Can Information Technology Save Health Care?

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Nicolas P. Terry, Information Technology's Failure to Disrupt Health Care, 13 **Nev. L.J**. 722 (2013).

The massive stimulus bill of 2009 included the HITECH Act, by which Congress pledged roughly $30 billion to encourage providers to adopt electronic health records and other health information technologies (HIT). The bill cited a long list of familiar but elusive policy goals—improve health care quality, reduce medical errors, reduce health disparities, control costs, reduce inefficiencies, improve public health, promote competition, increase consumer choice. If the health policy literature had a fantasy genre, the HITECH Act solving our health system's problems through a new nationwide HIT infrastructure would feature prominently.

But a few years later, as Nicolas Terry observes, and "HIT still appears to be a large rock that only a few dedicated converts are pushing up a steep and expensive hill." Why is that? Why wouldn't our lumbering, dysfunctional, and fantastically expensive health care system be transformed by information technology like so many other industries? Doesn't our health care system practically beg for the efficiencies of information technology? Terry's article, *Information Technology's Failure to Disrupt Health Care*, tries to answer these questions.

The framework he uses is the idea of "disruptive innovation." Coined by Harvard Business professor Clayton Christensen, a disruptive innovation is a novel product, technology, or business practice that undermines and ultimately displaces existing products, firms, or even entire industries—usually by being much less expensive and more accessible than incumbents. Terry cites familiar examples, like iPods undermining traditional music distribution, web sites undermining the traditional newspaper industry, and *Wikipedia* undermining *Encyclopedia Britannica*'s print editions.

Of course, it didn't take long for the idea to hit health care. Out of the roughly 48 articles on Westlaw that cite one of Christensen's publications on "disruptive innovation," roughly half appear in health law articles. (See here at note 7.) Christensen himself applies disruption theory to health care in The Innovator's Prescription: A Disruptive Solution for Health Care. Again, our GDP-devouring health system would seem ripe for "disruption." This notion is not limited to business theorists. Leading medical thinkers like Eric Topol think that health care is primed for some creative destruction.

The disruption formula fits health care so well, it seems like a matter of *when* HIT will transform our health care system, not *if*. This makes Terry's sober, rigorous review of HIT in health care so timely and valuable. For example, Terry tells the familiar story of Google Health—perhaps the poster child for Silicon Valley's conceits—which aimed to transform health care (not modest) by creating web-based personal health records (pretty modest). Before that, Healtheon had tried something similar. Both failed. Were they simply ahead of their time?

Terry astutely observes that HIT innovation to date has not been radical enough—it has been largely "sustaining" innovations, made by incumbents to slightly improve incumbents, rather than truly "disruptive" innovation, per Christensen's framework. The problem with outsiders like Healtheon and Google Health is that they didn't offer much in the way of a new "value proposition."

Another important contribution is identifying structural reasons why HIT has not transformed our health system for the better. First, Terry argues that HIT suffers from the same market failures that plague the health care system—too numerous here to cite. Second, he observes that the health system itself creates barriers for HIT with byzantine organizational and reimbursement schemes more tailored to episodic care, not process-oriented care. Third, he notes that HIT itself suffers from a lack of standardization, which inhibits data interoperability, exchange, and transparency.

So is all this HIT spending for naught? Terry argues that we would need to reform the things that make health care inhospitable to disruption. In Part V: The Value of Waiting, Terry explains that HIPAA's privacy rules, the HITECH Act's meaningful use requirements, and perhaps even the Affordable Care Act's insurance and delivery reforms introduced even more fog to a health care system that was already menacingly complex.

But Terry also notes that a potentially disruptive category of HIT products already exists, though it may not be mature enough yet—mobile health technologies, including medical apps for smartphones and tablets. These products allow, for example, diabetics to track their blood glucose levels, or cardiac patients to perform mobile electrocardiograms. Mobile apps allow us to do other previously unimaginable things because we carry powerful computers around in our pockets or purses.

Per the disruption model, Terry argues that mobile health technologies might be "smaller, simpler, and more convenient," introducing a new value proposition to the market by making health care available wherever you can carry a smartphone, unbundled from far more expensive health professionals and facilities. In fact, Terry notes, mobile phones are smaller and more accessible even than retail medical clinics, which Christensen singles out as a "disruptive innovation" in *The Innovator's Prescription*.

The scope of the mobile device market also points toward genuine disruption. Today there are more than six billion mobile devices in the world, and by 2017 the number of mobile devices (nine billion) might exceed the world population. Downloads and users of medical apps are skyrocketing as Apple, Google, and Samsung rush to add even more sensors and hardware with potential medical uses to their devices. All the fervor makes one wonder whether HIT is a real solution to our health care problems, or mere technological solutionism.

Terry has always had a keen eye for the new and unusual in health care. And he has become one of the most well-respected voices on the legal and regulatory complications of HIT, particularly on patient privacy. At its base, Terry notes that HIT must go beyond simply storing, receiving, and sending health data to actually doing something with it. The promise might reside in innovative ways to use clinical decision support (CDS), algorithms, artificial intelligence (AI), and process-oriented improvements, perhaps using "big data."

So many want so badly for HIT to transform health care. But Terry's appraisal shows that all this disruption talk does not fit reality—yet.

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