



Designing Healthcare Solutions

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Editorial

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Innovation in healthcare has traditionally come from the science laboratory and from curious, experimenting clinicians. While these remain rich sources of new therapies and products, increasingly innovation is found when designers join in collaborations with scientists and clinicians. Who are designers? Professionals trained to uncover people's spoken and unspoken needs (human factors researchers), to generate tangible products and services that address these needs in new and better ways (industrial and graphic designers), and to ensure that the design intent is preserved in the final manufactured form (engineers).

Why designers? When tools, products, or services are designed solely by content experts, often usability and desirability suffer. Imagine the iPhone designed by telephony experts and engineers – it would be just another unsatisfying smartphone. It wasn't until the iPhone that people realized how bad existing phones were. Many relevant examples can be found in healthcare. Exubera seemed like a can't-fail molecule, the first inhalable insulin. But what about the user experience? The molecule needed a large inhaler, too unwieldy to carry on one's person, too difficult to use with confidence and frankly embarrassing to imagine using in public. Physicians wouldn't prescribe a therapy that patients couldn't succeed with, and Exubera was taken off the market.

All too often, today's pharmaceutical innovation model based on molecules and biological knowledge falls down when it encounters patient psychology. Another example is patient adherence. Researchers design great molecules, physicians prescribe them, but if patients fail to take the medications, enormous amounts of time and money have been wasted. Adherence rates for many therapies are shockingly low.

What's missing is the patient perspective which designers can bring to the table. Working in collaboration, designers can shape innovations generated by researchers and clinicians into successful patient-centric solutions.

What do these partners in collaboration need in order to work successfully together? They need to be act as a coherent team¹ to communicate, to share a common goal, and to be able to trust and depend on one another. Unfortunately each of these needs runs into barriers in today's healthcare system. Legal and regulatory barriers

stifle trust and confidence that the collaboration will be safe and can work against shared goals. And large differences in work culture can impair or entirely impede communication.

Legal & Regulatory barriers to collaboration

Fear of Lawsuits:

In many countries and environments, fears of lawsuits and the associated consequences stifle any desire to collaborate. Why would a surgeon let a design team observe a procedure when any associated lawsuit (should complications arise) could have huge financial consequences? While the collaboration could yield better surgical tools in the long-run, there is no immediate upside for the surgeon. And, while it is sometimes possible to compensate surgeons for their time and involvement, they are often required to disclose such compensation. Many are scared of appearing to be in the pocket of manufacturers. So, there's a catch-22. Physicians often see designer involvement as a lose-lose situation: If they are involved, there's a huge downside in potential malpractice suits, but any upside (in the form of compensation), creates an impression of bias. However, the alternative, no physician involvement, leads to innovation stagnation. Imagine a surgical tool designed by a team of researchers and designers who had never seen an operating room or observed a procedure. It might be technically creative, it might be ergonomically thoughtful, but without the active involvement of clinicians and first-hand knowledge of the environment of use, success is improbable. Innovation success depends on ensuring that designers have intimate awareness of how clinicians work their needs and constraints.

Increasingly Strict Privacy Rules:

Some countries legislate (or are working towards legislation on) how patient information can be used, limiting access for non-clinicians to patient data. While such guidelines' intentions are undeniably noble – none of us wants our health information widely available – there have been unintended negative consequences. Design is most successful when it responds to deep needs. Designers uncover these needs by spending time with the patients, physicians, and other stakeholders for whom they are designing. When we erect walls between designers and the patients for whom they need to design, innovation suffers. Stricter privacy rules clearly protect individual patients, but at large cost to society as a whole.

Cultural barriers to collaboration

Perhaps even more daunting than legal barriers to collaboration are cultural barriers. Scientists, clinicians, and designers live in different worlds, speak different languages, and have trouble aligning on agreed-to goals.



Scientists

Many scientists, working diligently to develop rigorously validated therapies, have never met one of their target patients. They struggle to collaborate with physicians, who are focused on individual patients, not protocols and p-values. Researchers feel like physicians often work from their guts, based on what's been successful for them, rather than from proven methods and established processes. They also find it challenging to collaborate with designers, who may push for compromises in optimal efficacy to better suit real-world needs, particularly around emotional, social, and cognitive differences. This viewpoint can extend beyond the therapies themselves to even to the design of packaging. As discussed in one article in this issue², an entrenched graphic design philosophy has created medication packaging that is clinical to the point of austerity. Scientists and pharma companies are used to this and feel the style establishes credibility, but it has created a patient unfriendly aesthetic.

Some scientists are becoming aware of the consequences of being too disconnected from patients. After having a drug fail in the marketplace due to formulation decisions made without deep knowledge and consideration of the patient population, one group of pharmaceutical industry researchers decided to try something new. They hired designers to create a set of patient-centered posters to educate and inspire them about real-world needs.

Clinicians

Most clinicians, while they meet patients daily and provide thoughtful, sensitive care, have never visited patients in their homes or spent time to understand their daily struggles and challenges. They also often don't understand what designers do, the design process, and the negotiations to create a final product that is valuable and manufacturable. For example, while the best care for diabetics is careful blood glucose level measuring and mealtime insulin, Novo Nordisk launched Lantus, a once-daily basal insulin therapy. Scientists and clinicians shudder, but the comprised design (non-optimal therapy, but easier to fit into daily life) has been tremendously successful at helping patients start insulin who otherwise wouldn't.

Designers may push for compromises like this to be more patient centered. One approach that has helped bridge this gap is the use of surgeon advisory boards to involve clinicians in the design process for tools they will be using. Another tool is the establishment of collaborations^{3,4} where designers and engineers work with clinicians to design, for example, customized facial bone implants.

Designers

At the outset of healthcare collaborations, designers know little about the scientific and clinical worlds and can be insensitive both to clinicians' dedicated patient focus and scientists' endless search for deeper understanding. They can come across as thoughtless, especially to the deep technical details necessary to design successfully in this environment.

The more exposure they have to scientists and clinicians, the more they will grow to appreciate the nuances and complexities of medical care and design and collaborate more sensitively.

Right now, the barriers to true collaboration seem daunting. But for those passionate about creating new tools, packaging, services, and therapies, it is essential to recognize these barriers and work together to overcome them. The more each party can understand and appreciate what the others bring to the collaboration, the better they can meet their shared goal of successful healthcare innovation to improve lives.

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PEER REVIEW

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