

## Industry Developments and Trends

# Same-handed vs. Mirrored Inpatient Unit Configuration

### Introduction

Studies on the effectiveness of same-handed configuration of inpatient rooms in supporting improved patient safety, experience and staff efficiencies are, at best, inconclusive. While there is a lot of discussion around the potential for improvements in patient safety and operational efficiencies in healthcare settings, most studies that cite safety and efficiencies from standardized environments are from other industries. The Joint Commission publication *Safe by Design: Designing Safety in Health Care Facilities, Processes, and Culture*<sup>1</sup> examined the concept of standardized processes and environments in support of patient safety. This publication cited evidence from rigorous studies in aviation and nuclear power plant operations that had taken place over the past two decades supporting standardization of process and environment to improve safety. Based on the evidence in these industries, an assumption has been made that same-handed inpatient rooms better support cognitive demand and help automate cognitive processes leading to less demand on short-term memory. However, the study of standardization in healthcare environments is much more recent. To date only a few studies have specifically looked at same-handedness in inpatient units and conclusions related to their impact on patient safety and cognitive effort among staff are inconclusive. Additionally, to our knowledge, no one has conducted a full analysis of the cost-benefits of same-handedness in patient rooms.

#### In this report:

- Recent studies on same-handed inpatient unit configurations
- Key takeaways for inpatient unit design
- Inpatient Unit Project Matrix Comparison: Mirrored vs. Same-Handed Inpatient Units



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## Recent Studies on Same-Handedness

### Assessment of Patient Room Attributes Most Important to Configuration<sup>2</sup>

In an assessment of patient room configurations, a panel of experts from healthcare design, nursing, cancer, and tertiary care ranked patient room features that are most important to consider for room configuration. Features related to patient safety, staff efficiency, circulation, infection control, patient considerations, and family amenities. Same-handedness ranked lowest in importance out of the 23 room features. Room features listed in **TABLE 1** ranked higher than same-handedness in their importance on room configuration.

### Impact of Same-handedness in a Simulated Patient Care Environment<sup>3</sup>

Leveraging observations of simulated patient care in mock-up rooms, a 2010 study found that standardized same-handed inpatient rooms did not support better efficiencies and safety compared to standardized mirror-image inpatient rooms. The authors concluded that because nursing patterns were not standardized the caregivers did not exhibit the behavioral benefits thought to be associated with same-handed rooms – a right-side approach and location of the caregiver. This finding indicates healthcare organizations many not realize the full behavioral benefits of same-handedness unless caregiver operational processes are highly standardized. In terms of cognitive processing, this study found that familiarity with the environment was more strongly associated with a global view of the patient room upon entry compared to same-handedness. The study also found that variability among patients (e.g., the number, type, and location of equipment needed for their care) added significant unpredictability to the patient room environment negating some of the positive benefits that standardization can have.

### Comparing Same-handed and Mirrored Private and Semi-Private Patient Rooms<sup>4</sup>

A 2010 study surveyed patients and nurses at eight medical-surgical inpatient units with mirrored semi-private (5), mirrored private (2), and same-handed private (1) configurations. The team concluded that the same-handed configuration was associated with more right-side approaches by nurses. In turn, the right-side approach was associated with fewer patient falls. Additionally, nurses on the same-handed private unit were more likely to report better organization of workspace at patients' bedside as compared to mirrored private units. However, differences in noise levels and patient sleep quality between same-handed and mirrored private configurations were not statistically significant. Not surprisingly, this study found much greater differences in patient satisfaction and nurse perception of their work environment between mirrored private and mirrored semiprivate units than between same-handed private and mirrored private units. The major implication for nurse managers cited by this study was to use a participatory design process with staff members before making decisions for or against same-handedness.

### Anecdotal Evidence

While there are case studies available on hospitals that have implemented same-handed inpatient units, they have not included any post-occupancy data citing hard evidence of the benefits of the configuration. In 2011, the design team for Parkland Hospital held a tele-conference with staff from other hospitals that used same-handed rooms to help the hospital make decisions related to same-handedness. Staff working in hospitals with same-handed units indicated benefits such as less confusion among staff about where equipment is located; ease of orienting float staff, residents, and medical students; and aiding recruitment efforts due to the ease of working in same-handed rooms.<sup>5,6</sup>

**TABLE 1** Patient room considerations related to configuration ranked by design and non-design healthcare experts.<sup>2</sup>

Patient Room Configuration Considerations		
PERFORMANCE ISSUE	CATEGORY	OVERALL RANK
Clearance around bed	Staff Efficiency	1
Access around patient	Circulation	2
Visibility of patient	Patient Safety	3
Access to patient's head	Circulation	4
Caregiver access	Patient Safety	5
Access to bathroom	Patient Safety	6
Auditory privacy	Patient Consideration	7
Hand-wash location	Infection Control	8
Transport in/out of the room	Circulation	9
Family accommodation	Family Amenities/Space	10
Handwashing and work surface separation	Infection Control	11
Proximity to patient	Family Amenities/Space	12
Bathroom configuration	Patient Safety	13
Access to supplies	Staff Efficiency	14
View of exterior	Patient Consideration	15
Daylight	Patient Consideration	16
Access of data	Staff Efficiency	17
Visibility of corridor	Patient Consideration	18
Auditory pathway	Patient Safety	19
Visual privacy for corridor	Patient Consideration	20
View of TV	Family Amenities/Space	21
Storage	Patient Consideration	22
Standardization (same-handed vs. mirror-image layout)	Patient Safety	23



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## Key Takeaways for Inpatient Unit Design

- There is no empirical evidence that same-handed rooms improve patient safety or patient or staff satisfaction outcomes.
- In order to derive the potential benefits of room standardization (including but not limited to same-handedness), the patient room environment should be considered in the context of existing or planned operational protocols and processes along with the type of patients that will utilize the room.
- Experts perceive several other performance issues related to the patient room to be more important to configuration than same-handedness (TABLE 1).
- Regardless of the decision to use same-handed or mirrored inpatient unit configurations, it is important to include staff in the decision-making process related to the patient room design as they will be the ones to operationalize the space.

## Conclusion

It should be noted that very little research is available on same-handed inpatient units after 2011. However, the research up until that time has provided little evidence that same-handed units provide a significant benefit for patient safety or caregiver cognition. In recent years, several of CannonDesign's clients have weighed the pros and cons of same-handed inpatient units and have made a decision based on their organizational needs. Based on our analysis of our recent projects, a majority are using (or building) mirrored patient units.

## References

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6. Harper, K. Adams, H., & Thomas, D. (2011, July 26). Applying evidence-based design at the New Parkland Hospital. *Healthcare Design Magazine*. Retrieved from: <http://www.healthcaredesignmagazine.com/article/applying-evidence-based-design-new-parkland-hospital>

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