



KEY POINT SUMMARY

OBJECTIVES

To examine the protective capabilities of private hospital rooms against central line-associated bloodstream infections.

The role of the built environment and private rooms for reducing central line-associated bloodstream infections

O'Neill, L., Park, S.-H., Rosinia, F. 2018 / PLOS ONE, Volume 13, Issue 7, Pages 12

Key Concepts/Context

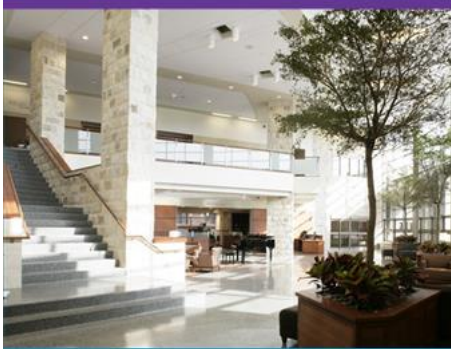
Private patient rooms in hospital environments are widely considered a helpful defense against healthcare-associated infections (HAIs). However, the ways in which private rooms might help mitigate specific kinds of HAIs, such as central line-associated bloodstream infections (CLABSIs), remain unclear and relatively unexplored. Since CLABSIs affect approximately 41,000 patients a year and are responsible for about \$2 billion in annual healthcare costs, it is worth investigating whether or not private hospital rooms actually contribute to the reduction of these infections.

Methods

The authors obtained all data analyzed in this study from the 2013 Texas Inpatient Public Use Data File (TIPUDF). This archive contains 93% to 97% of all hospital discharge records in the state, and lists one primary and 24 secondary diagnoses for each discharge. Data at the hospital level were gathered from a 2013 survey of the American Hospital Association. A total of 1,357 CLABSI cases were identified from 335 different hospitals, which were then organized into two groups based on predominant patient room type – private room (Group 1) or bay room (Group 2). Patients included in the study were over the age of 18 and had stayed in the hospital for at least two days. Patients diagnosed with HIV or certain forms of cancer were excluded.

Findings

Group 1 hospitals were more likely to be privately owned, demographically homogenous, and staffed with 42% more nurses per bed than Group 2 hospitals. Group 2 patients had longer lengths of stay on average (5.6 days versus 4.8 days),



The Center for Health Design: Moving Healthcare Forward

The Center for Health Design advances best practices and empowers healthcare leaders with quality research that demonstrates the value of design to improve health outcomes, patient experience of care, and provider/staff satisfaction and performance.

Learn more at
www.healthdesign.org

while patients from Group 1 had more comorbidities on average (3.28 vs. 3.24). Overall, a positive association was found between a hospital's percentage of bay rooms and CLABSI rates, even after statistical adjustments for all other factors were considered. Group 2 patients assigned to private rooms were at 24% lower risk for contracting CLABSI than patients in bay rooms. In line with previous studies, data showed that nursing staff played a major role in mitigating CLABSI.

Limitations

The authors note that their usage of CLABSI incidents as a measure is a limitation since these figures only relate to HAI-related outcomes and are in need of a better documentation method. This study is a meta-analysis; all of its conclusions are derived from statistically analyzed data; no qualitative or quantitative data were gathered on-site at any location included in the study. The authors also noted that all data were derived from institutions located within one state.

Design Implications

Statistical results and analyses from this study suggest that locating patients within private rooms may help deter instances of specific HAIs such as CLABSI. The results also imply that higher nurse-to-bed ratios also impact HAI rates; in instances where designers do not have the spatial resources required for additional private rooms, careful consideration could be given to the placement of nursing stations resources.

The Knowledge Repository is a collaborative effort with our partners

Academy of
Architecture for Health
an AIA Knowledge Community



Design for Aging
an AIA Knowledge Community



Additional key point summaries provided by:

NIHD | Nursing Institute for
Healthcare Design
LEADERSHIP • EDUCATION • ADVOCACY

RESEARCH DESIGN
CONNECTIONS