Our high-tech healthcare future is here. But it’s not what I thought.

BY FRANK MOSS
Frank Moss has had a 35-year career as a high-tech, biotech and health-tech entrepreneur. He is the co-founder and chairman of Twine Health, Inc., which develops and markets a health IT platform for patient-centric chronic care. He is also a co-founder Matter.io, a web-based service for small batch manufacturing for independent designers and small businesses. His other startups include Stellar Computer, Bowstreet (acquired by IBM), Infinity Pharmaceuticals (INFI) and Bluefin Labs (acquired by Twitter). He served as director of the MIT Media Lab from 2006-2011 and was professor of the practice there, heading the New Media Medicine group from 2007 to 2013. He is the author of The Sorcerers and their Apprentices: How the Digital Magicians of the MIT Media Lab are Creating the Innovative Technologies That Will Transform our Lives (June 7, 2011). Moss began his career in IBM Research and served as CEO and chairman of Tivoli Systems Inc., a pioneer in distributed systems management, which he took public in 1995 and subsequently merged with IBM in 1996. Moss served on the board of trustees of Princeton from 2007-2011 and is currently a member of the executive advisory councils of the Mayo Clinic Innovation Center, the Cincinnati Children’s Hospital Medical Center and the Princeton School of Engineering and Applied Science. Moss holds a BSE from Princeton in mechanical and aerospace engineering and a Ph.D. from MIT in Aeronautics and Astronautics.
In my November 9, 2011 op-ed in the New York Times entitled Our High-Tech Health-Care Future I imagined the next big technology-driven revolution which I called "consumer health":

"It would begin with a "digital nervous system": inconspicuous wireless sensors worn on your body and placed in your home would continuously monitor your vital signs and track the daily activities that affect your health, counting the number of steps you take and the quantity and quality of food you eat… Then you’d get automated advice. Software that could analyze and visually represent this data would enable you to truly understand the impact of your behavior on your health and suggest changes to help prevent illness — by far the most effective way to cut healthcare costs.”

This high-tech vision for the future of a healthcare came at a time when many technologists like myself began declaring they were about to disrupt medicine the same way they disrupted media, music and practically every other societal system - from the bottom up, by the consumers of healthcare.

The result would be a shiny new system that moves healthcare out of hospitals and doctors offices into people’s everyday lives; one in which people actively engage in their health and change their behaviors; and one that is much more scalable, more cost effective and produce much better health outcomes than the current one.

Or maybe not.

My recent work in the digital health space has made me realize that we technologists can’t approach medicine the same way we’ve approached media and music. Healthcare is a different beast.

From clinical to consumer

Indeed, the first generation of efforts to bring high-tech to healthcare, Clinical Health IT, has yielded disappointing results. Electronic health records were supposed to boost care by giving doctors greater access to patient data. While they may have boosted back-office efficiency, EHRs have actually undermined patient care. The more time doctors spend on data access and entry during office visits the less time they have to spend with patients addressing their health concerns.

Moreover, the human and capital resources that healthcare organizations have invested in the implementation and roll-out of Clinical Health IT systems, including EMRs, has been stratospheric. Sadly, for all this there is little clinical evidence that they have actually made anyone change their behavior and get healthier.

Meanwhile, the second generation of high-tech healthcare, similar to the scenario I described
in my NYT Op-Ed, has been rocketing onto the scene, propelled by tens of billions of dollars of investment in thousands of startups. In this model, called Consumer Health IT, people use wearable devices and app-packed smartphones to track daily routines and vital signs. The data is continuously measured and uploaded to the cloud where machine learning algorithms analyze it in the context of one's personal health data, comparing it to mountains of historical population data, and spit out automated diagnoses and feedback for beneficial actions.

Clinicians move to the background, replaced by Artificial Intelligence algorithms in the cloud, and patients move to the foreground. Guided by their smartphones people finally adopt positive health behaviors, stick with them in the long run and live happier, healthier lives.

Or at least that's the idea. The problem is that people don't operate that way.

Despite of the huge amount of hype and money invested in Consumer Health IT, no credible evidence has emerged that it changes people's behavior and improves their health outcomes - except for perhaps a tiny group of tech savvy consumers who already pay close attention to their health anyway. The recent Scripps study showed the no evidence that biosensors improve any of the triple aim objectives.

In retrospect that shouldn't be surprising. Anyone who thinks that apps and data alone are going to convince a person to fundamentally change their behavior - to take their meds, limit their salt, hit the gym much more and sustain that behavior in the long run - is simply ignoring human nature.

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Behavioral psychologists say the most effective way to positively influence behavior over time is by creating a caring support network. And when I use the term "network," I’m referring to humans, not machines. People aren’t algorithms. We’re sentient creatures that thrive on social interaction.

That’s the lesson that I and my colleagues have learned over the past eight years, beginning at the MIT Media Lab and recently at Twine Health. From the beginning of our journey we have sought to unleash the full power of ordinary people to take the lead in their health, in the spirit of the Consumer Health IT.

Informed by behavioral psychology and learning science, and guided by numerous clinical pilots, we have developed a high-tech healthcare model that succeeds where both Clinical Health IT and Consumer Health IT fail. Called Collaborative Health IT, our approach enables everyone to dramatically improve their health-related behaviors quickly and keep them there in the long run.

The not-so-secret sauce is the re-appearance for the digital age of a concept which has been around the health and wellness world long before the internet and the smartphone: real flesh and blood human health coaches.

The other fundamental and obvious element - though oft-ignored in healthcare, perhaps shockingly so - is the critical role of the patient in their success.

The process starts when the patient and their health coach sit together and co-create a shared action plan, which captures the patient’s health goals - such as target weight and blood pressure - and the health actions needed to meet them - such as diet, exercise and medication schedule.

The shared action plan is crafted by the coach with the patient to fit with the patient’s lifestyle. A good plan begins with simple goals and realistic actions. Once coach and patient get it to their liking, the action plan is synchronized on the patient’s and coach’s mobile devices. Health actions and patient-generated data are automatically captured in the app, and is accessible and visible to both the patient and the coach.

The rest takes place in the context of the patient’s everyday life, with he or she rarely having to return to the doctor’s office. Using a highly visual mobile interface, patients easily see the effect, positive or negative, of their daily actions on their health goals and learn over time what works and what doesn’t, and then make adjustments.

But here’s the thing that makes this work so well: The health coach uses a central dashboard in their app to monitor the progress of all their patients against their plans. Through a series of visual cues, filters and

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alerts, the coach is able to see when one of their patients veers off-course and identify opportunities for positive reinforcement. Using a simple messaging system that is integrated within the app, the coach can easily connect with the patient and provide them support and encouragement, both social and medical, at precisely the time when it is needed, and where it is needed.

These well-timed “coaching moments” have proven to be invaluable in keeping patients engaged and on-track for the long run. When it comes to behavior change, there is nothing more powerful than accountability to someone who knows you, who cares about you and is there for you - when and where you need them.

The payoff for clinicians and individuals using Twine’s collaborative care platform has been huge. In randomized controlled trials with innovative organizations such as Massachusetts General Hospital and the Joslin Diabetes Center this approach has been shown to significantly improve health outcomes for today’s most pervasive chronic conditions such as hypertension and diabetes. The results are unprecedented:

“Three times the number of patients reached their targets (for blood pressure and Hemoglobin A1c respectively), in less time than the standard-of-care.”

But you’re probably wondering about the affordability of this “high-touch, high-tech healthcare” approach. Is it realistic for health coaches to be able to deliver this level of personalized caring and support to not just a few patients, but to many? And make each feel as if they are the only one?

Twine published clinical results demonstrated immediate impact and sustained changes at scale never seen before in the industry.
Here there’s more good news:

“Health coaches were able to manage five times as many patients with Twine’s Collaborative Health IT platform as with traditional tools. Also there were 2/3 fewer office visits for all causes. Finally, health coaches were twice as gratified with their jobs and patients reported a five star satisfaction rating.”

I believe that Collaborative Health IT is poised to take off in 2016. The clinical results in all dimensions are hard to ignore and the demand is growing. Most organizations which are at financial risk for the health of their patient populations - such as direct primary care practices, self-insured employers, and those wellness and on-site clinics that service employers - already have health coaches on their care teams or are planning to add them in the coming year. Now they will have the tools to do the job more efficiently and effectively than ever before.

Like many of my fellow technologists I trumpeted the virtues of Consumer Health IT five years ago. But I’ve learned my lesson. There’s a reason they call it “healthcare.” People care. Data and devices don’t.
About Twine

We see technology as more than a tool. It’s a partner. So we look beyond it to understand technology in the context of people’s real-life needs and desires. Because we aren’t creating science fiction, we’re helping real people live better lives today.

Our SaaS-based collaborative care platform enables risk-bearing organizations to implement high-performance health coaching programs, transitioning quickly and economically from episodic, office-based care to continuous, whole-person care. We believe that when patients lead, everyone wins. The Twine platform and coaching methodology have been rigorously studied with world-class healthcare organizations, proving that they improve health outcomes three-fold at one-third of the cost of standard care. Patients experience better quality of life, providers are more efficient and effective with more gratification in their work, and costs are minimized for payers.
Join the movement.

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