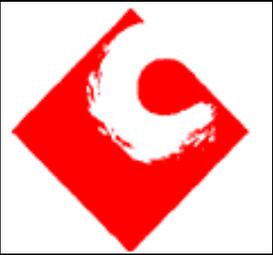


# Nursing Unit Design: Staff Interaction & Communication Patterns





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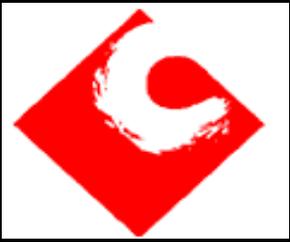
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### **Why should we care about Unit Design, Staff Interaction and Communication?**

Nursing units are chaotic, complex systems, with myriad behaviors and unpredictable circumstances colliding at a rapid pace (Bromberg, 2006). In the face of these challenging circumstances, hospital staff must insure the safety, comfort and livelihood of patients and family members, without compromising their own well-being. Understanding the relationship between unit design, staff interaction and communication can help hospital staff and management deal effectively with these challenges?

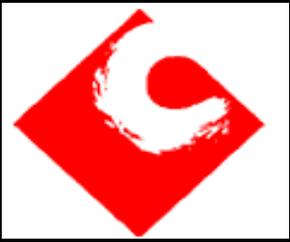
➤ **Recognizing the “human system”** (Sachs, 1995).

- Working environments are complex and dynamic
- Creating an effective working environment requires an activity-orientated approach
- Activity-orientated approach looks at whole activities, rather than particular tasks
- Understand how people communicate, learn, and think through problems

➤ **Informal communication & Learning**

- Informal communication supports daily work-related tasks, transmission of organizational culture, and team building (Whittaker, 1994).
- Face-to-face informal communication interactions are particularly important; not only support exchange of task information, but also “emotional information and social support (Zahn, 1991).”
- “Task and social communication can affect organizational functioning, providing intelligence and integration (Zahn, 1991).”

“Social interaction is key to learning [in nursing units]. The environment needs to support the many ways people interact for learning (Bromberg, 2006).”



### ➤ Creative Problem Solving

- Complex systems require workers to constantly generate creative solutions to unpredictable circumstances.

“The range of activities that workers must employ to actually get a job done, however, extends beyond the strict limits of a task into the less visible and more complex world of problem-finding, problem-solving, deciphering, decoding, understanding, and collaborating (Sachs, 1995).”

- Informal communication and learning assist the creative problem solving process.

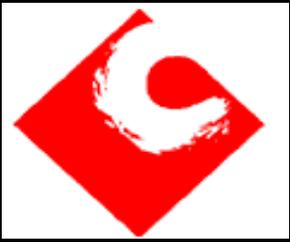
“It is easier to solve a vexing problem when a worker can bounce ideas off someone else instead of relying only on his or her own experience to arrive at a solution (Sachs, 1995).”

- **Case Study:** Toyota’s problem solving techniques for achieving reliability and performance are being adopted by health care organizations, which has resulted in significant improvements of “medication administration, nursing, delivering better quality of care, relieving workers of non-productive burdens, and saving costs (Spear, 2004).”

- The University of Pittsburgh Medical Center has developed the Perfecting Patient Care System (PPC), based on the principles of the Toyota Production System (Robinson, 2006).

- Focus on catching problems as soon as they occur, and immediately developing solutions; constant evolution of “best practice.”

“Standardization ...is coupled with testing work as it is being done...Not only are problems contained, prevented from propagating and compromising someone else’s work, but gaps between expectations and reality are investigated (Spear, 2004).”



# Introduction

## Health & Design Focus Issues

### Comparison of organizational versus activity approach to work (Sachs, 1995)

Dynamic "Human Systems" approach to coping with complex nursing challenges

Informal Communication



Informal Learning



Creative Problem Solving



Learning

Organizational View	Work/Activity View
<p><b>Analytic Assumption:</b></p> <p><i>People produce human error</i></p>	<p><b>Analytic Assumption:</b></p> <p><i>People discover problems and solve them</i></p>
<p><b>Design Assumptions:</b></p> <p>Deskilling is desirable</p> <p>Routine work, rote thinking desirable</p> <p>Flexibility = interchangeable jobs</p> <p>Standard Operating Environments are necessary to the business</p> <p>Social interaction is nonproductive</p> <p>Automation produces reliability</p>	<p><b>Design Assumptions:</b></p> <p>Skill development is desirable</p> <p>Development of knowledge, understanding, deciphering, is central to skill</p> <p>Flexibility = skilled people</p> <p>Collaboration and collaborative learning take place in communities</p> <p>Communities are funds of knowledge</p> <p>Skill through learning produces reliability</p>
<p><b>Consequence:</b></p> <p>Learning is not encouraged</p>	<p><b>Consequence:</b></p> <p>Learning is supported</p>



### ➤ **Design as a tool for facilitating desired behavior**

➤ The hospital's physical environment can support desired activities and behavior on multiple levels – both instrumental and symbolic (Becker, 1980).

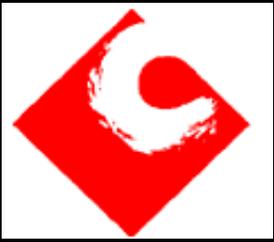
- Instrumental: environment as either support or barrier
- Symbolic: environment as “behavior catalyst,” which “sets in motion a series of linked events or behavioral reactions (Becker, 1980).”

➤ Environment as “behavior catalyst” can stimulate positive social interactions and communication, which can in turn improve patient care and fuel new behavioral processes (Becker, 1980).

➤ Proximity of workers has significant affect on communication patterns

“people who are physically collocated are more likely to communicate frequently and informally (Whittaker, 1994).”

**The nursing station should be a dynamic learning environment. The design should support impromptu meetings and informal information exchange between a wide variety of hospital staff (Bromberg, 2006), facilitating intelligent and creative problem solving.**



# Introduction

## *Trends in Nursing Unit Design*

**A primary issue of debate for nursing station design is the choice between decentralized vs. centralized unit design. The unit design has a significant affect on staff interaction and communication patterns.**

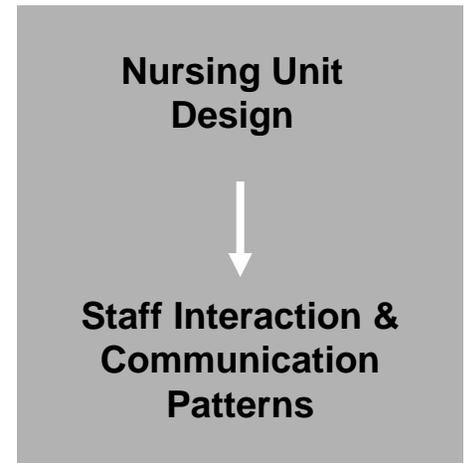
➤ Decentralized design has individual stations by patient rooms and no central hub

- Pros: Nurses closer to patients; less distractions
- Cons: Reduced collaborative interaction; increased noise levels by patient rooms; feelings of isolation

➤ Centralized design has a central hub where all workstations are located

- Pros: Encourages collaborative interaction; all resources in central location
- Cons: Removed from patients; congestion and distraction

➤ There is a growing movement towards hybrid nursing units that combine a central, collaborative space with small, decentralized nursing units closer to patients, where the central hub functions as an “information center” (Flynn, 2005).



“A combination of both [nursing unit] organizational models provides a variety of options and may give users the best of both worlds (Bromberg, 2006).”

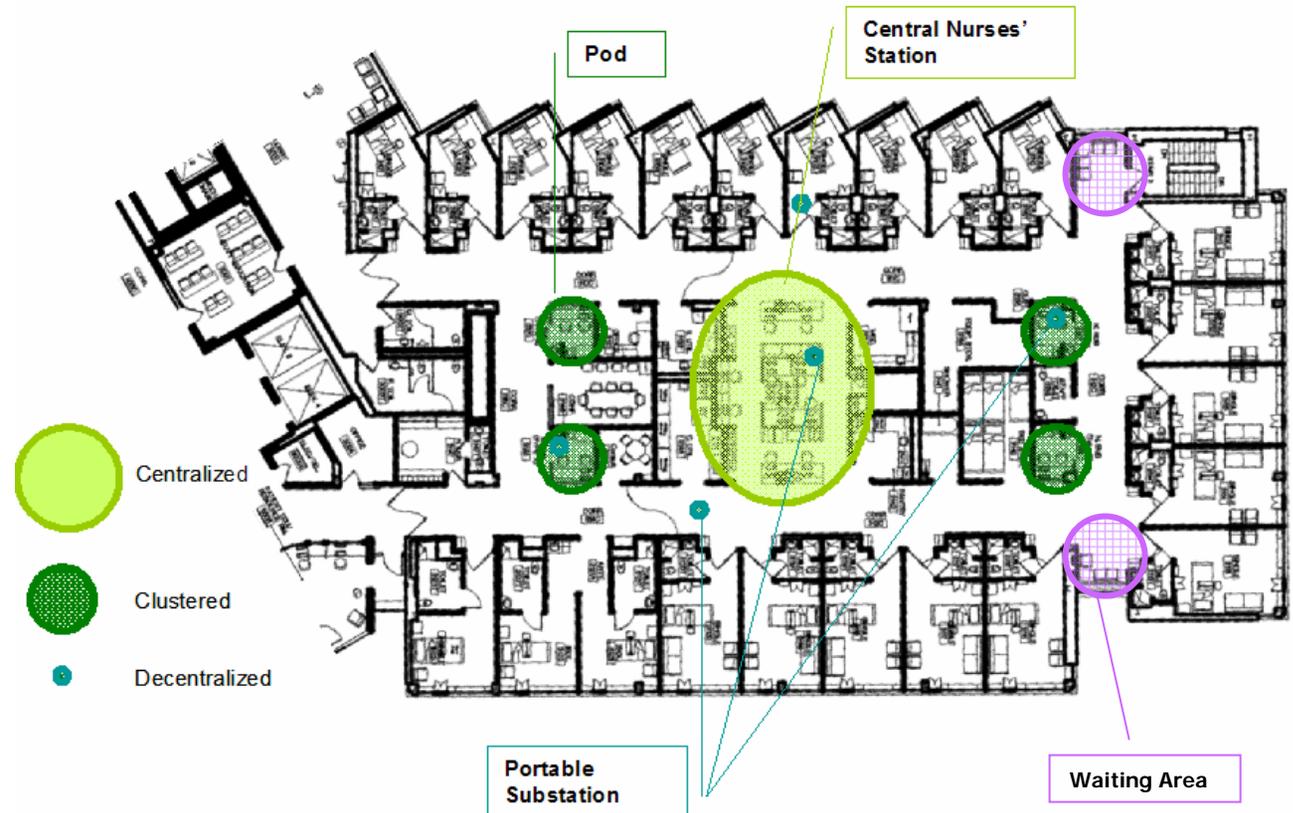


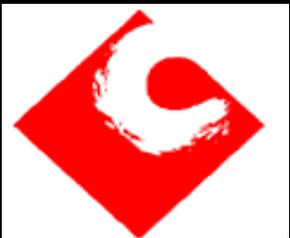
# Observation & Analysis

## CMC Nursing Unit Design

The CMC nursing unit is a hybrid design, with a central unit (CU) and four pods.

Does this unit design support informal communication and learning?





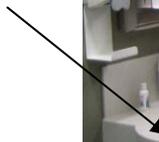
# Observation & Analysis

## CMC Nursing Unit Design

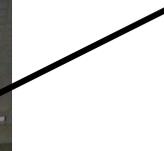
Central Unit



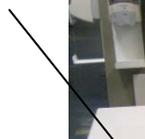
Sink



*Dictating station with glass barrier*



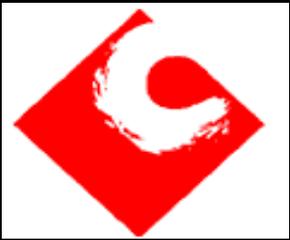
Bench/  
ledge



Central Unit



Doctor dictating station



# Observation & Analysis

## CMC Nursing Unit Design

**Corridor**



*Glass barrier*

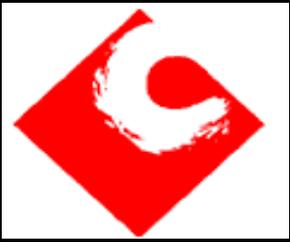


Ledge

**Computer  
on  
wheels**



**Pod interior**



# Observations & Analysis

## *Guiding Questions*

➤ **Does the unit design support informal communication and learning?**

➤ What type of interactions occur in the med/surg unit?  
Between who? Where do they occur with the greatest frequency?

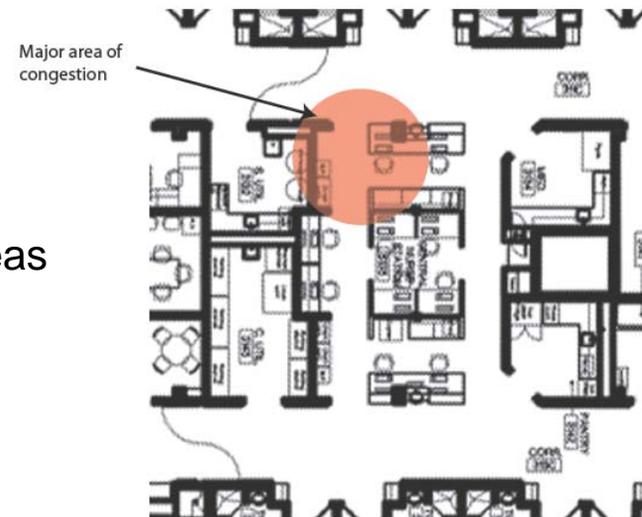
➤ Pods – how, when, why and by who are they being used?

➤ Central Unit – how, when, why and by who is it being used?

- What is happening in the congested area of the Central Unit?
- How are the dictating stations used? By whom?

➤ How are the small waiting areas used? By whom?

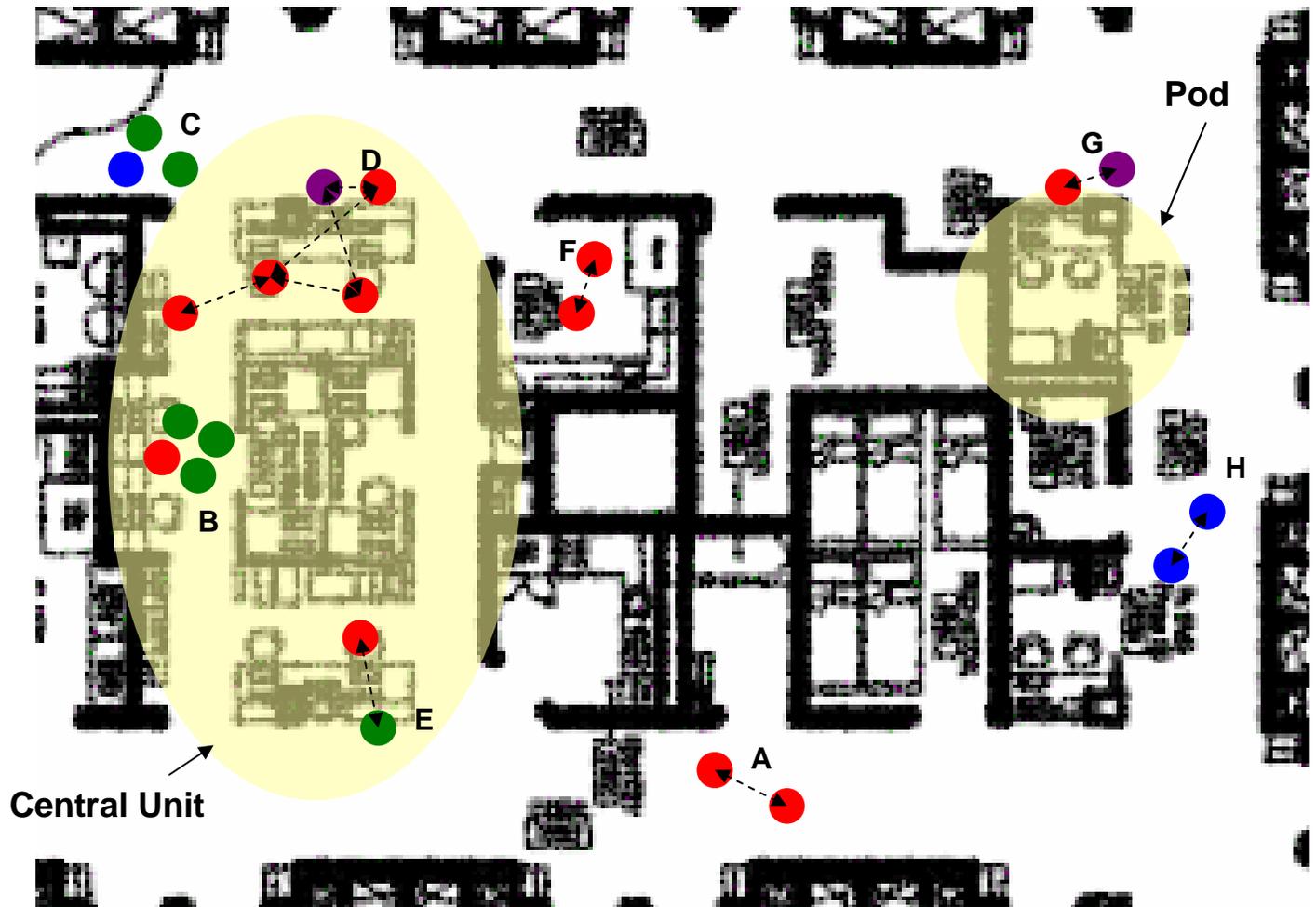
➤ What communication patterns can be identified?





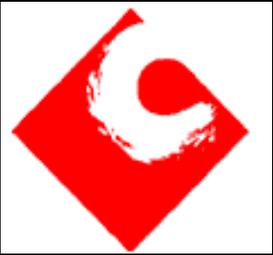
# Observations & Analysis

## *Behavior Mapping*



-  Nurse
-  Doctor
-  Patient/  
Family
-  Other

Nursing Unit Interactions, 7:30am-10:00am



# Observations & Analysis

## *Behavior Mapping*

### Key Findings:

-Corridors primary location for informal communication

-CU central communication hub for both information exchange and support

-Doctors and nurses communicate most frequently at benches, sinks and corridors i.e. locations where their paths naturally intersect.

**A:** Nurses have short conversations in corridor as they pass each other. Conversation subjects range from social/personal to information exchange to support/reassurance.

**B:** Family members cluster around charge nurse in CU corridor to discuss patient; consult room not used.

**C:** Family members cluster around vicar in corridor to discuss arrangements for patient who has just died; consult room not used; conversation can easily be heard

**D:** Central communication hub. Nurses pause at bench or sink and talk with nurses in CU; doctors and nurses communicate at bench, often while doctor washes hands; close proximity of patient files triggers discussion about patients. Conversation subjects range from social/personal to information exchange to support/reassurance.

**E:** Patients and family members approach nurses in CU when they have concerns, even if there are nurses in pods.

**F:** Nurses communicate with each other in medication room. Conversation subjects range from social/personal to information exchange to support/reassurance.

**G:** Nurses and doctors communicate directly outside of pod, utilizing ledge space to place patient information.

**H:** Cleaning staff pause in corridor and discuss social/personal subject matter, often for +5 minutes; provide support/reassurance to each other. Talking loudly directly outside patient room and blocking corridor.



# Observations & Analysis

## Space Usage

### Key Findings:

-Rarely is >1/4 pods occupied at any given time

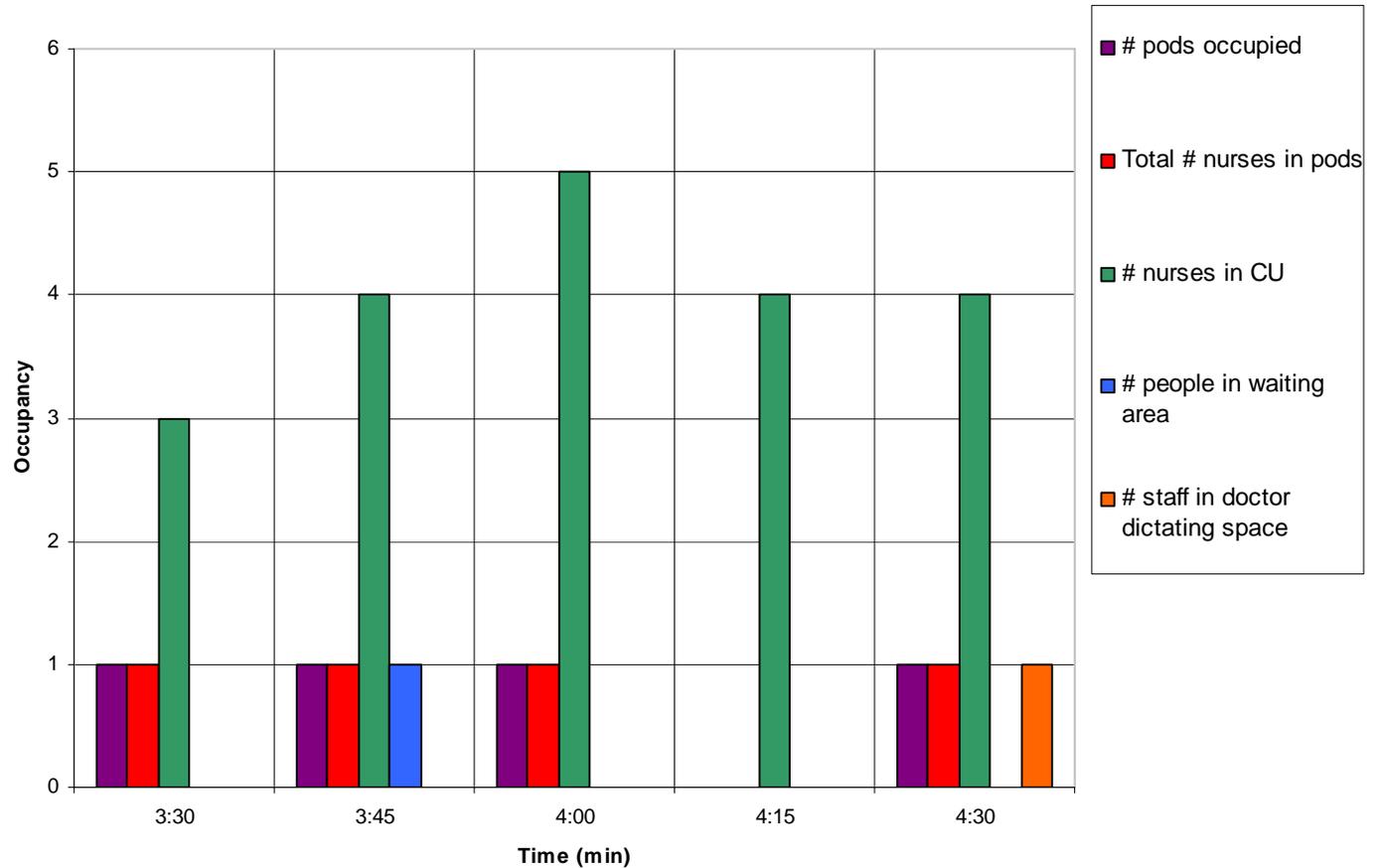
-Pods usually occupied by one nurse at a time; very little nurse interaction occurs

-Nurses spend most of time in CU

-Waiting areas rarely used

-Doctor dictating space rarely used

Space Usage at 15 min intervals





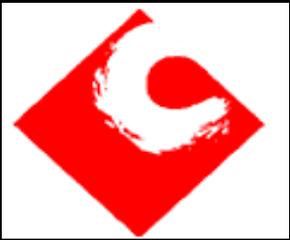
# Observations & Analysis

## *Nurse Shadowing*



Nurse was shadowed from 4:00-4:30 pm.

She moved among the highlighted spaces.



# Observations & Analysis

## Nurse Shadowing

### Key Findings:

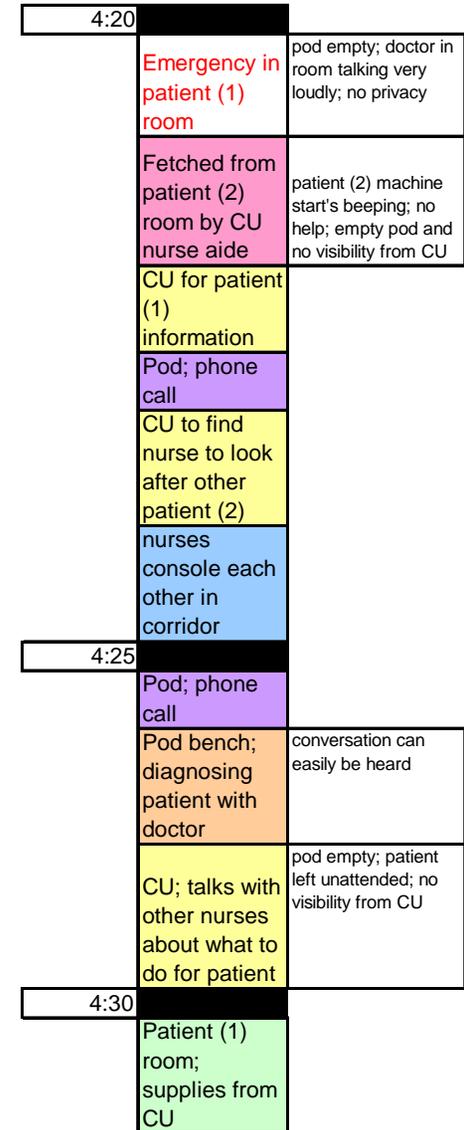
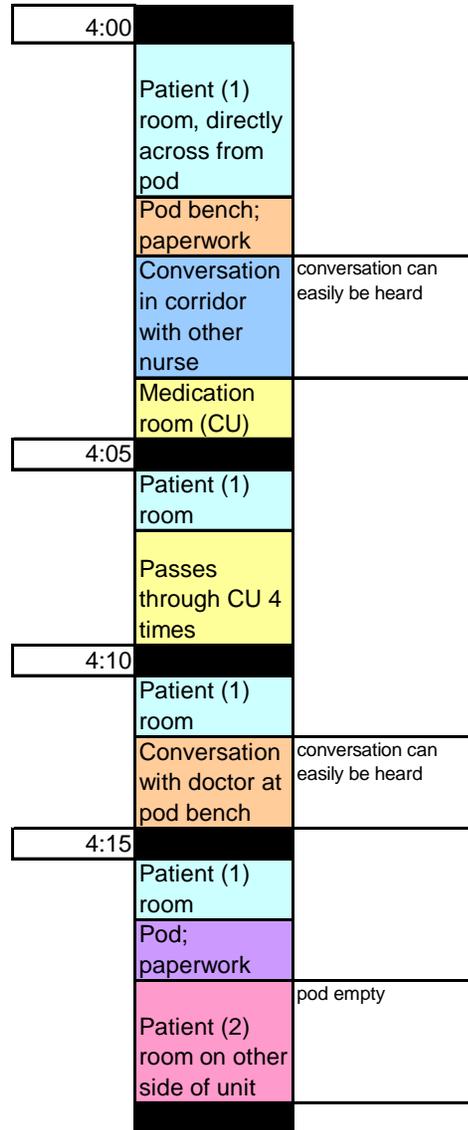
-Even when nurse is stationed directly by patient in a pod frequently travels to and from CU

-Little care is taken to keep conversations quiet and private

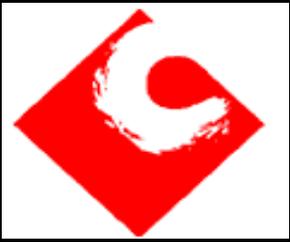
-Nurse doesn't "hang out" in pod; transitory; pod often empty

- When pods are empty it is difficult to monitor patients; very poor visibility from CU

Time (min)



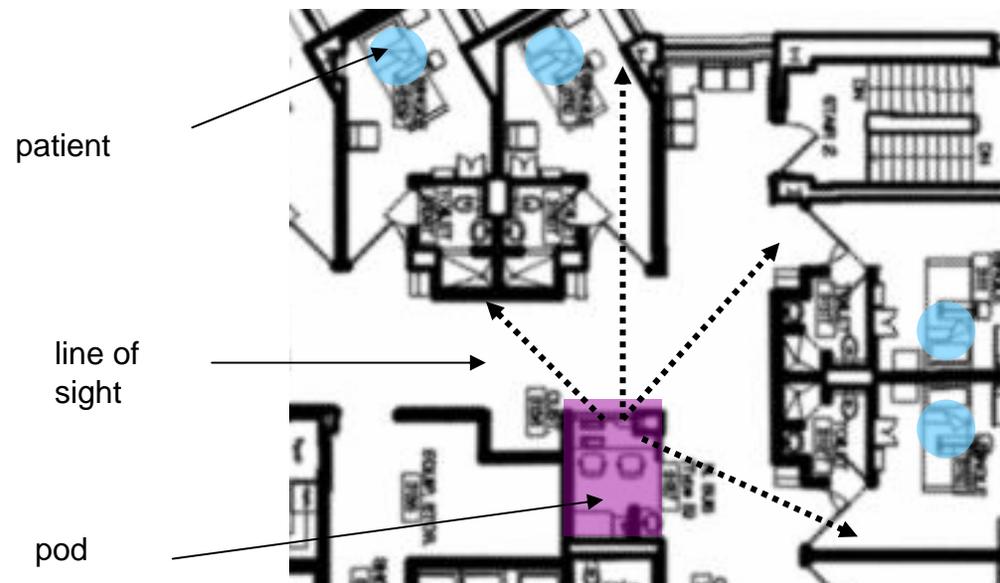




# Observations & Analysis

## *Privacy & Visibility*

- Pods were designed to increase visibility of patients. However, patient rooms were designed to provide patients with increased visual privacy. As a result, patients can't be seen from pods. Visibility of patients is very low from the CU.



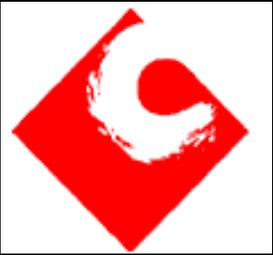
**Patients cannot be seen  
from pod**



### Does the hybrid nursing unit design support informal communication and learning?

- The *culture* of the med/surg nursing unit supports informal communication and learning. Information exchange, verbal support and group problem-solving occur constantly and are never frowned upon by my senior nurses or unit managers.
- **HOWEVER**, the unit design inhibits optimal communication in 3 ways:
  1. The design delineates nurse zones (pods) and doctor zones (dictating station). Even though the zone barriers are glass they still send a symbolic message to staff; they act as “behavior catalysts.” As a result, nurses don’t enter the dictating station and doctors don’t enter pods. This limits the impromptu interactions that can occur between doctors and nurses. This in turn limits opportunity for informal learning and creative problem solving. It also results in inefficient use of space.

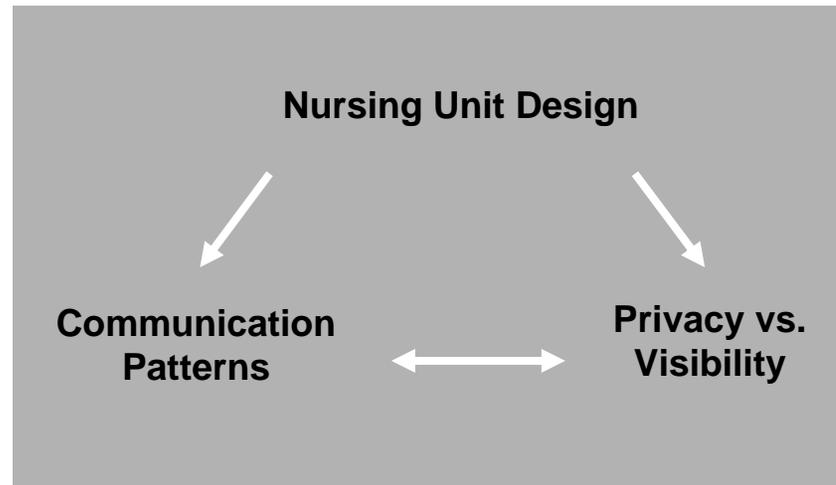


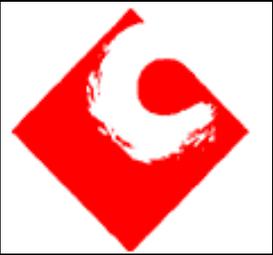


# Synthesis

## *Implications of Observation & Analysis*

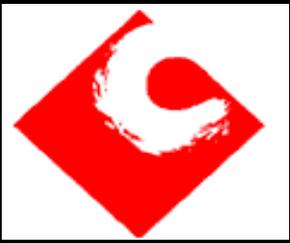
2. All staff conversations occur primarily in corridors and at benches and sinks. These areas are not appropriately designed to support interaction and communication and, as a result, privacy is compromised. The areas that do provide some degree of visual/acoustical privacy – pods, dictating station, small waiting areas, conference room, and consultation room – are rarely used for conversation as they are not nodes of interaction.
3. Poor visibility between patient rooms, pods and central unit decrease overall unit awareness and knowledge of what is going on. This results in second-hand information, delayed reaction time, propagation of problems, and decreased learning via observation.





- Nursing units are complex systems. To effectively cope with the myriad of challenges, solutions must consider the entire system. Therefore, solutions should address both policy and design issues. Furthermore, solutions should include both short-term recommendations and long-term ideals, to support the ongoing evolution of the environment.
  
- For the CMC med/surg nursing unit, solutions should focus on 3 major areas:
  1. **Removing “barriers” between nurses and doctors to encourage more impromptu interactions.**
  2. **Rethinking corridors so that they support informal communication and interaction without compromising privacy.**
  3. **Increasing visibility to support unit awareness and observational learning.**





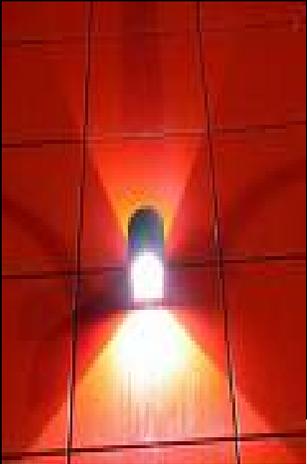
### 2. Privacy

- Ledges/kiosks should be strategically placed in areas that provide increased conversational privacy. Benches/kiosks will act as physical nodes for interaction.

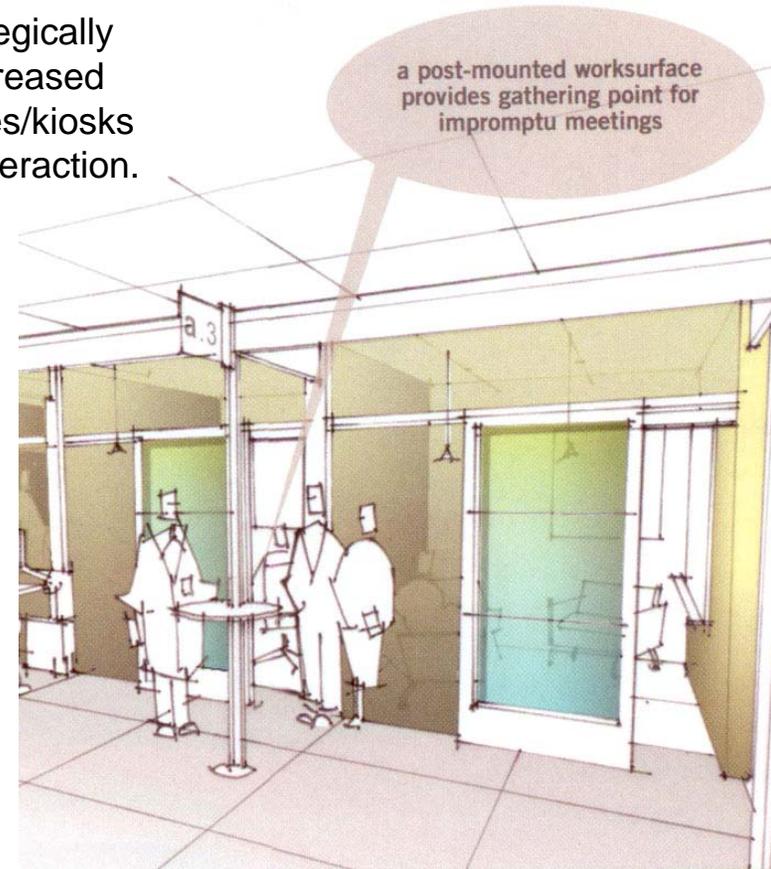
- Small waiting areas should be converted into “quiet zones” that act as flex space, accommodating both waiting and private conversation. Half the chairs should be removed and replaced by waist-height bench space.

- “Quiet zones” should be indicated by visual cues such as distinctive paint color and lighting.

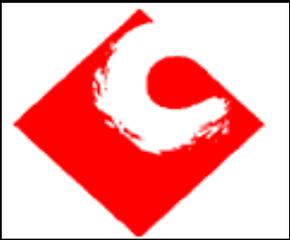
Distinctive paint color and lighting



Ledges

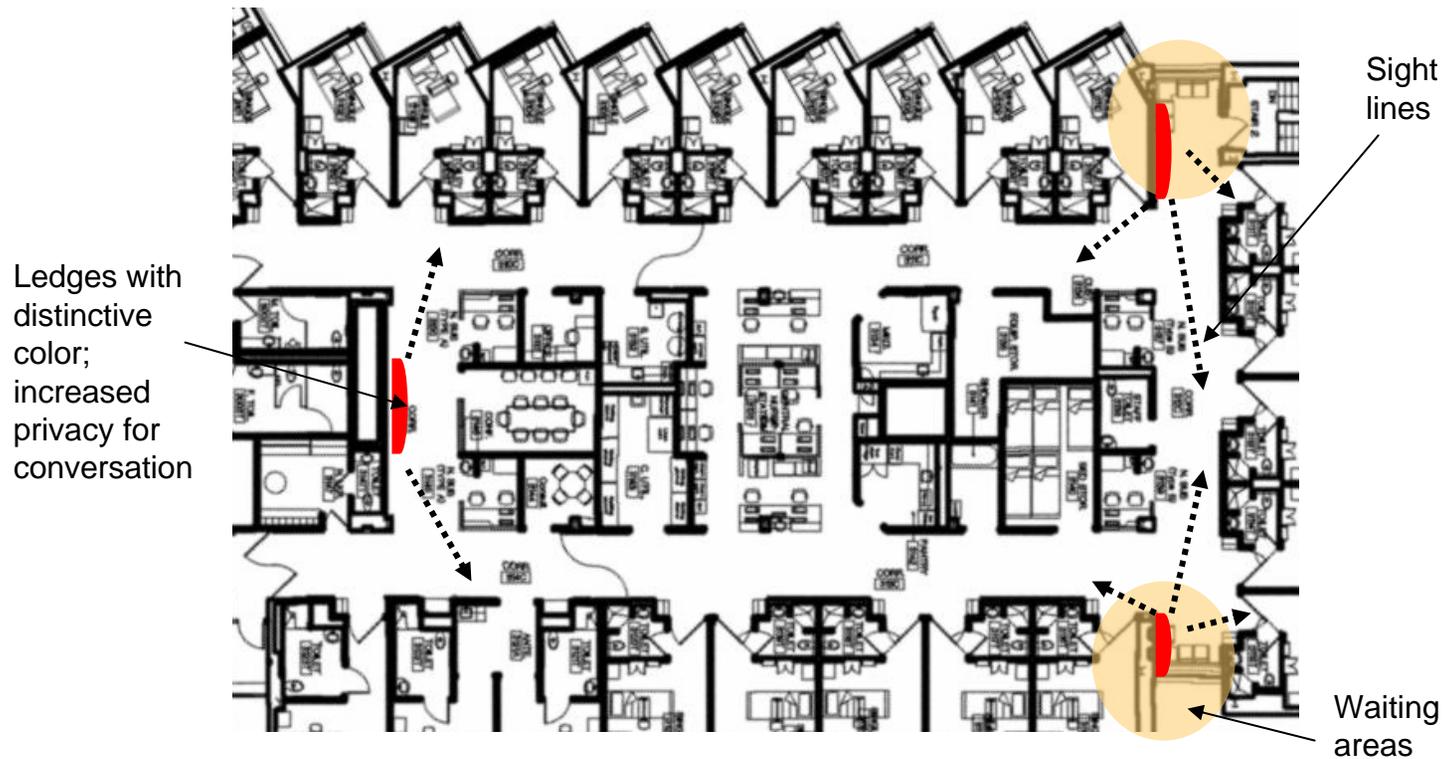


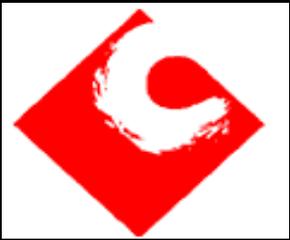
Kiosk as “gathering point for impromptu meetings (Bromberg, 2006).”



### 3. Visibility

- Strategically place ledges/kiosks so that, when staff are using them, their visibility of the unit is increased.





## Open unit design with semi-private stations

“The nursing station worktable layout allows the entire medical and hospital caregiving staff to face each other for the many planned and impromptu care-planning meetings in a barrier-free environment, rather than feeling isolated or having to stand with a high counter between them (Hardy, 2006).”



Reduced physical barriers;  
increased nurse/doctor  
interaction and teamwork

Glass paneling; increased  
patient visibility

No corridors

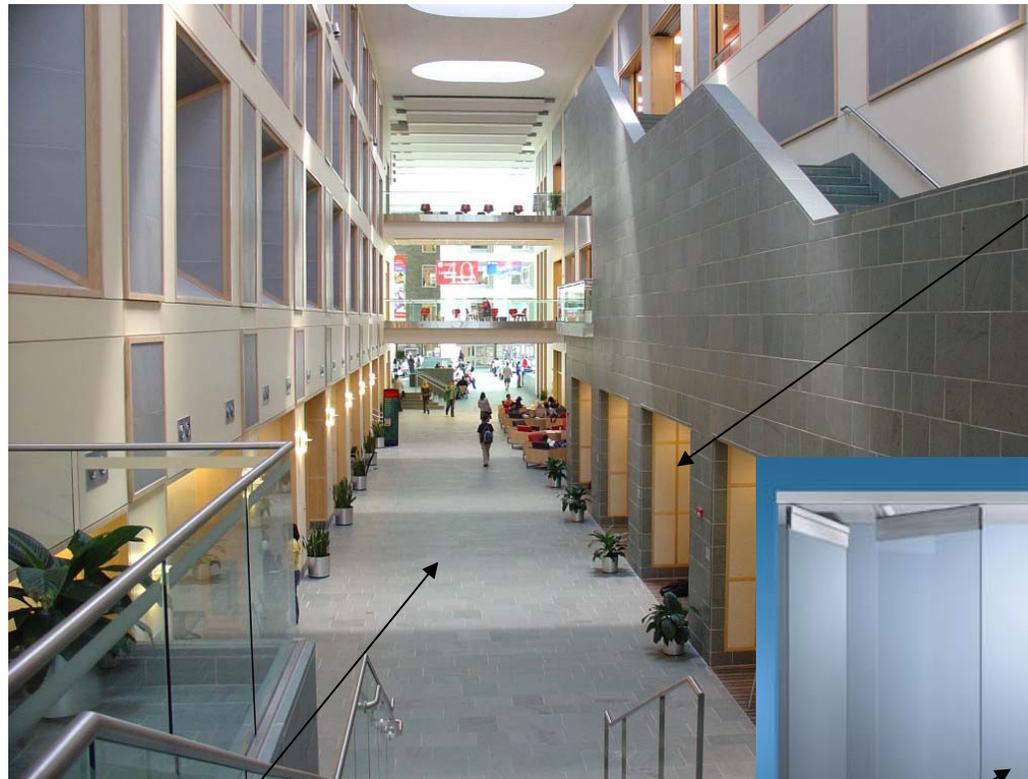
Ledge space  
to encourage  
informal  
interaction

Semi-private stations





## Re-thinking the corridor: Pull-off “quiet zones”

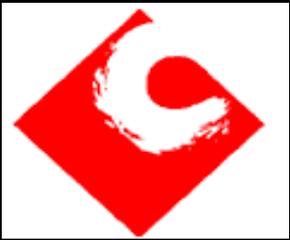


Pull-off zones allow privacy in open unit design

Wide corridor

Movable glazed glass walls for added privacy





## Re-thinking the corridor: Pull-off “quiet” zones

Ledges to encourage informal interaction. Computer equipment so space can be used by doctors and nurses when they need distraction-free space.



Pull-off zones should have sound masking ceiling and wall tiles. Possible suppliers include:

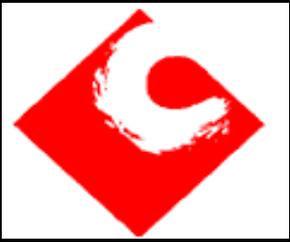
- Herman Miller for Healthcare
- LogiSon Acoustic Network
- Nurture by Steelcase

HealthcareDesign 2006

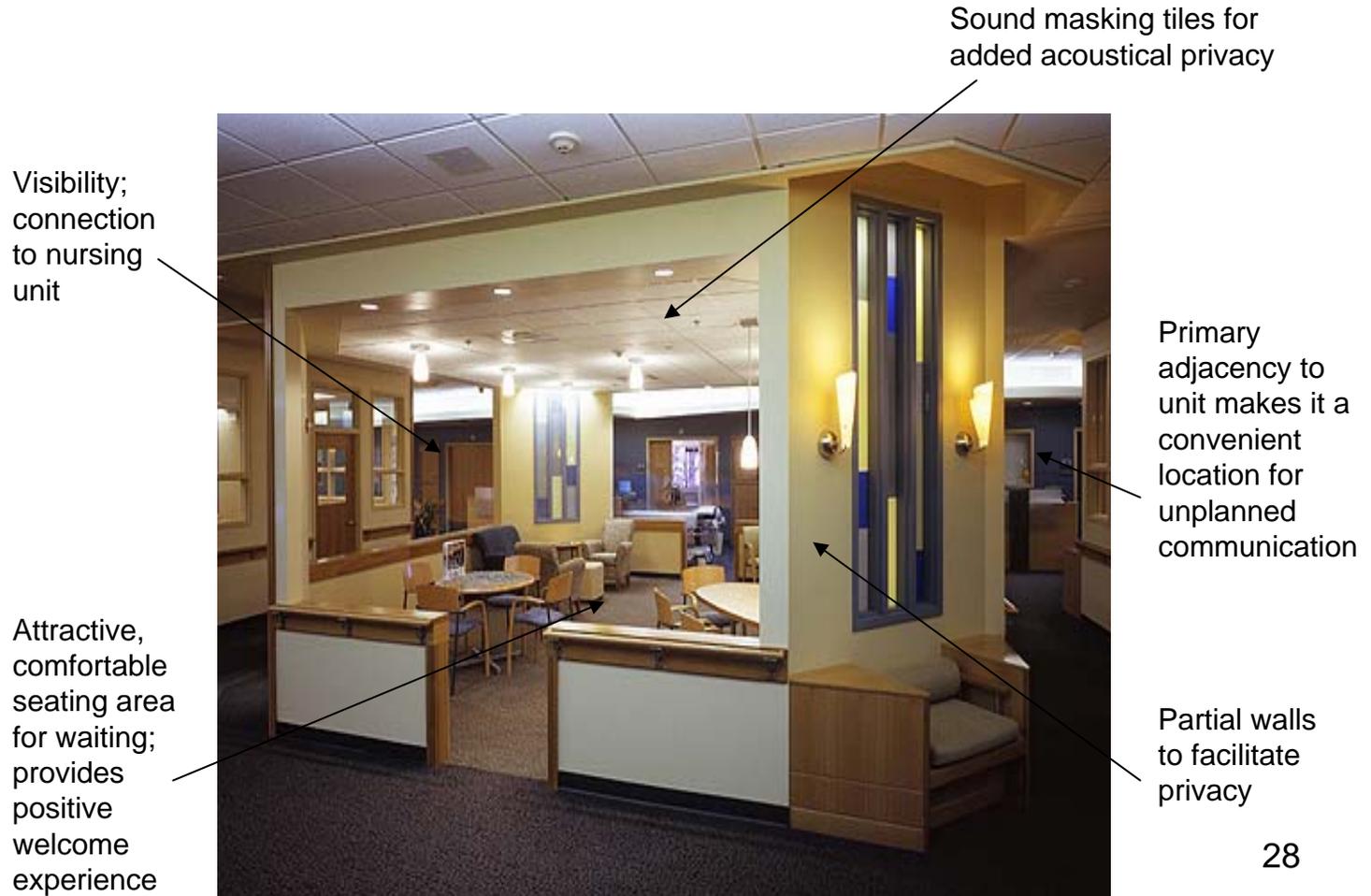
Rectangular vs. round nursing station design doesn't seem to affect noise level; more an issue of organization of nurse's activity and use of acoustical materials (Shepley, 2006).

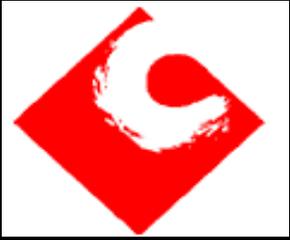


“Quiet zones” differentiated by change in material and distinctive lighting



## Semi-open seating area primarily adjacent to Central Unit





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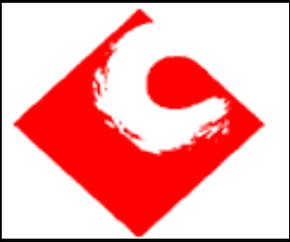
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