SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

This study discusses, through background information and five research questions, the organizational decision-making process behind evidence-based design (EBD) concepts, the criteria used to make these decisions, and how leadership styles can influence the process.

Making the Case for Evidence-Based Design in Healthcare: A Descriptive Case Study of Organizational Decision Making

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Key Concepts/Context

It is reported that an approximately 98,000 people die each year in the United States as a result of medical errors (IOM, 1999). This is unacceptable in a country that prides itself on the best medical institutions and access to the highest-end technology. It is believed that the need to renew currently standing hospitals is due to a combination of aging buildings, aging populations, and introduction of new technologies (Ulrich, 2004). This has led to a large patient safety movement and the largest hospital construction boom in U.S. history (Jones, 2004). In California alone, it is expected that approximately $45 billion to $110 billion will be spent renovating the healthcare industry over the next 30 years (Meade & Kulick, 2007). This "once-in-a-lifetime" hospital construction boom opens opportunities for healthcare architects and professionals working together in rethinking hospital design and healthcare delivery. The primary aim in redesigning is to (a) reduce stress and fatigue on staff, (b) increase effectiveness in care delivery, (c) improve patient safety, (d) reduce patient and family stress while improving outcomes, (e) improve overall healthcare quality, and (f) improve overall operating performance.

But effective EBD decision-making requires analysis and a systems approach to applying the research findings. Often leaders make strategic and policy decisions with an intended outcome, but do so without a proper systems approach. Janis (1989) suggests that there are seven procedural criteria that decision makers must undertake when engaging in strategic policy decision-making. All seven criteria must be met, and failure to meet any of them results in defective decision-making.

This study looks at the decision-making process for an organization integrating evidence-based design concepts into their health facility. This is a case study focused on the repurposing of a public healthcare system in California serving seven

DESIGN IMPLICATIONS

Before embarking on design projects, it is critical to think through the design decision process as it relates to the context in which decisions will be made.

Decision maker's leadership style (transformational, participatory) is critical to ensure best outcomes.

Decision makers should organize the decision-making structure to avoid patterns of group think.

Decision makers should avoid information-processing errors that can lead to defective decision-making that would lead to undesirable outcomes.

distinctly different communities. This organization is governed by a seven-member, publically elected Board of Directors who serve a four-year term. The goal is to build a new acute care hospital and level two trauma center, doubling the size of its community hospital, and build satellite acute clinics in four outlying communities. The estimated cost to actualize this facilities master plan (FMP) was $756 million in 2004, bringing attention to the opportunity to incorporate evidence-based design.

In this study, the leadership of this health facility was motivated to consider evidence-based design concepts that mostly impacted patient care and safety, improved working conditions for staff, and improved operating efficiencies. This motivated the organizational leaders to partner with The Center for Health Design as one of its Pebble Project partners.

This study shows that the organization was engaged in a highly participatory process involving all levels of the organization. Staff participated in the Champion Team (CT) process and took frequent tours of the mock-up rooms. The leadership was also willing to slow the design process in order to implement the CT process (costing substantial time and monetary investment), proving leadership's commitment to the implementation of EBD concepts.

The following EBD outcomes were adopted in the design of the facilities to varying degrees: single occupancy, same-handed, acuity-adaptable rooms, distributed nursing stations, healing environments, sustainability, and integrated interventional platform.

Methods

This paper took a mixed-method approach. The methods used include descriptions, qualitative and quantitative research, and a single case study. The framework used for this study was the Systems Research Organizing Model. Data was collected through interviews, a review of documentary evidence (meeting minutes, administrative reports, and journal publications from January 2004-December 2006), participant observations, physical factors (construction models and mock-up rooms), and a Multifactor Leadership Questionnaire.

This paper poses five questions: (1) How did healthcare leaders learn of innovations in design? (2) How did healthcare leaders make decisions in the selection of healthcare design concepts? (3) What criteria did healthcare leaders use in the decision-making process? (4) How did healthcare leaders consider input from the staff in design decisions? (5) To what extent did the leadership style of administrators affect the outcomes of the decision making process?

A sampling was taken of the organization's district Board of Directors (BOD), Executive Management Team (EMT) members, Expansion Steering Committee (ESC) members, Champion Team (CT) members, and architects as key respondents for the study. The CT group was comprised of members from all levels of the

organization, from frontline staff to directors. They were to act as the think tank, proposing innovative design concepts informed by a framework of objectives and constraints.

Only subjects present from the concept phase through the completion of the design phase were included in the study.

The design process was iterative. Architects presented multiple options to the ESC team for their feedback and approval. The options were vetted and only the best design options were presented to the BOD.

The leadership style of the CEO and ESC members is critical in the success of implementing EBD processes. It is believed that a CEO is pivotal in focusing the efforts of the team to ensure successful outcomes.

Contextual factors play a role in the EBD decision-making process. The most common factors that play a role are the public nature of the BOD/healthcare district and financial constraints.

Findings

Research Question One: How did healthcare leaders and providers learn of and use innovation in developing design concepts?

1. Internet was most frequently cited source for gathering information related to innovations in design.
2. The five sources cited in the interviews include: lit reviews, architects involved in the project, site visits to other organizations that had implemented design concepts, and consultations with industry experts.

Research Question Two: How did healthcare leaders and providers make decisions regarding the selection of EBD concepts?

1. All three groups described a participative process.
2. Presentations by the architects were instrumental in decision-making process and educating the decision-makers.
3. Decision-making tools modeled after the organization's balanced domains of finance, customer service, quality, and workforce development.
4. Decision-making effectiveness and quality outcomes scored an average of 3.5 (1=not at all and 5=great deal) across all questions and groups.
   ESC rated its satisfaction with the decision-making process lower than did BOD and CT.
5. CEO has the greatest influence in design decision process.

Research Question Three: What criteria did healthcare leaders and providers use to make decisions about the selection of EBD concepts?

1. Two priority criteria across all three groups were: (1) financial considerations, including life-cycle costs and ROI, and (2) patient care and safety, including ease and efficiency for healthcare provider in patient care.
2. ESC and CT members agreed to select only criteria best supported by evidence.
3. ESC considered a balance between cost of the projects with planning goals and incorporation of as many EBD concepts as possible.

Research Question Four: How did healthcare leaders consider input from frontline staff and care providers in design decisions?

1. Mean score of 4.36 on getting input from frontline staff
2. Mean score of 3.32 on getting input from physicians

Research Question Five: To what extent did the leadership style of the healthcare administrators affect the outcomes of the decision-making process?

1. Majority of ESC members described leadership style as transformational and participative.
2. All three groups believed that the leadership style of ESC members allowed for adoption of EBD concepts and welcomed input from frontline staff (score greater than 4). An excerpt from the Facility Design Charter: "We chose a team-based structure in order to access the 'best thinking.' …We believe that cross-pollination of knowledge and integration of ideas from all levels of the organization will foster momentum and ownership."
3. ESC members' perception of the CEO's leadership style is more transformational than the average for other U.S. respondents' ratings of their own CEOs.

Multifactor Leadership Questionnaire: Questions about the extent the BOD believed public nature is a factor in their willingness to adopt EBD concepts.

1. Cited acuity-adaptable care delivery model as the most regulatory issue
2. Most frequently cited environmental factors are energy utilization and waste management."Because we live in a glass bowl using public money, we feel a responsibility to do things the right way; by using EBD trends, the BOD couldn't be criticized by the public."

Client: Organization's leadership is considered the client in this study.

1. Most frequent decision-making models by ESC members were (1) desire to see the issue from all angles, (2) desire to consider a lot of data in the decision-making process, (3) desire to engage in a participative decision-making process.
2. No indication of groupthink issues in this org

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Action Focus: Information-processing techniques, tested for the seven information-processing errors

1. Congruency between the BOD and ESC members for 6/7 questions
2. Statistically significant difference between BOD and ESC responses to the question of "the extent that there was intensive search for new information." BOD rated this question lower than ESC members.

Limitations

- Limited physician input in the design process due to scheduling conflicts
- ESC may be least satisfied with the decision-making methodology because it required a significantly larger amount of time from their schedule than it required of the BOD (on top of their existing job responsibilities).
- The lower rating for BOD's intensive search for new information may be due to the fact that the ESC had already done the majority of the information search and vetting before presenting the findings to the BOD.
- The decision-making process was slow on key decisions. This may be due to the organization's interest in keeping the process inclusive with a large membership and view the issue from all angles and consider the largest amount of data in the decision-making process.
- Interview questioning was limited to the timeframe 2004-2006 even though the participants knew everything that transpired before and after these years, influencing their answers.
- This study is based on a single case study, therefore making it difficult to generalize about other healthcare organizations.
- The interviews relied heavily on subjects recalling events that took place three to five years earlier.
- Facilities expansion project was scaled back due to financial constraints after design decisions were finalized. This may influence interviewees' perceptions.
- CT members were self-selected and joined after the ESC design decision process was underway. They may have impacted the CT members' perceptions or the results of the study.
- The principal investigator participated on the EMT throughout the design process. This may be perceived as biased.
- The documentary evidence was initially collected for a purpose other than this case study, so information may be incomplete to answer the research questions.