

# **Med/Surg Patient Room Layouts Identified Through a Participatory Design Process with Hospital Staff**

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## **Abstract**

The design hospital patient rooms needs to accommodate the ergonomic needs of a wide range of hospital staff while at the same time affording a comfortable healing space for patients and their visitors. This work used a participatory process that engaged 23 different occupational groups in the design of a full-sized model patient room. With regards to the layout of the room, the position of the bathroom, the bed, the family zone, and the staff sink are key components that shape the overall room design. This paper describes the layouts produced by 26 design sessions comprised of mixed occupational groups. Inboard bathroom design were most frequently used, with the bed located on the same side as the bathroom. The family zone was always positioned near the windows.

## **Introduction**

The research aims to enhance the safety of all healthcare staff working in hospital patient rooms by designing patient rooms that meet the physical and cognitive needs of those providing direct and indirect patient care. The design of hospital patient rooms influences the way hospital staff perform work tasks, which in turn affects their levels of physical exertion and ultimately their health and safety, patient safety, and their work performance.

Three emerging trends in healthcare will impact the design of hospital rooms. First, there is a trend toward acuity–adaptable rooms which can be configured to accommodate the needs of patients as they progressively regain their health (Hendrich, Fay, Sorrells, 2004). Second, there is a trend towards the provision of in-room clinical services rather than transporting patients throughout the healthcare facility (Patel et al. 2006). These trends signify that there will be more hospital staff providing services in patient rooms of the future. Third, patients are getting heavier. This means larger beds and larger furnishings, and less work space for hospital staff. These trends therefore indicate the need to re-examine the design of healthcare facilities so that the ergonomic needs of hospital staff are addressed, while at the same time considering the needs of family and visitors.

Our research team has been conducting a participatory design process which started with a series of focus groups and interviews that engaged 23 different

occupational groups that work in the patient rooms (Lavender et al., 2014). This process has been followed with participatory design sessions in which mixed occupational groups have been asked to design their ideal med/surg patient room. This paper aims to describe the layouts selected by the participants in these design sessions of four key room components upon which the rest of the room was built: the bathroom, the bed (patient care zone), the family zone, and the staff sink.

## **Methods**

One hundred one participants, representing 24 occupational groups, participated in 26 mixed-group design sessions in which they designed a 300 square-foot single-patient med/surg hospital room. Each session began with a discussion about the general room layout where the participants used a white-board model of the room to initially identify where the bed, bathroom, and family zone should be located relative to the doorway and the windows. This white-board model served as a starting point for the full-scale design process that took place in a 15 foot by 20 foot full-scale model room. This room was comprised of Velco-covered walls, moveable bathroom walls, a hospital bed, and furnishings commonly found in patient rooms. Equipment and things used in the room was represented either by the actual items or mock-ups constructed from a variety of materials.

The full-scale design process began with the placement of the bathroom and the bed as indicated by the white-board model. These locations were frequently changed once people were in the full-scale model room and all the necessary items for the room were being placed by the participants. This analysis looked at resulting locations of four major components of the room: the bathroom, the bed, the family zone, and the staff sink.

## **Results**

Of the 25 rooms designed through this participatory process, 19 had an inboard bathroom located just inside the room door (figure 1). Four rooms had the bathroom on the outboard wall. Nurses preferred the bathroom close to the door so they could quickly and easily get in to assist patients when needed. Plumbers liked the bathroom close to the door so they would not disturb the patient when servicing the room. The doorway to the bathroom can be located on one of two walls or diagonally across the corner. A sliding door along the outside wall of the bathroom was chosen in 14 designs, and split (“French”) doors were selected for four bathroom designs. The remainder of the bathrooms had a single hinged door.

The headwall and the bed were most frequently positioned in the location shown in figure 1. Hospital staff wanted the patient to be able to see them walking in the door and wanted sightlines such that they could tell if the patient was in the room. However, most felt that having the head of the patient bed on the opposite side of the room as shown in figure 1 compromised patient privacy.

Other key placements were the staff sink which was positioned near the door most cases. However, the sink was visible to the patient in only 21 of the 25 room layouts.

The family zone, which contained a sofa that converted to a bed, was positioned in front of or adjacent to the windows in all designs.

## Conclusions

The room layouts most frequently chosen placed that bathroom inboard, which enable easy access by different staff members and patient, and the bed such that staff could see the patient from the corridor. While fewer outboard bathroom designs used, these designs keep the bed closer to the corridor and reduce steps for patient care staff. The trade-offs between these different layouts need to be investigated further in consideration of the varied needs across all hospital staff.

## References

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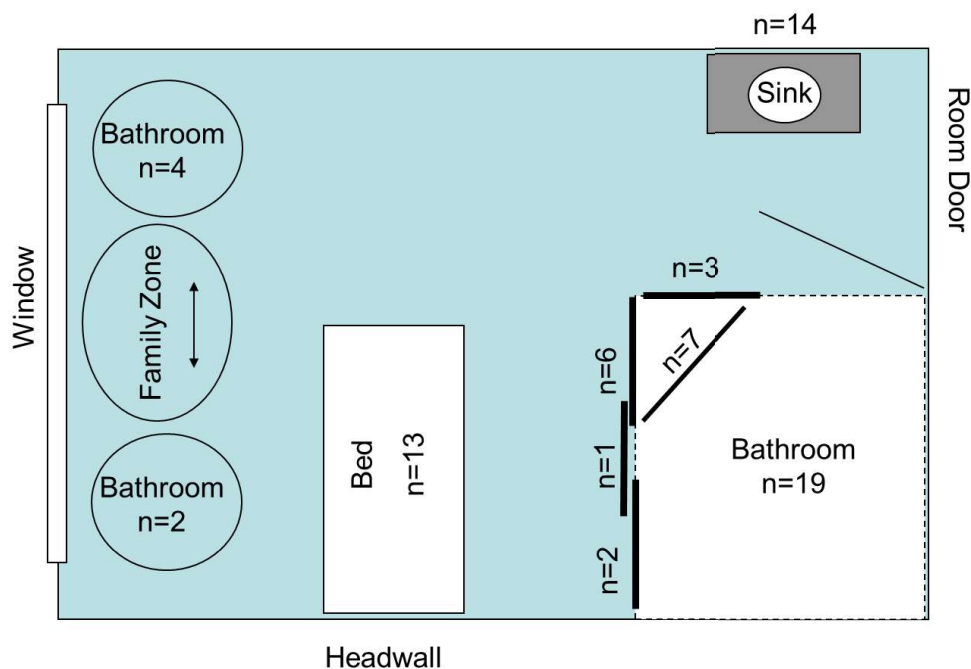


Figure 1. The most frequent placements of the bathroom, bed, healthcare provider sink and family zone. Alternative bathroom placements are also shown. The thicker lines along the bathroom wall represent the door locations. The numbers show how frequently these specific items were located in these positions across the 25 design sessions.