Widely regarded as one of the world's leading experts on strategic innovation in healthcare, **Rasu Shrestha**, MD, MBA, has pursued his career across multiple continents and a diverse range of disciplines. As the Chief Innovation Officer for the University of Pittsburgh Medical Center (UPMC), he discusses the shift toward more participatory healthcare in an exclusive interview with American medical writer Peter Jaret. "Patients have already checked out Dr. Google before they see a Dr. Shrestha," says the renowned doctor.

Delivering on the Promise of Healthcare Innovation

Interview: Peter Jaret | Photos: Frank Walsh

Housed in the historic former Nabisco bakery in Pittsburgh, UPMC Enterprises promotes strategic partnerships, joint development agreements, and investments in healthcare startups, while working with clinical partners throughout UPMC, a 19 billion USD provider-payer that includes more than 40 hospitals and 3.4 million insurance members. In September, while programmers hunched over glowing monitors and strategists plotted out new initiatives on whiteboards in sunlit conference rooms, Dr. Shrestha sat down to share his thoughts on the best practices for nurturing and implementing innovative technologies.

Rasu Shrestha, MD, MBA, CIO

Chief Innovation Officer for the University of Pittsburgh Medical Center (UPMC), Rasu Shrestha, MD, was recently named one of the 26 "Smartest People in Health IT" by Becker's Hospital Review and one of the "Top 20 Health IT Leaders Driving Change" by InformationWeek.

Shrestha serves as the Executive Vice President of UPMC Enterprises, which seeks to develop and commercialize innovative healthcare technologies. A radiologist by training, he has been the chair of the Informatics Scientific Program Committee at the Radiological Society of North America (RSNA). In March 2018, the U.S. Department of Veterans Affairs announced that Shrestha will lead its efforts around interoperability and to push the boundaries of open application programming interfaces (APIs). In addition, he is co-chair of Health Datapalooza, an annual conference that brings together experts from the public, policy, and private sectors to discuss the future of health data and its role in supporting healthcare transformation.

Wearing many hats, Shrestha brings his far-reaching expertise in medicine, radiology, informatics, business strategy, entrepreneurialism, and technology design to bear on a single all-embracing goal: Using strategic innovation to improve the quality and control the cost of healthcare.

How did you first become interested in healthcare innovation?
My specialty is radiology, which set the pace for the industry early on in moving from analog to digital and in developing picture archiving and communications systems (PACS). Radiology has also been a leader in using algorithms and AI to support diagnostic decision-making. So I guess I've always been interested in innovation. Today, of course, across the healthcare spectrum, technological innovation holds out the promise of really transforming the practice of medicine for the better.

What are the biggest challenges?
Healthcare is littered with challenges. I mean, if you're a sucker for a challenge, come to healthcare, right? One is the sheer complexity of healthcare. There's the complexity of medical research. The complexity of the healthcare system we've created. The complexity of human beings – not just our biology, but our behavior and what drives behavioral change. Unfortunately, some of the technologies in healthcare today only add to that complexity. So one of our starting points is to recognize that innovation isn't about adding more bells and whistles. It's about making the tools we design as simple as possible.

Another challenge is a clash of cultures between healthcare providers and innovators. In healthcare, in large part for the right reasons, we resist change. That's what evidence-based guidelines, clinical protocols, best practices are all based on: Let's test to see what works and stick with it. We're slow to change because making a mistake in healthcare can be a matter of life or death. Innovators, on the other hand, want to disrupt things. Innovators say, "hey here's a brand new way of doing things. Trust us, it will work." There's an inherent clash between those cultures. We're trying to find ways to bridge these cultural differences by embracing the core value of design thinking so that we can approach the challenge of culture clash in a radically pragmatic way.

How do you encourage these people with very different perspectives to work together?
We ask ourselves and the people we work with to understand the perspectives of the other people involved. We don't necessarily start with the pain points. And we definitely don't start by jumping straight to the solutions. We start with empathy. We involve the key stakeholders in the conversation right from the beginning, and we keep them engaged in an iterative process. The goal isn't to

develop a fully fledged product for the enduser right from the start. We're not running a marathon. We're doing short sprints of development, where we have the opportunity to fail fast, but scale successes. That way, we get active feedback, rapid iterative cycles that encourage the right type of innovation to bubble up to the top.

We also choose partners – innovators, entrepreneurs, collaborators, and team members – with a real passion and determination to make meaningful changes. It takes a special breed of doers and believers to make change happen and to scale it up, to make it sticky. We're not interested in some sexy-sounding new technology just because it's cool or the latest thing. We look for strategic alignments that will allow us to make a real difference in the quality, efficiency, and cost of healthcare.

Where do you see innovation making the biggest difference, in terms of better outcomes at lower cost?
There are multiple wedges that the hammer of innovation can strike. I want to mention here that we're ideally positioned to nurture innovation at UPMC. We're an integrated delivery network, which means we provide coverage through our health plan, and we provide healthcare services through our provider network. We make sure that the incentives to provide value and control costs are aligned to make the right decision not just for the patient but also for the healthcare plan member. We think of UPMC as a living laboratory. Our model is not just patient-centric but really a person-centric approach to care, which is a different perspective altogether. The goal is to keep people out of the hospital, to cut costs by keeping people well.

Go to *siemens-healthineers.com/ shrestha* for exclusive video excerpts of the interview with Dr. Shrestha.

"Healthcare will be more pervasive in people's lives because it will be focused on keeping people within the magic circle of wellness, not just treating them when they're sick."

Rasu Shrestha, MD, MBA

One of the things we're focusing on is the delivery process itself, looking for ways to squeeze out costs that shouldn't be there in the first place. We're also looking for ways to intelligently bring together data that's often locked away in silos of information systems thoughout the healthcare infrastructure. Let me give you an example in radiology. When a patient comes in who has had a whack to the head, a busy emergency department doctor routinely orders head and neck imaging tests. It's routine. And it's also expensive. We have a lot of data out there that could help a doctor decide when imaging is appropriate and necessary and when it's not. We need better ways to make that data quickly and easily accessible.

Another example are chronically ill patients. Too often, they're seen in the hospital, discharged, and before long they're back in the hospital. In a new initiative at UPMC, we're discharging patients with not just a bag of pills and a discharge summary but with wearable devices and other technologies that allow us to monitor their condition – with their permission, of course. There's a lot of data being pulled into an intelligent data hub, which enables us to monitor chronically ill patients and recognize when things are starting to go wrong, so we can intervene before they have a crisis and end up in the ED. We improve care and cut costs.

How will precision medicine fit into the future of healthcare?

Increasingly, we can look at genotypic data, phenotypic data, imaging data and medical records. We can get insights into biomarkers and receptors, predispositions for certain diseases or side effects, and feed it all into clinical decision-making. We can personalize care for that "n of 1," meaning the individual patient in front of you. At the other end of the spectrum is population health, or the "n of many." With big data, we're learning more about what certain populations of people have in common – people with diabetes, for instance, or congestive heart failure, or populations that have both diabetes and congestive heart failure. You can learn a lot about patients just by looking at their zip codes, which may be an even stronger determinant of health outcomes than genetic codes. Data about where people eat, work, live, and play is important because it's the data that will affect behavior change and health habits. One of our strategies at UPMC is to find the right balance between precision medicine and population medicine, make the best and most precise decision for that "n of 1" who also happens to be an "n of many."

How will innovation transform a patient's experience of healthcare?

Increasingly, healthcare will be less about treating a specific episode of illness and more about promoting well-being. Healthcare will be more pervasive in people's lives because it will be focused on keeping people within the magic circle of wellness, not just treating them when they're sick.

The relationship between patients and physicians will also change. Medicine has always been traditionally very paternalistic. Patients went to the doctor expecting the doctor to tell them what needs to be done, to order tests, to give them medications. We're already seeing a shift toward more participatory care. They're more aware, more engaged, they're leaning in. One of the goals of innovation must be to capitalize on that engagement and empower these people to take charge of their health. It's not just a matter of giving people access to their health data. It also means giving them the tools and capability to make the data useful and meaningful to them, in their circumstances, and to their preferences and drives.

The practice of medicine is also being transformed, and change can be threatening. What's your message to the next generation of doctors?

The fear out there is that "AI is coming, so run for the hills!" I don't think that's how we should think about it. Instead of artificial intelligence, we should call it "augmented intelligence." Designed and used wisely, emerging technologies like AI will enable doctors do what they do best – and what they truly want to do best, which is to care for patients.

AI is really good at data crunching. It's really good at looking at multiple different data points – not just two or three or four but tens of thousands, parallel processed at the same time, something we humans can't do. AI will be a powerful diagnostic tool for doctors. If managed right, it will make us smarter and give us the space to nurture trust, a sense of community, and a sense of collaboration with our patients. The role of doctors and nurses as communicators and counselors will become more important than ever. We'll have the opportunity to practice much more holistically, to get to know our patients better, not just when they're sick but, just as importantly, when they're well. I think healthcare providers will be much more involved in innovation, in helping to shape the technologies so they provide real value. ●

Author:
Peter Jaret is a frequent contributor to the *New York Times* and other publications. He is the author of several books, including Nurse: A World of Care (Emory Press) and Impact: From the Frontlines of Global Health (National Geographic).