

# Big Data for Better Health



## Q&A with Dr. David Reiter

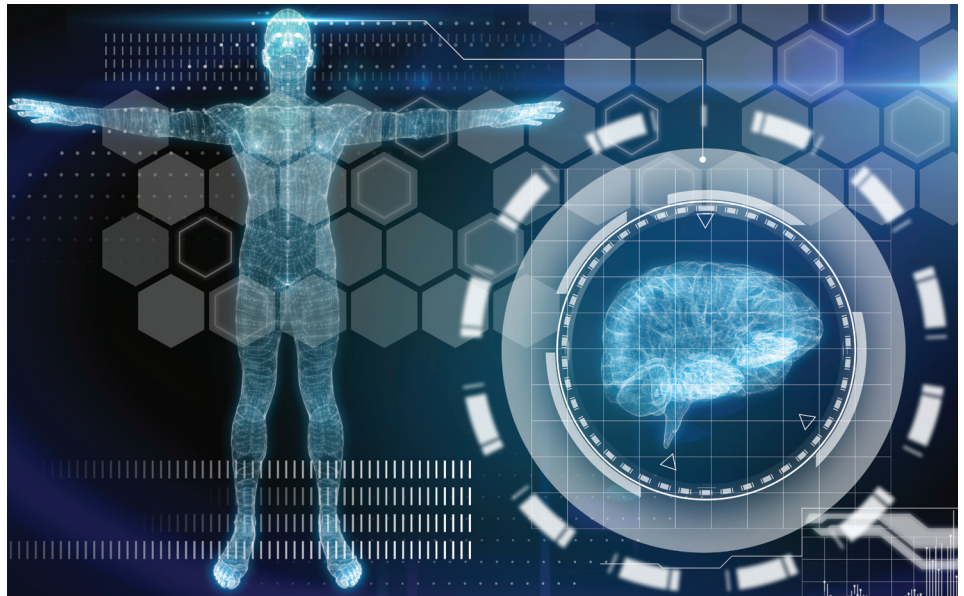
David Reiter, MD, MBA, FACS is Vice President and Executive Director of Jefferson's Center for Healthcare Entrepreneurship and Scientific Solutions (CHESS) and Professor of Otolaryngology-Head and Neck Surgery, specializing in facial plastic surgery. To learn more about CHESS contact Dr. Reiter at david.reiter@jefferson.edu or 215-955-8682.

**Q.** What is the Center for Healthcare Entrepreneurship and Scientific Solutions?

**A.** CHESS is a Jefferson start-up supporting evidence-based medicine through innovative approaches to data acquisition, aggregation and analysis. We're using industry standards and methods that have not been employed in healthcare before. We're using data and mathematical modeling to identify the probability of good and bad outcomes and the factors that influence those probabilities so that we can maximize the probability of a good outcome and minimize the probability of a bad outcome. This is knowledge; this is power. Let's take advantage of it.

**Q.** Why is CHESS important?

**A.** We're trying to get all the data we can to help providers, healthcare organizations and patients make better decisions. If you're a cardiologist, wouldn't you like to know that your patient's waist size has been going up an inch every year for the last three years? So we're partnering with local clothing stores. We just signed a landmark partnership with Independence Blue Cross and will have access to their database, and because of the merger, we now have access to Abington's. We're bringing greater rational sense to healthcare by saying we won't make a medical decision until we have enough information to make it



with good probability that it's right. That's how we make healthcare more effective and efficient: by increasing the likelihood that everything we do makes something better and reducing the probability that it's a total waste of time and money.

**Q.** What do you see on the horizon for CHESS?

**A.** We've developed a working model to predict heart failure, which we're currently validating. I'm building an online interface, and we'll create a commercializable product. Every health system, every facility that delivers care – outpatient clinics, surgicenters – will want that model to know how to optimize outcomes. How do you minimize the infection rate and unnecessary tests? How do you mini-

mize unplanned returns to the operating room? I want to get it to the point where it can tell you the probability that the next pill or the next X-ray is going to make any difference at all.

What's further down the line is to drive clinical pathways with output from this tool. Most of the orders doctors write can be done by the system. If a patient's blood urea nitrogen is between 5 and 20, give this much IV fluid per hour. If it's between 21 and 40, give that much. You don't need a doctor to make that decision; we can automate it, and with WiFi and all the pumps we have now, we can even automate the changes.

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**Q.** Won't that make healthcare less human?

**A.** Not at all. Clinical expertise is more important than ever. The secret is finding the people who need something out of the ordinary. So if 99 percent of people in our model respond a certain way to medication, but 1 percent don't, then we need to identify the factors that predict that aberrant response so we can intervene. If I have enough data to say, "This patient is not in this group: there's something funny about this patient; we don't know what it is, so you've got to look harder," that's how we're going to provide better care. Without data, doctors have to rely on clinical acumen and intuition. Where there are data to drive consistent care, use them so we can spend our time talking to the patients and examining them.

**Q.** What's the promise of CHES?

**A.** I'd love to partner with a restaurant chain. Imagine this: You walk in with your Jefferson phone app. It "knows" that you're diabetic or have heart or kidney disease, and it has data on all the foods you can't eat, the foods you're allowed to eat and the foods you like. Scanning the app, the iPad menu would list only the items that you like and that are okay for you medically.

We want to work with architects and building designers too. If you have the highest body mass index in your department, your office should be the farthest from the elevator and the bathroom so you have to walk more. We could design workplaces to maximize health. That's the kind of thing we're trying to produce. Think about the money it costs an employer when

somebody's out sick. Productivity's down. They have to pay a temp and get them up to speed. If we could show that employees who come to Jefferson lose fewer days of work per year, people will flock here, and everybody will be better off.