SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

The objectives of the study were to compare a centralized and a decentralized nurse station concerning communication with team members, care time and clinical activities, types of activities, number of visits to patients and time spent, and the nurse response time.

Centralized and Decentralized Nurse Station Design: An Examination of Caregiver Communication, Work Activities, and Technology

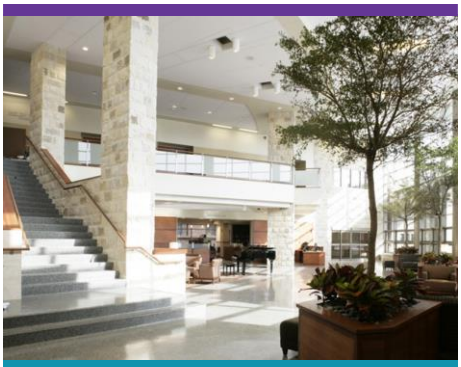
Gurascio-Howard, L., Malloch, K., 2007 /*HERD: Health Environments Research & Design Journal, Volume 1, Issue 1, Pages 44-57*

Key Concepts/Context

Patients need to be close to a nurse (RN) for easy access to care and to save travel time. Centralized nurse stations are placed in one location to serve a group of patient rooms. Decentralized stations allow for faster connections between nurses and patients and other areas like medication rooms. This study was conducted in medical-surgical units at two different hospitals to compare the two layouts using a small sample of nurses.

Methods

The study was done on a sample of four RNs at the two medical-surgical units with the data collection process designed to be the least intrusive on their daily activities. The two units were selected to be different in design but with similar patient types and acute needs. The first was traditional with a centralized nurse station, while the second was newly opened with more advanced decentralized nurse alcoves. A research team of interdisciplinary members was chosen to work on collecting and analyzing data. It was composed of experts from nursing, ergonomics/human factors, communications technology, building construction, and design. The research started by shadowing the four RNs at the two units from 7:00 a.m. to 3:00 p.m. daily, to create a shadowing log. The researchers entered the beginning and ending times of activities as the RNs moved around the units. Conversations during shadowing were audio recorded and the number of each recording entered in the log. After the shadowing was completed RN interviews started with specific questions to technology, communication, and teamwork. The results were categorized into four sections: experience, communication mode,



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team, and design. Additionally, nurse call system reports were used to analyze RN movement at the decentralized unit during the study period. Nurse location data was collected at the decentralized unit using locator nurse badges that were identified by ceiling sensors placed every 20 feet in hallways, patient rooms, medication rooms, conference rooms, and the lounge. There was no data available for the centralized unit because it was deemed unreliable. The data from the decentralized unit was analyzed using locator reports for the full RN shift.

Findings

The study analyzed 502 communications between RNs and team members, with 56% from the decentralized unit and 46% from the centralized unit. The decentralized unit with its alcoves increased the chance for collaboration and information sharing among team members. On the other hand, the interviews indicated that the centralized station allowed for more networking opportunities among RNs. There was a lack of RN-to-RN communication in the decentralized unit because of the physical separation of the alcoves. Physician and RN communication was similar in both units but the health unit coordinator (HUC) initiated contact more often in the centralized design. The opposite was true in the decentralized design, as the RNs initiated the contact with the HUC. The direct patient care time spent by the RNs was collected from the shadow log and showed more total time spent in patient rooms in the decentralized unit. The alcoves allowed for more visits to patient rooms as they were 40% more frequent than with the centralized station. The time spent at the decentralized alcoves was 14% less than at the centralized station. Medication room visits were 138% more frequent in the decentralized unit. The time spent for preparing medication was greater in the decentralized unit. This was suggested by the authors to be due to the way the RNs prepared the medication. Documentation time spent by the RNs was more at the decentralized unit, with charting activity taking 28% of shift time compared to 21% at the centralized unit. The results of patient satisfaction surveys during a six-month period regarding the response to patient calls were used to compare the two units. The decentralized unit scores were higher on promptness of call response. In the end, there was more communication in the decentralized unit between RNs being 22% and more time spent with team members at 42%. Comparing data from previous studies showed that RNs spent more time in hallways in the centralized unit at 28.9% compared to 6% to 12% at the decentralized unit.

Limitations

The study sample was very small, with only four RNs at each unit; moreover, it did not take into account other caregivers or the HUC. The eight-hour shift period did not consider additional RN time spent outside the shift. Therefore, the study could not be generalized concerning the design of centralized and decentralized units.

Other limitations were cited by the authors in data collection regarding equipment variations in the two units.

Design Implications

The design of the facility with either a centralized or a decentralized nurse station impacts the movement and travel distance of RNs. Centralized designs cause more time to be spent in hallways rather than the caring of patients. Better layouts with alcoves would reduce travel time and better utilize unit space.