



## KEY POINT SUMMARY

### OBJECTIVES

This study looked to measure family and staff satisfaction with light, noise, aesthetics, temperature, and amenities, and evaluate staff and family perceptions of safety, security, and privacy within a newly built pediatric hospital featuring evidence-based design (EBD) interventions compared to the same criteria within an older existing hospital.

## Evaluation of the Built Environment: Staff and Family Satisfaction Pre- and Post-Occupancy of the Children's Hospital

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### Key Concepts/Context

As healthcare organizations begin to address the issues of quality and safety, patient-centered care, and emerging technologies through the replacement of old and outdated facilities, understanding the impact of the built environment on patient and staff health outcomes becomes increasingly necessary to make valued decisions throughout the process.

### Methods

For this study a pre/post survey design using a convenience sample from all nursing staff, social work, therapy staff, and families was conducted within a tertiary pediatric hospital in a major metropolitan hospital in the western United States. The departments represented in this research included the PICU, the NICU, the cardiac intensive care unit (CICU), the general clinical research center, medical/surgical units, and the oncology/hematology/bone marrow transplant unit. A survey was developed to measure staff and family satisfaction with specific elements within the built environment and collect demographic data for descriptive analysis. Staff surveys (SEBE) consisted of 53 questions relating to satisfaction and importance of selected characteristics that were incorporated within the design of the new facility. The questions relating to satisfaction were scored using a 5-point Likert scale ranging from 1= "never satisfied" to 5= "always satisfied." Participants could also choose "not applicable" as a response. Questions relating to importance were scored using 1= "yes" and 2= "no." Each question pertaining to the built environment was asked once for satisfaction and once for importance. For data analysis, 15 categories were created by content: charting area, layout of the patient



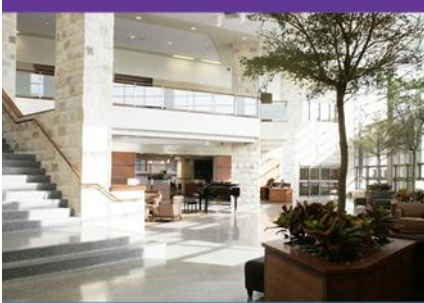
### DESIGN IMPLICATIONS

This research shows that the implementation of EBD principles within the architectural environment of a newly built children's hospital can increase staff and family satisfaction, allowing for the best possible health outcomes for children and increased staff retention.

room, natural light, artificial light, placement of sinks, placement of soap dispensers, storage, writing surfaces, comfort/appeal, privacy, security/safety, parking, breakroom, wayfinding, and proximities. Space was also left for open-ended comments. Family surveys (FEBE) consisted of 48 questions divided into 14 content areas: waiting room, quiet space, cleanliness, furniture, temperature, noise, natural light, privacy, security, wayfinding, parking, colors, overall appearance, and their child's room as a healing environment. Once the final English version was completed, a Spanish version was translated for use in this study by the medical interpreter department at the hospital. Staff and family surveys were distributed one year prior to the move to the new facility and six months post occupancy in the new facility. Staff surveys were distributed in packets that included a cover letter inviting participation, a brief demographic form, the survey, and a return envelope, with a return request date of two weeks later. Family participation was solicited in person by a research team member during the same timeframe as the staff surveys. Distribution for the post-occupancy survey was done by staff within the represented departments. Analysis of the data was done using SPSS 16.0 software. Demographic variables, individual item responses, and subscale scores were summarized using descriptive statistics. Inferential statistics were used to compare mean subscale scores pre- and post-move to the new facility. For the purpose of this analysis "Acute Care Units" consisted of medical/surgical units and the hematology/oncology/bone marrow transplant unit. "Intensive Care Units" consisted of the PICU, NICU, and CICU. "Therapies" consisted of all the therapies represented within the units. A total of 812 staff were sent the survey prior to the new building, and they had a 37.68-percent response rate. A total of 890 staff were sent the survey six months post-occupancy, and they had a 48.76-percent response rate. A total of 60 families participated in the pre-move survey, and a total of 67 families participated post-survey.

### Findings

A profile of staff respondents reported an almost equal distribution of age, a majority of Caucasian females, and an average length of employment with the hospital of  $7.89 \pm 8.48$  years. Staff pre/post surveys reported statistically significant differences across all subscales within the "Acute Care Units" except three: wayfinding, parking, and proximity. Analysis of pre-move importance for the same criteria indicated a fairly high importance in all areas and a lower level of importance post-move. Staff pre/post surveys reported statistically significant differences across all subscales within the "Intensive Care Units" except for wayfinding and proximity. Staff pre-move and post-move analysis of importance remained consistent with the prior data except in the areas of charting area, parking, and proximities. Staff pre/post surveys for "Therapies" reported statistically significant improvements in all subscales except four: placement of soap dispensers, safety/security, wayfinding, and proximities. These areas were not statistically better. Importance scores for the therapy staff varied considerably pre-



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to post-move depending on the variable. A profile of families reported a majority of Caucasian families compared to Hispanic families. The average patient age was  $5.32 \pm 6.82$  years, and the average length of stay was  $12.27 \pm 14.77$  days. Family pre/post surveys reported statistically significant differences across all subscales within the survey. In almost every subscale other than temperature and noise levels in the child's room, families were "almost always satisfied." Family importance scores pre/post-move showed parallel lines, with almost equal numbers post-occupancy falling above or below the pre-move rating.

### Limitations

Limitations to this study include moderate response rates from both staff and patients, thus not reflecting all views of hospital staff and families who receive treatment at The Children's Hospital, reducing generalizability. Also, the minimal number of Hispanic-speaking families who responded to the survey excludes an important population that uses the hospital. Additionally, possible revisions of the tool may need to be made for future research, as psychometric testing and evaluation were unable to be done due to limited time and resources.