-making in the future planning of ICUs and to aid ICU managers to consider ways in which to reduced any adverse effects of design on its staff.

Theoretical Framework

- A qualitative, exploratory design inspired by phenomenology – describe the lived experience of an individual
- **Hermeneutic phenomenology** - author uses own knowledge and experience of the subject to aid interpretation of participants' responses (Heidegger, 1962)

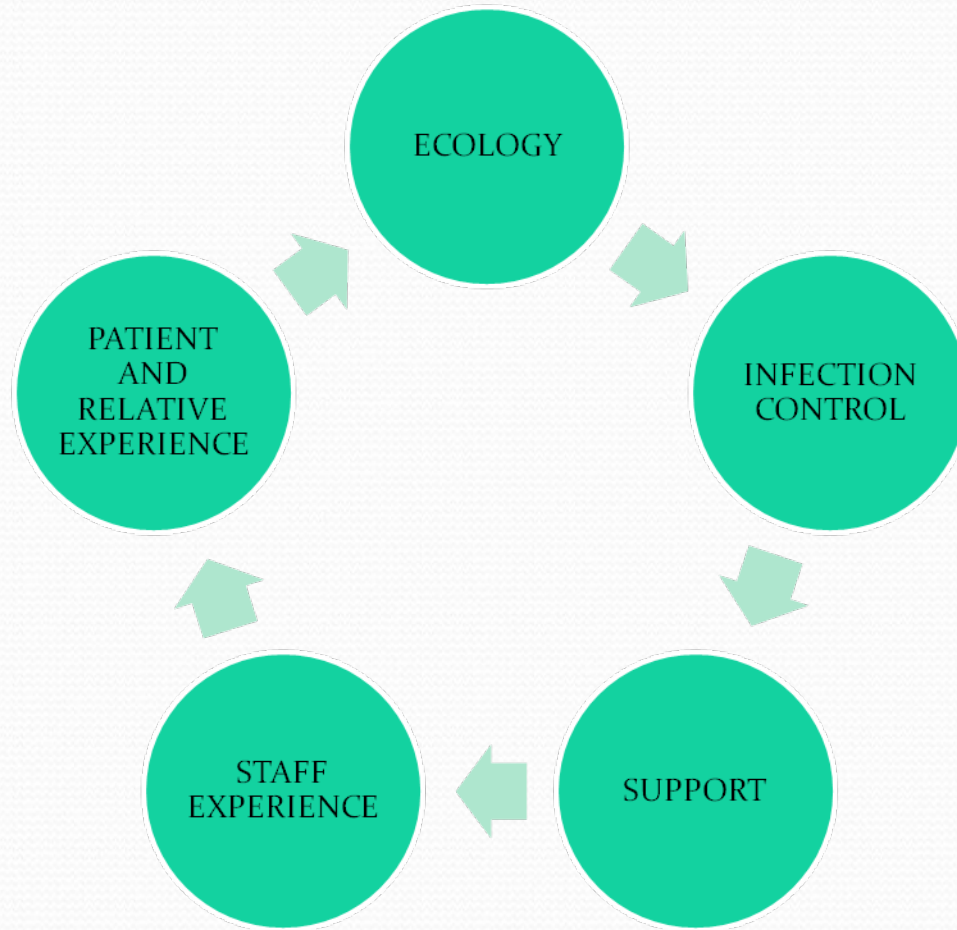
Research Design

- Data Collection – Focus Group Discussions
- Setting – Adult ICU (2000 pts per year) with 19-bedded open-plan area and 11-bedded single room area
- Sample – junior and senior ICU nurses (n=16) who had worked in both areas
- Data Analysis – thematic analysis using Ritchie & Spencer 'Framework' (1994)

Demographic Statistics

	Mean	Percentage	St Dev
Age	37.6		8.6
Years of ICU Experience	7.1		6.6
Female		94 (n=15)	
Male		6 (n= 1)	
Band 5		68 (n=11)	
Band 6		13 (n=2)	
Band 7		19 (n- 3)	
Single Rooms		44 (n=7)	
Open Plan		56 (n=9)	

Emergent Themes



Theme 1 - Ecology

Open Plan Area

- Better visibility and access
- Brighter atmosphere
- More support, teamwork and communication
- Noisier
- Lack of natural light
- Patient dependency increased
- Workload heavier, nurse:pt ratio often 1:2
- Unit activity increased

Single Rooms

- Quieter, peaceful for pts.
- Some pts. bored, depressed, lack of windows and view
- Temperature often cold
- Poor lighting
- Staff management difficult
- Known to affect retention of staff

Theme 2 – Infection Control

- Junior staff understood the need for infection control in single rooms though were concerned re. strict measures even when patients were not infected
- Junior staff felt this made their workload more demanding and was unsafe at times
- Both groups of staff found overall infection control measures were adhered to

Theme 3 – Patient Experience

Open Plan Area

- Noise could increase sensory overload if long-term
- Patients felt more secure due to visibility of nurses and medics
- Patient safety could be threatened by heavy workload and lack of staff

Single Rooms

- More privacy for patients and relatives
- Reduced sensory overload
- Could lead to anxiety, confusion and depression
- Increased risk of ICU syndrome if long-term
- Safety threatened due to lack of available staff in emergencies

Theme 4 - Support

Open Plan Area

- 'Bed buddies' and support staff readily available
- Medical staff available
- Senior nurses able to assess juniors who need help
- Juniors felt stressed with 2 critically ill patients if unit busy, as support reduced
- Role models and educational opportunities improved

Single Rooms

- Often only Team Leader and unqualified staff available to support 11 rooms
- Delays in nursing care/treatments due to lack of help
- Teamwork decreased
- Breaks difficult to manage
- Lack of educational opportunities

Theme 5 – Staff Experience

Open Plan Area

- Increased communication, camaraderie, socialisation
- Security and cohesion amongst team
- ‘Longdays’ better tolerated
- Preferred open plan area, even when busy

Single Rooms

- Decreased communication, camaraderie, socialisation
- Lack of teamwork
- Vulnerable – physical assault, emergencies
- Isolation and loneliness
- ‘Longdays’ intolerable
- Inequality between staff allocation
- Senior staff felt guilty about juniors in single rooms
- Some relief away from busy area

Conclusion

- Both designs were found to have positive and negative aspects
- Open plan – noisier, busier, less private but support, communication and socialisation increased, but heavier workload caused concern
- Single rooms – more private though poorly designed, staff isolation compounded by lack of access to support staff
- **Both groups felt single rooms had adverse effect on recruitment and retention of ICU nurses**

Limitations of the Study

- Transferability questionable due to size of study, further studies needed in other ICUs
- Sample size restricted to availability of staff, though data saturation after 16 participants
- Difficulty in organising focus groups due to workload of study site

Personal Reflection

- Systematic approach to research process
- Able to undertake empirical, tangible study significant to my area of work
- Findings may inform future planning
- Insight into other ICU's management style and problem-solving approaches

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