



KEY POINT SUMMARY

OBJECTIVES

To investigate how physical environments affect communication processes for managing patient safety and medication administration in hospitals providing acute care.

The effects of physical environments in medical wards on medication communication processes affecting patient safety

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Key Concepts/Context

The physical environment of a hospital has a wide range of effects on the quality of care administered to patients. In the context of medication distribution, seamless communication among healthcare professionals of different backgrounds is imperative, and in many cases the physical environment itself can have positive or negative effects on this complex process. Therefore, it is important to understand what aspects of the physical environment either impede or improve upon the communication processes involved in administering medication to patients.

Methods

- The study was conducted in two general medical wards (labeled as Ward 1 and Ward 2) of an acute care hospital. Participants included 31 doctors, 76 nurses (including nurse managers, coordinators, and clinical specialists), one pharmacist, and 27 patients. Patients were allowed to participate only if they were able to communicate with healthcare professionals during the process of medication management.
- For data collection, 72 field interviews were conducted with participants, along with 290 hours of participant observations, 34 hours of video recordings around the wards, and five focus group meetings.
- Ward 1 and Ward 2 both had single-bed and multi-bed (2-4 patients) patient rooms that were located alongside the ward corridors. Both wards had a central medication room and staff stations that functioned as the primary sites for interdisciplinary communications.
- Each ward had different workflows in accordance with their layouts. In Ward 1, the front and back staff stations were used by all staff members to plan, discuss, and record treatment procedures. The medication room was always



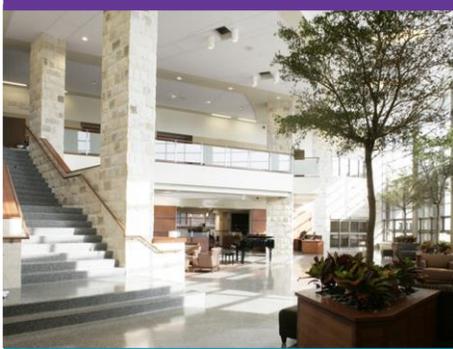
locked, and permanent nursing staff and pharmacists used access cards to retrieve medication as needed. Ward 2's medication room featured a medication retrieving device known as Pyxis, which required nurse usernames and fingerprints for access. A central staff station and one staff substation were shared by all medical personnel.

Findings

Workers in both wards described difficult daily experiences with cramped spaces, constant noise from overhead paging and moving equipment, and unexpected workflow interruptions. Ward 1's pharmacist was subjected to repeated interruptions from ward visitors due to the location of her desk. Ward 1's small medication room was often crowded, and relocation to any of the shared desks placed workers at risk for frequent interruptions. The cramped nature of Ward 1's medication room made it difficult to access medication in a timely manner. The introduction of the Pyxis device made it relatively easier for nurses in Ward 2 to access medication, but the use of Pyxis contributed to fewer instances of nurses double-checking controlled drugs at the bedside, which could adversely affect patient safety. But since Ward 2 had only one centralized station for all workers, competition for space and use of resources (such as computers) was a common source of frustration. Ward 2 was also described as "claustrophobic" by workers due to its lack of windows and direction signposts.

Design Implications

In areas where high traffic and complex processes of communication are expected to occur, design elements such as wider halls, open forums, greater spacing between tables and desks, and windows could help reduce claustrophobic feelings and interior noise pollution. Workstations intended for professionals who are not expected to facilitate regular communication with visitors should not be readily accessible to the public; this may help reduce frustrating interruptions and distractions. The Pyxis device could offer some relief for cramped medication rooms, but may contribute to rushed actions on behalf of workers administering medication; therefore, Pyxis might perform best in facilities that aren't known for having routinely high numbers of patients.



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Limitations

This study focuses on only two wards within one hospital. The study is framed in a way to illicit discussion about workplace difficulties, and though a few positive aspects about the wards were mentioned, the focus remained on the frustrating physical details of each ward, which may skew perceptions of the facility's effectiveness and impact as a whole.

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