SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

The objective of the essay is to present a business case for using EBD strategies for building better healthcare facilities.

Fable Hospital 2.0: The business case for building better health care facilities

Sadler, B. L., Berry, L. L., Guenther, R., Hamilton, D., Hessler, F. A., Merritt, C., & Parker, D. 2011 | *Hastings Center Report*. Volume 41, Issue 1, Pages 13-23

Key Concepts/Context

The Fable Hospital, an imaginary facility with the best design innovations, was proposed in 2004, and the authors indicate that many healthcare systems have consequently adapted the principles in the building of their hospitals. In this essay, the authors look at the growth of evidence-based design (EBD), the safety and quality revolution, increasing transparency, sustainability, and access to capital; based on this they propose the second version of the Fable Hospital, this time looking at the business wisdom of having such a facility built. They present the estimates of the costs and associated savings to incorporate EBD innovations in the Fable Hospital and conclude that the payback for this investment would be three years.

Methods

In this essay, the authors examine the latest research and knowledge on healthcare design and construction, the healthcare reform of 2010, and its focus on value and quality improvement, and their experience to present the second version of Fable Hospital.

Findings

The authors locate the imagined 300-bed Fable Hospital 2.0 in a medium-sized American city equipped with comprehensive inpatient and ambulatory services. At 600,000 square feet, the facility is expected to cost $350 million to build. The hospital's leadership endorse superior clinical quality, safety, patient-focused care, family-friendliness, staff support, efficiency, community responsibility, and ecological sustainability. The aim was to achieve a LEED gold status for the facility. It was expected that this hospital would achieve its payback for the investment in three years. Fable Hospital 2.0 would have the following design features:

DESIGN IMPLICATIONS

Large single, acuity-adaptable rooms with large windows and hand hygiene provisions, large bathrooms with double access doors, HEPA filters with 99.97% ability to filter airborne contaminants, ceiling-mounted lifts, decentralized nursing stations, sound-absorbing acoustical ceiling tiles and finishes, high-efficiency building envelope and glazing, high-efficiency mechanical and heat recovery equipment (to reduce energy demand), low-flow fixtures and provisions for rainwater capture (to reduce water demand), electronic ICUs, healing art and gardens and other measures for positive distraction, family and social space, respite areas for patients, staff gyms, are some of the design recommendations from this study.

Evidence-based innovations: The authors estimated that an expenditure of $26,206,275.00 would be incurred for the following EBD innovations:

- Large single rooms: Better clinical outcomes because of reduction in hospital-acquired infections, adverse drug events, and falls. Allows family to partake in care; increased patient satisfaction
- Acuity-adaptable rooms: High infrastructure cost, but reduced patient transfers, medication errors, patient falls, and staff load; prevention of diagnostic and treatment delays, increased patient satisfaction
- Larger windows: More natural light and views of nature are beneficial to both patients and staff.
- Larger patient bathrooms with double-door access: Reduced patient falls en route or in the bathroom.
- Ceiling-mounted patient lifts: Reduced musculoskeletal injuries sustained by staff from manually lifting patients
- Enhanced indoor air quality: HEPA filtration is 99.97% effective in removing airborne contaminants.
- Decentralized nursing substations: Allow nurses to see into patient rooms, respond to issues more quickly, help reduce patient falls, and increase direct patient care
- Hand-hygiene facilities: Access to sinks in all patient rooms – increase handwashing compliance
- Medication task area lighting: Reduced errors in dispensing of medications
- Noise-reducing measures: High-performance, sound-absorbing acoustical ceiling tiles and finishes, carpets, noise and vibration-isolated mechanical rooms, wireless pagers, space for private discussions and reduced alarm sounds
- Energy demand reduction: Use of high-efficiency building envelope and glazing, high-efficiency mechanical and heat recovery equipment
- Water demand reduction: Low-flow fixtures, rainwater capture, high-efficiency food service equipment
- Electronic intensive care unit: High-tech surveillance system providing electronic real-time connections to the ICU – reduced length of stay, mortality rates, and costs
- Healing art: Artwork with views of nature reduces anxiety, depression, and enhances recovery.

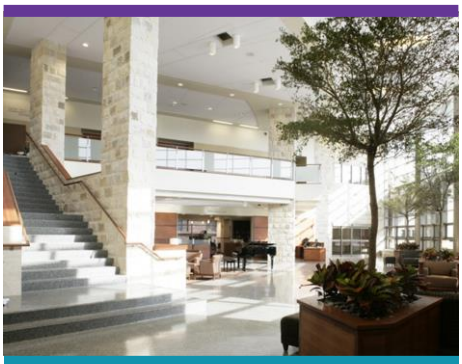
- Positive distraction measures: In addition to art and calming music in patient and procedure rooms –reduce patient pain, length of stay, stress, and depression.
- Healing gardens: Reduced stress and improved outcomes

Experience-based innovations: The authors estimated that an expenditure of $3,040,000.00 would be incurred for the following experience-based design innovations:

- Family/ social spaces: Can enhance clinical outcomes
- Improved wayfinding: Reduces confusion and saves staff time
- Health information resource center: Helps improve patient self-care
- Respite areas: Quiet areas for reflecting and meditation – improve patient satisfaction
- Staff gym: Increases staff recruitment and retention; improves staff health
- Decentralized nursing logistics: Improves nursing productivity and time in direct patient care
- Environmentally responsible materials: Avoiding materials that emit toxic fumes – better indoor air quality and reduced impact on public health

Economic benefits: The authors analyzed the following design innovations in the Fable Hospital to be both evidence-based and cost-effective, creating an annual estimated savings of $10,032,162.00:

- Patient falls were reduced – 30% of this reduction was because of acuity-adaptable rooms with large patient bathrooms with double doors, decentralized nurses stations, family space in the patient room, and electronic ICU.
- Patient transfers were fewer – 60% of this reduction was because of acuity-adaptable rooms with additional monitoring equipment.
- Adverse drug events were reduced – 20% of this reduction was because of larger single patient rooms, acuity adaptability in these rooms, lower noise levels and better task lighting.
- Healthcare-acquired infections were reduced – 20% of this reduction was because of single patient rooms, acuity-adaptable rooms, improved air filtration systems, and wide availability of hand hygiene dispensers.
- Length of stay was reduced – 10% of this was because of larger windows, views of nature and art, positive distractions like music.



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- Nursing turnover was reduced – 10% of this was because of more natural light, lower noise levels, patient ceiling lifts, improved location of supplies and medications, staff respite areas.
- Staff injuries were reduced – 50% of this was because of ceiling lifts, larger patient rooms and bathrooms, and facilities for staff exercise.
- Mortality rate and lengths of stay in the ICUs were lower – 40% of this was because of electronic ICU capability.
- Energy use was lower – 18% of this was because of high-efficiency building construction, equipment selection, and zoning of mechanical systems to operations.
- Demand for water decreased – 30% of this was because of design improvements.

Based on the above factors, the authors estimate that the payback for the investment in EBD recommendations would be three years.

Limitations

There are no limitations identified by the authors. However, it may be noted although the authors cite this study to be a sequel to the first Fable Hospital, they do not indicate if any empirical study was conducted to examine the efficacy or success of the first study. Also, given that this was published in 2011, the information on the expenses involved for incorporating these design aspects may have changed.

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AIA Academy of Architecture for Health of the American Institute of Architects

ASHE American Society for Healthcare Engineering, A personal membership group of the American Hospital Association

AAHF Academy of Architecture for Health Foundation

FGI

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Research Design Connections