

February 22, 2008



Relating Health Care Environment Design to Health Outcomes: Post Occupancy Evaluation of the Ward of the 21st Century

Project Funded by the
Health Quality Council of Alberta



calgary health region

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Why is this study important?



- Physical design is a key factor when considering quality in health care
- Evidence based design (EBD) describes the increasing focus on relating environmental design and health care outcomes

“EBD is a process of applying the findings of credible research to develop concepts that can be tested in the design process to predict or examine their effect on variables of interest” (Stichler, 2007)



Study Objectives



- Determine what environmental **design strategies** affect the delivery of health care and outcomes for patients, providers and the health system
- Identify potential **performance measures** or indicators for safety, effectiveness and efficiency that respond to changes in environmental design
- Make recommendations for **future planning and design** evaluation activities of health care facilities



What is Post Occupancy Evaluation

- POE is defined as “*the process of systematic data collection, analysis and comparison with explicitly stated performance criteria pertaining to occupied, built environments*” (Preiser et al., 1988).
- POE compares “*actual building performance with explicitly stated human performance needs*” (Cooper, Ahrentzen & Hasselkus, 1991).



Habitability Framework



Technical- physical characteristics of the built environment that contribute to the performance of basic building systems

Functional- design factors that deal with the fit of the built environment with the activities it was designed to support

Behavioral- design factors that primarily capture the psychosocial aspects of the environment that relate to the perceptions and psychological needs of users

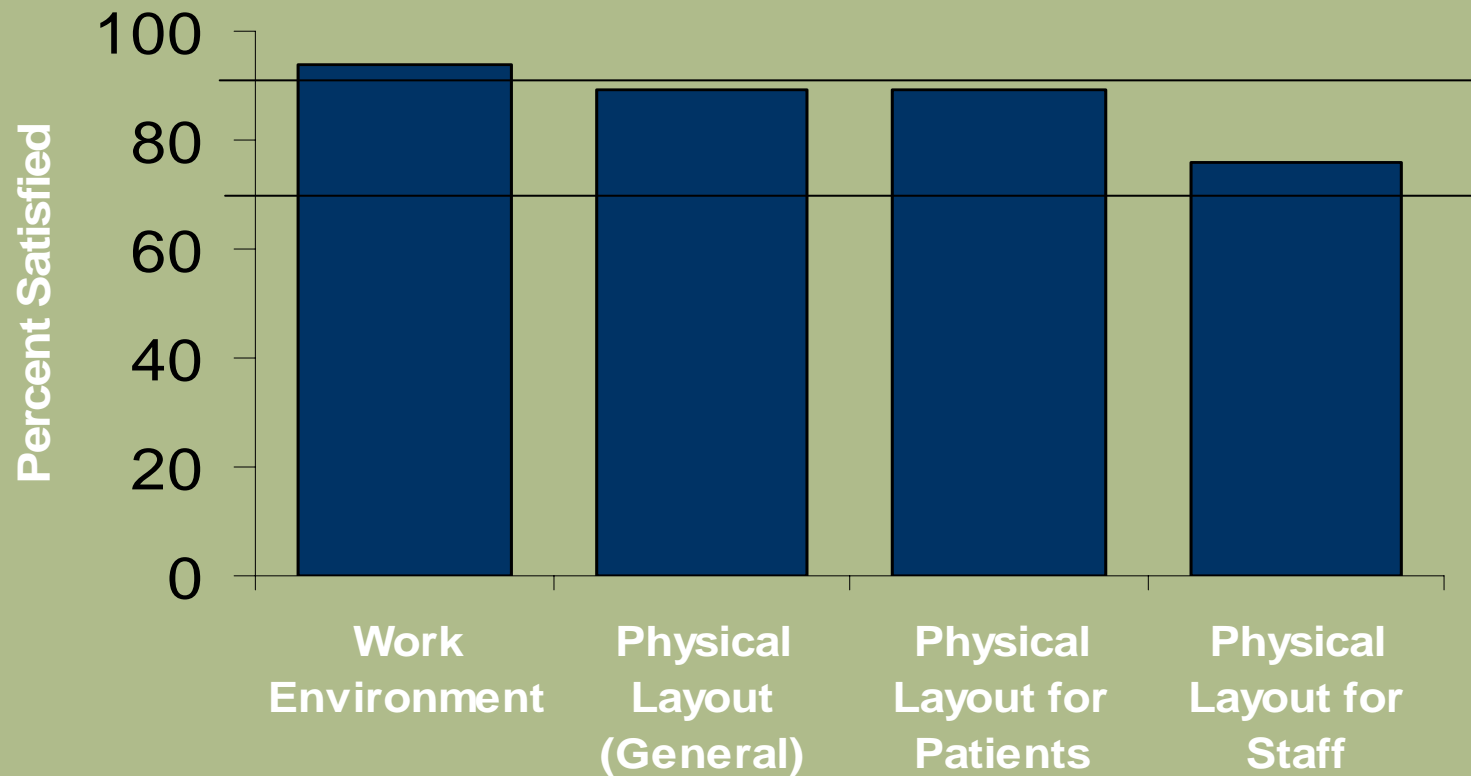
(Preiser, 1984)



2 Phase Mixed Methods Approach



Survey Results



Design Performance Indicators

Communication

Maintainability

Resources

Flexibility

Privacy



Design Performance Indicators

	Effectiveness	Efficiency	Safety
	<i>Successfully achieving or attaining results (outcomes), goals or objectives</i>	<i>How well are design elements (inputs) brought together to achieve results (outcomes), with minimal expenditure</i>	<i>Mitigate risks to avoid unintended or harmful results</i>
Themes			
Resources	Does design provide for the right resources ?	How well does design provide for the right resources ?	Does design provide resources that mitigate risks and that help to avoid unintended or harmful results?
Maintainability	Does design provide for the right maintainability ?	How well does the design support maintainability ?	Does design provide maintainability that mitigates risks and that helps to avoid unintended or harmful results?
Flexibility	Does the design provide for flexibility ?	How well does design provide for flexibility ?	Does design provide flexibility that mitigates risks and that helps to avoid unintended or harmful results?
Privacy	Does design provide for the right levels of privacy ?	How well does the design provide for privacy ?	Does design support privacy levels that mitigate risks and that help to avoid unintended or harmful results?
Communication	Does design provide for the right communication ?	How well does the design support communication ?	Does design provide communication systems that mitigate risks and that help to avoid unintended or harmful results?



Design Performance Indicators

Overall W21C Design

- a. Strong staff satisfaction and pride towards the W21C contributes to staff motivation at work.
- b. Positive staff comments on the increased overall space, workstations close to patient rooms, education space, designated allied health space and the staff room.
(Quote)
- c. Negative comments on the patient lounge which does not provide a favourable social space for patients.



Design Performance Indicators

Washroom Design and Location

- a. Patient bathrooms cannot easily accommodate the use of equipment to assist patients in toileting (e.g., commodes, IV poles)
- b. Door to the washroom cannot close or awkward for staff to assist patients while maintaining their privacy
- c. Portable toilets in observation room present increased level for staff and patients when transferring patients to the low toilets.
- d. Comments on embarrassment felt for patients' lack of privacy when using the bedside toilets in the observation room.



Design Performance Indicators

Patient Room Design

- a. Patient rooms have necessary technical capacity to accommodate changing monitoring and medical needs of patients
- b. Flexibility of single patient rooms supports patient-family interaction



Interpreting Design Performance



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Interpreting Design Performance

- Patient room design includes appropriate *resources* for the medical treatment of patients (e.g., negative air pressure, medical gases and standardized room equipment).
- However when the unit is overcapacity the single patient rooms do not ensure *privacy* and staff report some negative feedback from patients/families.



Interpreting Design Performance

- Increasing available space on the unit supported implementation of dedicated office space and multiuse meeting space, which improved access to staff resources (e.g., staff educator, medical teaching staff, allied health staff and unit management).
- However, the unit layout has increased travel time and overall workload for staff.



Interpreting Design Performance

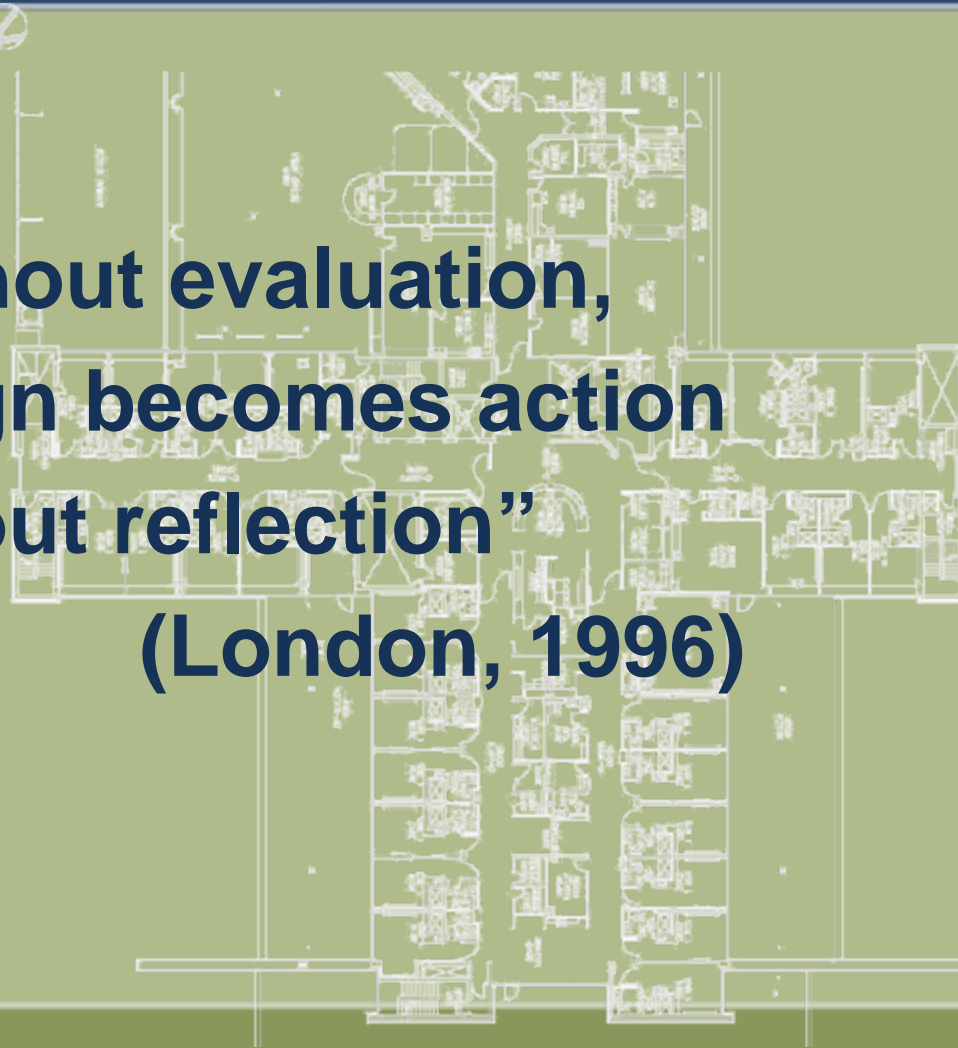
- Increased access to equipment and technology at the point of care has increased timeliness of patient information,
- However this has decreased overall interaction among staff.



Why is this study important?



**“Without evaluation,
design becomes action
without reflection”
(London, 1996)**



This approach to POE . . .



- Provided a deeper understanding of user satisfaction within the context of **effectiveness** and **efficiency** in addition to safety
- Provided a unique description of performance aspects in the built environment using **performance indicators** - *Resources, Maintainability, Flexibility, Privacy and Communication*
- Highlighted the **interrelationships** between design elements that contributes to overall design performance.





Thank You

Final report will be posted on our website

www.calgaryhealthregion.ca/hswru

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Additional Slides



Indicator Definitions



Resources

- Environmental design features that ensure adequate service capacity, including amount and access to supplies, physical space, equipment, technology, training, knowledge, expertise and access to staff/people

Maintainability

- The built environment's ability to minimize the need for, or provide ease of, modifications and repairs

Flexibility

- The built environment's ability to adapt to or anticipate new or changing requirements and needs.

Privacy

- The built environment's ability to support individuals' dignity, and need for integrity and personal autonomy.

Communication

- Processes and structures that support the exchange of thoughts, ideas, information and knowledge within the built environment.





And so for me to have that space, I feel more important. I don't know, it makes my role feel more welcomed and part of the team... So for me, it's more of a professional identity or job satisfaction. Yeah, it's amazing; just a little space to acknowledge that you're important to the team will do it. (Unit Staff Participant 9)

