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## MEDdesign: Improving Care through Connectivity and Collaboration



**Montana Cherney** is a Client Director and Senior Design Strategist at **Veryday** who applies a user-centered approach to innovating in the health care space. She has developed physical, digital and convergent solutions for emergency disaster incidents, neonatal intensive care units, clinician practices, lifestyle and chronic disease management, and caregiving for the elderly. Most recently Montana has been committed to leveraging mobile devices and ubiquitous connectivity to create new care paradigms for patients, providers and caregivers. She believes design thinking has and will continue to be a major contributor to the transformation of health care. Write to her at [Montana.cherney@veryday.com](mailto:Montana.cherney@veryday.com).

The global library of peer-reviewed biomedical literature already comprises more than 100 million articles. The health- and disease-related portion of the Internet's trillion+ webpages offers an enormous volume of information – one that reflects a wide spectrum of accuracy, relevance, and credibility. If you think people have to sift through a lot of information today, just wait.

Communication that is inclusive and balanced usually is favorable to the alternative. Better access to information helps all involved be more informed. In a health care system that is complicated,

In recent years there have been significant advances in the connected health care space driven by patients (as consumers), health care professionals and both health care and lifestyle brands. Ubiquitous connectivity and our increasing reliance on mobile devices are two of the most prevalent factors that are revolutionizing health care today – and that are allowing patients to take matters into their own hands. In many cases, these factors enable patients to become more educated and empowered. For example, at [mayoclinic.com](http://mayoclinic.com) I can get useful information about how to best support my friend who was recently diagnosed with motor neuron disease. I can recommend [PatientsLikeMe](#) to my friend who has Crohn's disease so he can get tips from others who are in a similar situation. My sister can track her migraine symptoms using [Symple](#).

There is no doubt that connected care solutions have dramatically changed the lives of millions. But at times our constant access to knowledge and data causes unnecessary anxiety for patients and burdens already strained health care professionals when they have to deal with a barrage of patient questions based on Internet queries.

I was curious to get a clinician's view, so I reached out to **David Rosenman**, a physician at the Mayo Clinic, who has an MBA in Innovation from MIT, to get his take. Below are excerpts from an interesting conversation we recently had.

**Montana Cherney: What is your view on our increasing access to health data and patients' desire to take matters into their own hands?**

**David Rosenman:** In a word, excellent; in two words, mostly excellent. "Excellent," because we all benefit from having more access to relevant information. "Mostly excellent," because figuring out what "matters" in a timely fashion is not always easy.

pressured from many directions, and not always well-coordinated, "taking matters into one's own hands" sometimes can feel like the best way forward. My hope is that better access to and flow of information will make that type of situation less common.

**Cherney: Can you recall a time recently when you were treating a patient and he/she referenced an Internet search regarding his/her condition?**

**Rosenman:** Yes, this is common. That said, I think many people still are afraid to acknowledge that they're looking elsewhere for information – afraid that their doctor will feel threatened or second-guessed, afraid to acknowledge how helpless, confused, or overwhelmed they themselves may feel. Hierarchical doctor-patient relationships and impaired flows of information have contributed to this situation. Hopefully, things are changing in this regard. I support people's natural desire to learn about their condition, and I try to help clarify whatever I can. If this leads to my doing some learning myself, I welcome that opportunity, too.



**David Rosenman** is an attending physician at the **Mayo Clinic** in Rochester, MN, and a consultant in areas related to the future of health care. He was a schoolteacher prior to studying medicine, and has won several teaching awards, including "Teacher of the Year" at Mayo Medical School. David led the creation of Mayo's international symposium on innovation & healthcare, and leads the middle 6 weeks of Mayo Medical School's curriculum – a cultural transition from the classroom to the clinical environment. He holds an MBA in Innovation and Global Leadership from the Massachusetts Institute of Technology, an MD from Indiana University, an MSc in Clinical Research from Mayo Clinic, an MA in Biology from Ball State University, and a BA in Communication from the University of Pennsylvania.  
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**Cherney: Do you think these searches cause unnecessary anxiety in patients? Have you experienced that access to more knowledge can be reassuring or educational?**

**Rosenman:** There is no doubt that Internet searches can result in unnecessary anxiety. Again, it comes down to determining which information is relevant to your particular situation, that's not always easy (or at least a good idea) to do on your own. This is where having a professional interpreter (e.g. your doctor) comes in handy. Someone well-educated in the "biopsychosocial" aspects of the human condition and experienced in providing care can be an invaluable guide in helping to navigate a sea of information. With the utmost respect and appreciation for both, Google is no more a doctor than a doctor is Google. Doctors will never know everything, and Google will never truly know anyone. Ultimately, each can help the other make a more valuable contribution to a person's care.

**Cherney: Do you find that many of your patients are using the web to learn more about their health?**

**Rosenman:** The people my colleagues and I take care of in the hospital are, for the most part, in the second half of their lives. While some of the more senior citizenry may be digitally inclined, the wave of tweeters, web surfers and health trackers won't see much of hospitals for a generation or two. My hope is that the awareness and connectedness brought about by recent technologies will help them remain away from hospitals.

In the meantime, it becomes more clear everyday that the world is at our fingertips, and that this connectedness is good. Online communities and new global networks have changed the landscape in health care for investigators, providers, and patients. Scientific research has become more collaborative and productive – especially for the rare conditions sometimes called "orphan diseases." Today, we can quickly and easily see how health care resources are used (e.g.: [DartmouthAtlas.org](http://DartmouthAtlas.org)), which care-related innovations have been useful (e.g.: [innovations.ahrq.gov](http://innovations.ahrq.gov)), where people are sick (e.g.: [Google FluTrends](http://GoogleFluTrends) or [HealthMap.org](http://HealthMap.org)), how our loved ones are doing (e.g.: [CaringBridge.org](http://CaringBridge.org)), the nutritional value of what we've eaten this month and much more.

**Cherney: Connectedness is also beneficial because it allows many to receive care that they might not normally receive. For someone living in a remote location, this could be a virtual exam for an acute condition conducted by a health care provider in another city; and for someone who cannot miss work, this could be remote monitoring of a chronic condition through connected sensors.**

**Rosenman:** That's right. Remote care is interesting and has tremendous potential value, because for many conditions, it can be substantially cheaper, "good enough," and more easily accessible than would be traditional, in-person care.

Indeed, less can be more. These days, what used to require a hospital visit can sometimes be taken care of in an outpatient facility, e.g. some surgical operations. Care that once required a clinic can occasionally take place while staying at home, e.g.: dialysis. Medical treatments and devices that once required us to be tethered to a particular place now can travel with us while we're on the go.

Many of these innovations, which often begin as relatively cheap, simple, but "good enough" and more easily accessible alternatives to the status quo, fit Professor Clayton Christensen's now classic definition of "disruptive technologies." I believe this explains much of the extraordinary success of the app store market: cheaper (99 cents), simpler (a single-lead "heart monitor" app), and more easily accessible (in your hand).

**Cherney: I would add that the tremendous success of these apps also relies on their inclusion of gamification and social elements, enabling enjoyment through play. Also allowing people to get support from friends and family. Do you see any of these factors ever finding their way into the more traditional "institutional" medical software space?**

**Rosenman:** Yes. Much of the value that we derive from mobile apps relates to enjoyment, beauty of design, social connection, and opportunities for creativity and personalization. Sometime soon, health records will be more thoughtfully designed, more personalized, and more intuitive. I have studying this for many years and it is inevitable that we will see a shift from an institution-centered, fragmented, strictly "medical" record, to one that is owned by or at least centrally organized around the person being cared for and one that includes direct contributions from the patient's own experience.

Combine these developments; increased connectivity, less-centralized care, empowered patients, thoughtfully-designed records with the wisdom from and care by those who most efficiently and effectively diagnose and treat, and there may be some very exciting developments on the health care horizon!

**Cherney: To close, I thought we could come up with some ideas for how we can foster a more collaborative relationship between patients and providers to improve care. I'll start us off with some provocations. Can we start to conduct more in-context interviews and observations while patients and providers are together to better assess their diverse and various needs?**

**Rosenman:** The health care environment is full of opportunities for carefully designed qualitative research around patient-provider communication. Many organizations (including Mayo Clinic) have done work in this area. In-context interviews can be challenging during very brief visits, in limited space, and under certain health-related circumstances. That said, there are a variety of ways in which valuable observations can be made.

**Cherney: Agreed. But how can we follow patients' care experiences over a period of time, not just during their discrete interactions with clinical care settings, to better understand how they talk about their conditions, how they retell the stories of their provider visits, where they look to for information and how they interpret that information?**

**David:** Really good question. Recent technologies make longitudinal connectedness easier. People already are starting to track their own health over time. This makes awareness of health more continuous and invites more continuous engagement. I have wondered if it could be valuable to pilot a "feedback café" near a clinical setting. Patients could be invited to share their thoughts in a

welcoming and comfortable environment. Important insights regarding an appointment that "didn't go so well" or "was confusing" could be captured and acted on. The benefit could be mutual. Catching someone shortly before or after his or her appointment might help to crystallize questions beforehand and/or improve retention of important points from the clinical visit afterward.

**Cherney: I love that idea. This could also extend to better preparing patients for their appointments. So, can we encourage more virtual back and forth between patients and providers in an effort to elicit the value that face-to-face conversations afford?**

**Rosenman:** Theoretically, yes. Asynchronous patient-provider communication can be very effective, but systems need to be designed to allow for it. Otherwise, already full inboxes become more full, busy days become busier, and the risk for dropped balls goes way up.

That said, the notion of capturing as much value as possible from face-to-face interaction is really important; a wonderful example has come up in the context of education. Sal Khan ([khanacademy.org](http://khanacademy.org)) developed online lessons that have allowed many students to "watch and learn" at home and to do their "homework" at school. In this case of a "flipped classroom," teachers are available to answer important questions and to offer their expertise for especially challenging material during the valuable face-to-face time. I see lots of opportunity to apply this model to health care.

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