



KEY POINT SUMMARY

OBJECTIVES

To explore relationships between HIT and Unit Layout, and their impact on nursing workflow and PCC.

Destination Bedside

Watkins, N., Kennedy, M., Lee, N., O'Neill, M., Peavey, E., DuCharme, M., & Padula, C. 2012 | *The Journal of Nursing Administration Volume 42, Issue 5, Pages 256-265*

Key Concepts/Context

Patient-centered care (PCC) has been at the core of healthcare reform. Improvements and advancements in Healthcare Information Technology (HIT), Electronic Health Records and inpatient unit layout have been some means that aim to achieve PCC. Also key to PCC is the alleviation of medical errors, which HIT and related technology can help achieve. This study explored the relationship between HIT and unit layout and their impact on nursing workflow and PCC in a medical-surgical inpatient unit. The study concluded that patient bed-to-bathroom transfers predicted more near-falls; bedside documentation by nurses predicted fewer near-falls; the use of Computer-on-Wheels (COWs) in hallways reduced nurses' time at patient bedside and posed a potential for more distractions; and documenting in the Nurse Station (NS) led to increased walking.

Methods

This study, conducted in three phases, used multiple methods – qualitative: interviews and focus group discussions; quantitative: surveys and behavioral observations. In the first phase, questionnaires on nursing workflow and patient experience were administered to 89 RNs and 109 patients, respectively. In the second phase, 111 nurses (29 used PDAs, pedometers and completed a questionnaire; 48 used only PDAs, and 48 answered a questionnaire) were observed regarding walking distance, space utilization, HIT use, and frequency of patient care at bedside. The variables examined in both phases were unit layout, HIT use, care delivery, nursing workflow, and patient outcomes. In the third phase, 40 nurses participated in design charrettes to create sketches of unit layout with HIT solutions. Principal Components Analysis with Varimax rotation was conducted on the data obtained from the patient questionnaire, while other data were subject to multi-linear regression analyses and Pearson's pairwise Correlations.

Findings

The analysis of data collected in the first phase indicated that:



- The more difficult bed-to-bathroom transfer was the more pain was reported by the patient.
- The more a nurse documented at the NS, the patient reported more pain.
- More near-falls were reported during bed -to-bathroom transfers.
- The more nurses documented at the bedside, there were fewer reports of near-falls.
- Nurses who frequently used COWs reported:
 - More documentation in the hallways ($r=0.76$; $P<0.01$)
 - Less documentation at patient bedside ($r=0.28$; $P<0.05$)
- Nurses reported more distractions during medication preparation.
- Nurses reported most distractions when preparing medications at their COWs.

The analysis of data collected in the second phase indicated that:

- The more nurses used the main NS for documentation, the more they walked.
- The more nurses documented at the main NS, the less time they spent at patient bedside.
- Nurses spent 44% of their time at the NS on documentation.
- In patient rooms, nurses spent 8.5% of the time in patient assessment and 3% in documentation.
- The more trips a nurse made to the medication storage (located near the NS) in an hour, the more distractions they reported ($r=-0.46$, $P<0.1$).

In the third phase, during the charrettes, nurses used information from the first two phases to suggest:

- A decentralized unit model with:
 - Unit floors should not have carpet
 - Spaces, equipment, and supplies should be standardized
- Patient rooms have an antechamber or porch that:
 - Has visibility into the room and of the unit and has a separate entry for staff
 - Is a consultation place for clinicians
 - Has space for decentralized supplies and medications, waste and dirty linen, and a sink
 - Has isolation capabilities
 - Has dedicated space for a COW
- Patient rooms should have:
 - Lockable medications cabinet, decentralized supplies, and equipment,
 - Smart capabilities and private work surfaces
 - Seating at patient bedside and task lighting for bedside procedures



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- Sliding doors
- Touch-sensitive lighted handrails to prevent patient falls during bed-to-bathroom transfers
- Recliner for patient
- NS should have flexible work spaces, more seating, and visibility of patient rooms.

Design Implications

Implications that the findings of this study have for design are as follows:

- Docking stations for COWs and other handheld computers, monitors, and power outlets to be located near the patient rooms
- Medications to be decentralized at or near patient bedside
- Key equipment and HIT solutions to be decentralized and standardized in every patient room
- A dedicated offstage area (or porch) with windows to be located near the patient room for HIT, equipment, medication, and supplies
- Adequate lighting for specific bedside tasks and work surfaces that are private in patient rooms

Limitations

The authors identify the following as limitations of their study:

- Phase 1 and 2 were kept separate to keep the data collection procedure simple for participants.
- Phase 1 was reliant on self-report data from nurses and patients.
- Although the patient selection was controlled by the random assignment, all units involved in the study were in the same hospital, limiting the generalizability of the findings.