Future of Health Care Means Never Having to Visit a Hospital

Patients empowered by tech will have care at their fingertips.

Trips to the hospital could soon be a thing of the past.

Brick-and-mortar clinics will no longer house hospital beds, as care will move into patients’ homes. Technology — and especially the internet of medical things — will empower consumers to take charge of their well-being. And artificial intelligence and algorithms will allow doctors to intervene before bad health outcomes actually occur.
That’s how Dr. Rasu Shrestha, chief innovation officer at the University of Pittsburgh Medical Center, envisions the future of health care. Shrestha focuses on thinking about what’s next in medicine and health care and exploring how to transform the organization into a more patient-focused and economically sustainable system.

A radiologist by training, Shrestha has been in health IT for the past 20 years and also serves as executive vice president of UPMC Enterprises, the innovation and commercialization unit of UPMC. One of its main priorities is to figure out how the organization can use technology intelligently to push newer care models and fully prepare for the internet of medical things.

“We’re putting our money where our mouth is and taking a much-needed fresher approach to reinventing the future of health care,” he said. “Health care shouldn’t be just about rolling out IT solutions but figuring out how to leverage these data elements and marry them with specific, newer care models coming into play.”

GovernmentCIO Media Editor-in-Chief Camille Tuutti spoke with Shrestha about the internet of medical things, the promise of emerging technologies and the challenge with injecting innovation into health care.

This conversation has been edited and condensed.

GovernmentCIO Media: What area of health care has the biggest need for innovation?

Dr. Rasu Shrestha: What remains as the biggest need for innovation is not just around implementing [electronic medical records] solutions but the real challenge is how do we optimize workflow? How do we make sure these EMR solutions that we continue to deploy don’t result in clinician burnout?

We’re seeing massive amounts of burnout right now. We’re seeing story after story of where clinicians are seeing technology, essentially, as an impediment to care as opposed to an enabler of better care.
That’s an area with a huge need for innovation. We’ve spent all this money, we have all these systems that are up, but at the same time, we’re really stuck because 40 percent of the time, clinicians are spending time in the EMR documenting, billing and coding and they have their backs to their patient. And that shouldn’t be the case.

**GCIO Media:** In terms of specific health technologies, which do you see emerging as forces to reckon with next year and beyond?

**Shrestha:** We’re doing some work with Microsoft right now specifically in the space of artificial intelligence and chatbot technology to really streamline clinical workflow. [Regarding] the rampant clinician burnout, my clinical colleagues feel like detectives and documentors more than they are clinicians because they’re entering notes and updating information and scrambling through all these screens, tabs and medical records they’re seeing.

What we’re doing is pushing the boundaries with artificial intelligence and saying, alright, how do we de-noise the data and allow for a more natural interface between the repository of clinical and digital content that exist in the backend while there’s a human being, a clinician, at the front end. So, leveraging chatbot-like technology to have a more natural conversation and allow for a more streamlined clinical workflow and then spend more time interacting with the patient.

**GCIO Media:** If you look ahead a few years, what would be your dream scenario for how AI is used to make clinicians’ jobs easier, if you look beyond automation and chatbots?

**Shrestha:** What we’re looking for is not for these algorithms to replace clinicians but to augment the care we’re providing, to make us better clinicians, to make us focused on the things that are inherently human in how we practice care and interact with patients.
We’re not just discharging patients with a bag of pills and a discharge summary, but with technology, and we’re saying, how are we leveraging these technologies that monitor their well-being and their vitals and other streams of data if we’re able to push the envelope further? How do we add layers of artificial intelligence to specifically say, “hey, this patient is about to fall off the guardrails, let’s intervene before that even happens.”

[These] prescriptive algorithms would allow for us, essentially, to not have a patient in our hospital. In the end, it would not be about filling the hospital beds but to actually incentivize the patients to be well and not ill. There is a strong role for predictive algorithms and AI to push ahead with that and augment the care we’re providing.

**GCIO Media:** What’s the hardest part of trying to infuse innovation into health care?

**Shrestha:** Interoperability has been a big challenge, because you have all these data repositories that don’t talk to each other. We’ve been doing a lot in the past decade to push interoperability forward, but there are many things that still need to be done around it. There’s legacy systems and applications that hold a lot of data and that is the crux of the workflow. So, interoperability continues to be a challenge across the industry.

The other challenge is culture. There’s this clash that happens from the other end where you have innovators and entrepreneurs coming in saying, “hey, there’s this brand-new way of doing things, trust us, it will work.” And that clash needs to be acknowledged . . . and part of how we address that culture clash is opening up UPMC as a living lab . . . We look at these challenges in a sterile room, whether it’s filled with white boards and really smart people. It needs to be done in an environment where care is actually happening.

**GCIO Media:** How will patient-focused care change over the years?

**Shrestha:** What we’re going to see is a lot of more capabilities that naturally will have to come into play that would empower patients and consumers to be better informed about the choices they need to be making. We’re really trying to push that envelope forward at UPMC in the consumer-facing work we’re doing, whether it be around mental health or looking at patients who’re moving from one location to another and give them more access to their data through portal and apps, and take
charge of their health and their families’ well-being.

So, really empowering the patient and not just engaging them, but giving them access to the right tools and the right information and contextualizing all of that in their specific everyday life scenarios.

We’re pretty adamant that care over the next decade or so is going to shift away from brick-and-mortar hospitals to patients’ homes and to the consumers’ smartphones in their pockets. So, how do we get ready for that? How do we get a great handle of the Internet of Medical Things and engage consumers in what we’re seeing as nudges that basically result in behavior change and allowing for them to really make the right decision that would incentivize them to practice healthy behavior and prevent them to go to the hospital in the first place.

**GCIO Media:** So, speaking of the Internet of Medical Things. How about implantable technology, like microchips and things like that, to store medical records on patients?

**Shrestha:** I think there’s a lot of promise in that. We’ve been looking at opportunities in the space of implantable devices. There’s a need for us to have specific capabilities, whether it’s RFID or where you can, essentially, have information that is pertinent to that device being easily accessible across the board, regardless if that patient is in the hospital where they got that implant or they are traveling in Florida or elsewhere. It’s a space that we’re looking at here at UPMC, even from a supply chain perspective.

**GCIO Mag:** Talk a little about your role as co-chair of [Health Datapalooza](#). What are you looking to do differently next year, if anything?

**Shrestha:** I think it’s a tremendous opportunity to have a one-of-a-kind cross-sector discussion on the future of health data. Part of what I want to do next year is to not just showcase what innovations are happening but how, and how people are liberating the data and creating actionable knowledge and how that’s then driving health policy. Focusing not just on the what but the how is going to be really important for this upcoming Health Datapalooza.

The other thing that’s going to be new is around the impact of data-related innovation on patient outcomes and quality improvement so there’s going to be an inordinate level focus on patients and engaging patients in these discussions and
engaging them in the designs of these solutions.

The call for submissions for “pitch your presentation” just went out from the palooza so we’re really making a big call for innovators, clinicians, state and federal employees and anyone who deals with health and health IT who wants to just pitch their presentations. We’ll make sure that the best get the stage at Health Datapalooza.