



Healthcare Design Innovations, a Hit-or-Miss Proposition

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EDITORIAL

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In the realm of innovation, hindsight often provides clarity. This is certainly the case within the healthcare industry, which has an extensive history of revealing gaps between intended and realized outcomes of innovative, or at least seemingly innovative, interventions. Illustrating the point, in the U.S. we are not that far removed from a time when: heroin was sold through Sears, Roebuck catalogues as a cure for opium addiction; Walter Freeman freely toured the country like a travelling revivalist, recklessly performing ice pick lobotomies; and, asbestos was used in mass quantities to construct and insulate the walls, ceilings and ducts of our healthcare facilities. For better or worse, the hit-or-miss evolution and application of innovation, including design innovation, is a constant within the healthcare realm. And while some ideas now seem just plain ludicrous, we cannot simply disregard seemingly ridiculous ideas as successful innovations are often crafted from the bones of past deficiencies and failures.

There is a tremendous premium placed on healthcare innovation in the United States, and the world over. After all, there are diseases to treat, epidemics to halt,

cures to find and lives to save. In the U.S. alone, public and private spending on biomedical research and development (which includes drug, biotechnology and medical device research) hovers around \$100 billion (1). This does not even take into consideration total annual healthcare spending, which dwells in the trillions (2). Further, America accounts for more than 80 percent of research and development spending and more than 75 percent of the world's biotechnical revenue (3). Overall, Dr. Tyler Cowen (4), professor of economics at George Mason University, claimed that "[t]he American health care system, high expenditures and all, is driving innovation for the entire world" (para.12).

In complementary fashion, innovation in the medical sciences and technology is being joined by a growing body of transdisciplinary knowledge and collaborative practice in design innovation for healthcare and healing environments. Particular attention, especially within the realm of evidence-based design, is now being paid to the role that innovation in design materials, qualities and strategies employed within the built environment play in patient treatment and recovery. In fact, an ever-expanding body of research continues to suggest that features of the built environment of healthcare facilities can affect diagnoses, treatment, patient recovery time, incidence of medical errors, patient and staff satisfaction, staff productivity and efficiency, workforce turnover, operating expenses, revenue and resource conservation, among other aspects. The \$70 billion expected in healthcare construction spending in the U.S. in 2011 comes at a time when research regarding design and design innovation has never been more robust (5). Extending beyond healthcare facilities, Webster and Steinke (6) claimed that "[t]he physical



design of health care facilities has a significant and often unrealized potential in working to address some of the major issues" within the healthcare system as a whole (p. 39).

Still, regardless of the time, money and optimism invested in the research, development and application of healthcare-related design innovations, positive returns on these investments are anything but a foregone conclusion; nor can it be said that attempts at innovation ensure forward progress. For instance, Michael Mandel (7), chief economist at BusinessWeek, argued that "while the biotech industry has continued to grow...the gains in health as a whole have been disappointing, given the enormous sums invested in research" (para. 5). The research, development, application and measurement phases of innovation all face conditions that can facilitate or hinder the efficacy or success of a given innovation. The reasons why design innovations succeed or falter within healthcare facilities are countless. It should be understood that innovation is an iterative process, meaning success and failure do not present definitive or permanent end states of innovation. On one hand, success may be fleeting. Even innovations that are deemed successful and brought to market undergo continuous updates, revisions, disruptions and replacement. On the other hand, innovations once considered failures may be repurposed with great success. And of course, innovation can dwell anywhere in between these two poles.

Design innovation is a tricky term, combining two words that are each variably used as nouns and verbs – which in this case means product or process. Defining success in terms of design innovation is perhaps an even trickier proposition, to be sure. Borrowing from Tim Brown (8), CEO of the uber-innovative design firm IDEO, innovation is the end result of a "collaborative, human-centered, iterative, and practical approach to finding the best ideas and ultimate solutions" (para. 5). Brown's definition highlights the need for multidisciplinary collaboration among multiple stakeholders in devising products or processes that preserve and promote the best interests of all end-users. After all, transformative learning and innovation are not relegated to the confines of disciplines, but often emerge where two or

more disciplines intersect. Given the proper attention, context and environment, innovation, in many instances, has the potential to be powerful, transformative and far-reaching in effect – especially in a field where innovation can literally mean the difference between life and death.

From the distance nurses travel to the width of hallways, from special considerations to the colour of patient rooms, elements of design are intricately woven into the materials, instruments and spaces that permeate healthcare and healing environments. Research suggests that we look at design in healthcare not simply a matter of aesthetic or taste, but as an innovative tool with the potential to address some of the critical issues facing the healthcare industry. Research and experience continue to demonstrate that successful outcomes in healthcare do not solely depend on the proper combination of chemicals, technological progress or a skilled surgeon's hand. Successful patient, staff, organizational and systemic outcomes are also the products of multidisciplinary efforts aimed toward innovative design strategies. Based on the natural attrition of hospitals reaching the end of their lifecycles, as well as the growing evidence of the built environment's impact on health outcomes, there continues to be an acceleration of innovation in healthcare design – innovation that, as mentioned above (8), depends largely on a "collaborative, human-centered, iterative, and practical approach to finding the best ideas and ultimate solutions" (para. 5).

Whether design innovations are glaringly successful, produce discrepant outcomes, fail to achieve intended outcomes or are still being evaluated, the line defining success or failure in design, especially in healthcare design, is iterative, fickle and often difficult to navigate. As such, collaborative, interdisciplinary efforts involving multiple users can serve to inform innovative design solutions that augment healthcare delivery while addressing some of the critical issues facing the healthcare industry. Ultimately, healthcare practitioners, administrators, staff, designers, planners, patients and stakeholders of any ilk or creed all play an integral role in shaping and enhancing the design and efficacy of our healthcare and healing environments.



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CONFLICTS OF INTEREST

James Shraiky and Joshua Schoonover declare that we have no competing interests.