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Healthcare Transformation gratefully acknowledges the seed funding provided by Richard H. Rothman, MD, PhD, to launch the Journal. Dr. Rothman is an innovative surgeon, path-breaking scientist, academic leader, philanthropist, educator, inventor, and entrepreneur. He is the founder of the Rothman Institute, a world leader in orthopedics, and professor of orthopedic surgery at Sidney Kimmel Medical College at Thomas Jefferson University, and also serves on Jefferson’s Board of Trustees. Dr. Rothman is a generous benefactor of Jefferson and major supporter of Healthcare Transformation. “At Jefferson, Dr. Klasko is challenging the healthcare enterprise today and reimagining a better tomorrow,” says Dr. Rothman. “Healthcare Transformation is an example of the disruptive change he is striving to achieve and inspire.”
Welcome Editorial:
Seize the Moment

Stephen K. Klasko, MD, MBA

Editor-in-Chief,
Healthcare Transformation;
President, Thomas Jefferson University;
CEO, Jefferson Health

would love to say that the idea for this Journal began with some academic
grandiose plan in mind, but that would be a lie, and I certainly do not want
the first sentence of the first edition of Healthcare Transformation to be untrue.
It actually began at a Philadelphia Eagles game as I took the UBER down to the
stadium, gathered the tickets I had bought on an internet site with one click
and sat down in my seat. It hit me right then and there. How come everything I
have taken for granted in all other parts of my life still eludes us in healthcare? I
can do all my shopping, traveling, and even ordering of reserved seats for the new
Star Wars movie six weeks in advance, but if the Eagles give me a stomach ache or
a rash, my unscheduled care options are much more limited.

This time, I figured I would solve the dilemma by ordering a beer. Now, I said
to myself, at least stadium vending is as bad as healthcare in making it hard for
consumers. And there it was. Just as I was about to get up, climb over the twenty
people between me and the aisle, and miss a set of downs so that I could stand in
line, I suddenly get a text message on my cell phone. “If you don’t want to miss a
play,” it said, “download this app and make a food and beverage purchase directly
from your seat without missing a down.” And so I did.

I slept badly that night … the beer and the Eagles’ loss didn’t help … nor did
the dream/nightmare I had that went something like this: What if we lived in an
alternative universe in which everything ran like healthcare? What if the alt-Uber
made you fill out the same forms before you ordered a ride each time? Or the
alt-Amex sent you undecipherable bills? Or the alt-gmail would not let you
communicate with anyone unless you had the same computer? It was a bad dream
… and when I awoke, I made a commitment that not only did I not want to live in
that alt-universe, but the real challenge was in how to create a different alternate
future where healthcare runs like one of those cool Silicon Valley companies. So

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reproduction in any medium, provided the original author(s) and the source are credited.
I called the people who now are on our masthead as editors and editorial board members, and everyone of us recognized the obvious—as Buckminster Fuller said, “You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

So, welcome to the new model of healthcare. Of course, we don’t know exactly what it is yet, but we do know this: Optimistic revolutions start with ideas, so that those of us who (1) recognize that we are unprepared for the future, (2) understand that we will need a whole different level of service and skill sets if we hope to have an optimistic future, and (3) don’t believe a miracle is going to just occur have a resource to share our ideas, successes, and even transformative failures (which any entrepreneur would say teaches you more than successes).

In this edition alone, you will hear from Aneesh Chopra, the first chief technology officer under President Obama, who took on the similar challenge of dragging government services into the future, and at the same time from Jack Welch, who has taken his expertise in creating leaders and built an educational platform for physicians and other healthcare professionals to obtain a “real life MBA . . . and a real MBA.” You will have the opportunity to hear from

“Healthcare Transformation is designed to positively explore disruptive ideas in a peer-reviewed manner.”
experts on whether telehealth is a technology waiting for a purpose or the “Uber of unscheduled care.” You will be challenged by our first peer-accepted articles, ranging from systems approaches to healthcare to retail medicine. And since we are transforming, our online editions will give you plenty of opportunities to discuss topics through various sites and link to other related transformers.

If you’ve gotten this far, you are one of us. “Us” includes physicians, nurses, pharmacists, healthcare professionals, pharma and medical device employees and executives, insurers and retail pharmacies, who want to be more optimistic about the future than the past. People who want to realize what will be obvious 10 years from now and do it today. People who want to change the DNA of healthcare by focusing on the customers and students of the future instead of compromising and assuming we can continue to teach students and treat patients the way we did in the past. And most importantly, people who do not want to be outdone by stadium beer vendor app developers. We look forward to seizing the moment with you together.

We launch this journal fully knowing that 2016 will be a significant year for healthcare policy. Each presidential candidate will offer detailed statements of where he or she intends to take national planning for the payment and provision of care. We will reflect on those debates in articles during 2016, and will solicit your views and expertise as the national debate develops.
Catalysts for Change: A Conversation with America’s First CTO

Aneesh Chopra1

Stephen K. Klasko2 and Neil Gomes3
A decade ago, the words “hi-tech” and “government” used in a single sentence may have been the perfect image of an oxymoron. Not anymore. Not since Aneesh Chopra was appointed by President Barack Obama as the first chief technology officer of the United States.

As chronicled in his book, *Innovative State*, Aneesh made it his personal goal upon appointment to leverage the transformative power of technology, crowdsourcing, start-up thinking, and open standards to make government hi-tech, collaborative, innovative, agile, and simply . . . cool.

Healthcare has traversed a timeline very similar to government and could use similar thinking to catapult it into the future. It’s about time we too made that transition—about time we bring the “cool” into healthcare. And here’s how. In this interview, *Healthcare Transformation’s* Editor-in-Chief, Dr. Stephen K. Klasko, and Associate Editor Neil Gomes find bold, transformative advice from Aneesh Chopra, who has his sights focused clearly on healthcare as his next frontier for change.

**Dr. Klasko:** Aneesh, thank you for joining us to talk about how technology can drive transformation. In your book *Innovative State*, you chronicle the transformative power of technology as it has gradually brought about change in government over the ages. In fact, some people think there are parts of government that are actually cool for the first time.

**Mr. Chopra:** I would agree.

**Dr. Klasko:** And I think one of the things that we saw from the outside is how you focused innovative thinkers in industry on collaboratively solving the problems of government. Healthcare is traversing the same timeline, but is a little behind. As you think about our transition and how we bring some of that cool into healthcare, what can be a major catalyst for this change? What is the shock? And do you see outside folks—governments, providers, payers, pick anybody—playing a role in the journey to harmonize healthcare and develop a cure for itself?

“**In your book *Innovative State*, you chronicle the transformative power of technology as it has gradually brought about change in government over the ages.**”

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Photograph courtesy of Michael Ventura.

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Mr. Chopra: Thank you for the question. I would start by saying that the ultimate catalyst for change is the CEO, the executive. In our case, President Obama made a pretty bold statement on his first full day in office that he was going to shift the default setting of government from closed to open. He referenced the role that a chief technology officer would play to help execute the vision that he put forward. But make no mistake, it was his vision that he wanted to basically close the innovation gap.

His particular perspective in terms of a catalyst for change was that the country had a lot of problems, and we had to expand the toolkit in order to meet those problems. One of those tools was going to be the role that technology, data, and innovation could play as a complement to the more traditional tools that had been made available by prior presidents around new regulations, new investments, and the like.

The challenge, or the opportunity, when it comes to this catalyst is you need to have the leadership commitment up front, but then you also have to have the management capacity to execute. And so the combination of the two is where we saw the greatest impact.

Clearly, in healthcare, we are facing the same leadership moment. There are those CEOs who are looking to build a future that focuses on value and are looking to their boards and proclaiming that they want to be leaders in a value-based care delivery model. Those are the leaders who are making a call to action built around that new operating model. But there are also leaders who are somewhat contrarian: “I see this potential future. I do not know that it will pan out. Instead I want to take my organization toward continued operational excellence within the current fee-for-service environment, betting that it might continue.”

“In our case, President Obama made a pretty bold statement on his first full day in office that he was going to shift the default setting of government from closed to open.”
In both cases, the catalyst for change is that as the leader declares the vision that he or she wants, there are roles for technology, data, and innovation to help accelerate that vision on either front. Either can be supported by technology. Obviously I am much more focused on organizations that are diving into value.

**Dr. Klasko:** You had the CEO taking a leadership stand, in this case, the CEO of the country, saying, “This is what we are about.” I have to believe that even though people worked for him, that there were people rolling their eyes and saying, “You know, hey, I have been in government for 20 years. I am not going to do this.” Did you find that, or . . . ?

**Mr. Chopra:** Yes, of course.

**Dr. Klasko:** Did everybody just say, “Oh, Aneesh, you know, anything you say.”

**Mr. Chopra:** No. That is an exceptional point, because you are right, declarations are only as good as the voice that presents them. We had an expression called the B Team. You know, “I will be here when you leave. I was here before you got here.” Basically, the B Team was the sort of stereotypical view of an individual that might want to wait out this particular wave of leadership. Every organization has the proverbial B Team.

I would say that you engage the B Team with a management approach to close the gap. On open data, our execution plan called for every federal agency to open up at least three high-value data sets for the American people to access in machine-readable form within 45 days. And that combination of the president declaring, “This is the new approach to problem-solving,” combined with a very practical approach that had people deliver results in near–real time helped to shock the system.

And I will just give you one small, little anecdote. The CIA, when they were told to disclose a data set in machine-readable form, the first high-value data set that they put forward was the menu for the cafeteria in the CIA—which, by the way, turned out to be one of the more popular data sets.

**Dr. Klasko:** There are a lot of parallels regarding inertia between longstanding federal employees reporting to a president they know is only going to be there for eight years and tenured faculty for life reporting to university presidents that have an average tenure of about three or four years.

**Mr. Chopra:** Yeah, yeah. Management techniques of carrots, sticks, and transparency all were in play during our tenure. We asked for the carrot, which is,
he will honor you. President Obama, you know, in his cabinet meetings would call out cabinet secretaries who oversaw innovative programs, even if they were just getting started and had modest impacts but were in the right direction. They got shout-outs by the president and rewarded.

We held agencies accountable through mandates like the three high-value data sets. And on transparency, we graded each of the agencies on their implementation plans, and we put that on a public website so people could see how well we were internally grading the agencies.

Mr. Gomes: As you have made this transition from government to industry, you must have had several choices for what you could do after that, but you picked healthcare and healthcare systems. Can you explain why you chose the path of bringing about change in healthcare systems via technology, data, intelligent analytics?

Mr. Chopra: Thank you very much. My passion for healthcare predates my role in government. My first job out of college was as a banker at Morgan Stanley, where my colleagues took Netscape public, and I was enamored at the possibilities of the Internet and what it might mean for healthcare. My subsequent graduate thesis examined the lessons of Internet-based technologies in academic medical centers, writing about the case studies at Beth Israel Deaconess and some of the work that had been done to embrace Internet-based technology to virtually connect providers.

I have been very passionate about where and how healthcare could advance by building on the Internet, and I just simply pivoted my role over time. I spent a near-decade at the Advisory Board Company, wrote our first major study on the Internet for our membership base, as well as serving as Virginia’s secretary of technology with then-governor Tim Kaine, now senator. During my interview, he specifically focused on my passion for healthcare IT and that the moment was right for the public, private, nonprofit sectors, federal, state, and local to collaborate to modernize the system and the infrastructure.

He would later ask me to co-lead that effort with our then Health Secretary, later CMS Administrator, Marilyn Tavenner. This had been a priority. When the President hired me as CTO, he encouraged me to make healthcare one of those areas of focus. And so it was not that high of a leap to suggest that the foundation of what we were doing in Washington might have implications in the private sector.

A big thrust of our efforts in government was to open up data sets held by the government. The holy grail for sure had been the linked Medicare claims data
sets, which are a window on the performance of the healthcare system for 40-plus million Americans. We can see what patients, what conditions they have, what doctors they have seen, where they have navigated in and out of various networks, and how they were treated; all of that information is essentially locked into this database, with very few entrepreneurs and innovators having access to it for purposes of making the system work better. And so it was a natural transition to think about ways that we could bring government data to life with appropriate privacy and security protections.

**Mr. Gomes:** Tell us about your startup, NavHealth, and its parent company, Hunch Analytics. For example, you work at Jefferson Health and DV ACO, the Delaware Valley ACO. How might this collaboration serve as an example of how asking the right questions, finding the right data, and applying the right technologies to solve dilemmas can bring about fundamental change?

**Mr. Chopra:** I cofounded Hunch Analytics with Dan Ross and Sanju Bansal, a successful entrepreneur who cofounded MicroStrategy, a business intelligence software company. Sanju set aside some research and development money to prototype products built on open data sets held by the government that could be brought to life specifically in health and education markets.

Top on that list was the Medicare ACO program. For the first time in history, the federal government is collaborating with organizations like the Delaware Valley ACO and Jefferson within that group, as well as literally 400-plus organizations around the country under contract to release access to the full patient healthcare experience with permission. For the first time, physician leaders who were thinking about their patients, who previously only had a window into their lives based on when they came into the practice, could now more fully understand what happened before the patient came in or after they left. Through the Medicare ACO program, we are able to stitch together these data sets.

Mining these data sets is important because I think we are in the most entrepreneurial period in healthcare. Among the areas of greatest innovation is the new set of questions that doctors, nurses, frontline staff and management can
start to ask to figure out whether or not segments of patients are currently getting the coordinated care they deserve, or if there are areas in which we might identify better pathways for their care. Then eventually, we can put in place the workflows and applications to make sure that patients and providers navigate these networks to get the right care at the right setting at the right time.

So I am proud to be a partner with Jefferson in exploring this information and identifying those patient segments where we can deploy the value-based care delivery system the country so desperately needs.

**Dr. Klasko:** One of the things that I noticed when you were working with President Obama was that the traditional way of looking at government best practices was very similar to how we once looked at healthcare best practices. But you didn’t accept that lower standard of best practice just because it was government. We have that issue with medical errors. I often laugh, when a physician leader compromises on his or her goals by saying, “We should be more like a hospital that has cut their infection rates by 10 percent.” That’s the wrong standard. Maybe we should go look at another industry that has gotten to zero defects.

And I think as I look at one thing that was unique about the way you handled things, you compared government to and brought in best practices from some other nonobvious services and industries that saw similar problems, and what you might be able to learn from those. And then you leveraged those parallels as you began to transform government services.

Who do you think we can learn from in healthcare? Where would you say, Steve, forget your traditional standards, this is where you could go to learn and pick up some disruptive quality control, customer service, or technology advice that does not exist in healthcare?

**Mr. Chopra:** It is about context. In the late 1990s, my colleagues at the Advisory Board wrote a book called *Stall Points.* How do seemingly indestructible companies hit a proverbial brick wall and effectively struggle? And the classic case example is Kodak, which really was the bellwether of the ball, right? They were the most innovative and entrepreneurial company, 90-plus percent market share, and here we are decades later watching their demise.

And it turns out that there are some fundamental lessons that can be learned, but among them was their failure to manage their innovation pipeline. To give you an example, they invented the VCR, but management said, “Who is going to

"Mining these data sets is important because I think we are in the most entrepreneurial period in healthcare."
spend 500 bucks to buy this device?“ and they chose not to commercialize it. They invented digital photography but, again, chose not to commercialize for fear it would compete with their core business on film.

The lessons that I drew for the president were really the lessons about how we close this innovation gap, and what are the capabilities that we would need to better manage the innovation pipeline? And so there were three case studies, if you will indulge for a moment, I will share them.

The first of those case studies was actually Procter & Gamble, whose CEO, A.G. Lafley, had made a bold proclamation that 50% of all new products sold by Procter & Gamble would come from ideas that originated outside of their famous lab network. I called their CTO and, jokingly, said, “Oh, my goodness, your boss just punched you in the gut. You are only good for half the productivity. Is that embarrassing?” And he said, “Quite the opposite. I mean, he gave me air cover to do what I always naturally wanted to do, which is to reach out.”

You know, we believe in Joy’s Law. Joy’s Law is attributed to the founder of Sun Microsystems, Bill Joy, who said, “No matter who you are, the smartest people working on the issues you care about work for someone else.” That idea of open innovation, opening up the doors, the cultural commitment to find those ideas and welcome them, not kill them at the edge, was an important attribute that we learned from Procter & Gamble.

Although somewhat controversial today, Jeff Bezos at Amazon actually created a model where frontline workers could be rewarded for new ideas that they experimented with, even if those new ideas were not really reported up through management or approved. He rewarded people with these old Nike sneakers to say, “Thank you for trying.” You know, the Just Do It awards. And it sent the message that basically there is innovation that can take place from the bottom-up. Imagine 3 million frontline workers actively contributing ideas for the president’s key priorities?

And then lastly, and the one most relevant, I think, for where we are going in healthcare, is actually Facebook, but in the context of their developer platform. At the time, Facebook had something like 3,000 employees. But if you searched how many people had the job title Facebook developer, there were over 30,000 people who were contributing to the Facebook platform. And that meant Nike would hire a Facebook developer if they wanted to build that experience.
I would look at those three threads, Steve. What is the right cultural statement to surface ideas from the outside in? How do we value frontline workers up and down, bottom-up, not top-down? And then how do we build platforms so that people all across the enterprise, in and out, can contribute to this pace of change? Those were the big lessons and case studies that we adopted, as we worked to advance the president’s open innovation agenda.

And then the theme of all this, given your point about the Six Sigma experience, was to adopt a lean startup culture that took all of these ideas and said, “Operationalize them.” We would take the best of lean management principles and the spirit of startups and think about hypothesis generation, prototyping, feedback, adjusting on the fly and thinking of cycle times measured in weeks and months, not years, or election cycles.

**Dr. Klasko:** Now that is like a crash course for CMOs, as far as what they probably need to do moving forward. Aneesh, a good part of my research has been on what makes physicians and healthcare leaders different than other people, as to how we handle change.

And what we found is that we are sort of in a bad positive feedback cycle, that a major contributor to the inertia in healthcare is a sense of powerlessness. You know, I have the opportunity to visit with medical staff around the country, and it is like the Woody Allen quote, you know, “We are at a crossroads. One road leads to total destruction, the other utter despair. Let us hope we choose the right one.”

And then the other problem seems to be even for the physicians that don’t feel powerless, they are still blaming everybody else. By the time you get to looking in the mirror, often, it is too late. Given that we both come from very different worlds, how do we overcome this sense of powerlessness? Because there are some realities—decreased NIH funding, decreased inpatient reimbursement, some regulation issues. Suppose President Obama got all the stakeholders together and said, “I want to give you one last shot at getting this together.” And let us just say everybody had to look in the mirror and not blame the person across from them—what would you suggest that a CEO or CMO of a
Mr. Chopra: Well, thank you for the question. This is actually the most exciting question to answer, where we are right now. Let me begin with an observation. My humble opinion is that what you are describing is a wall of disbelief. And my hope is that readers of this article might have the following conclusion: That if we collectively punch a hole in that wall of disbelief, we will collectively find out that it is paper-thin, because it is paper-thin. And I mention this because a lot of the anxiety is misplaced as the facts are the inverse of what people believe.

Let us take an example. One of the fears of regulation is the sense that basically Washington is dictating how we get paid, they are telling us what we are supposed to be doing, we do not think they are doing it right, but we can only argue it so much. And there is this sense that you are powerless in the face of this onslaught. Let us just take payments.

One of the first myths I would like to myth-bust is in the Affordable Care Act. One of the most powerful provisions of the law is that if you are the CEO of a health system, you have the opportunity to petition and design your own payment bundle. If you believe that you can do something better than anybody else, perhaps for a given patient population with a set of conditions or under definable circumstances, and you want to take risk and responsibility for a specific number of months of their care, you have the opportunity to petition the Medicare Innovation Center to run that as a proverbial payment trial; if that trial works and the independent actuary of the United States asserts that your trial generated value, then that can become a national payment option without having to go back to Congress.

Let us take a second example around designing the insurance marketplace. Again, getting everybody around the room and saying, “Is this how we would like to develop the access programs? Is this how you want everybody to get insurance? Is this what a minimum benefit plan should look like? Is this how we should get employers involved?” We could rewrite the healthcare exchange provisions provided we reach the same coverage, cost, and quality assumptions.

Another myth to bust—every single state in the country by the year 2017 has the
legal authority to rewrite all the major marketplace provisions of the law. If you can come up with a better, more effective way of onboarding Americans into the system to lower costs and to improve outcomes, you can petition the government under the state innovation waiver starting in 2017 and actually get the authority to rewrite major provisions of the Affordable Care Act in your state.

And the last, but not least, again, in the spirit of myth-busting, we have this historical perspective about silos. “Well, there is the insurance company, and there is the hospital, and here is the physician, and here is the nursing home, and each of these are separately regulated and governed.” And all of that is true—those are today’s silos.

But at last, because of some of the technology provisions in the law, we are creating the conditions where organizations that are opening up this data can now collaborate even with organizations that are not owned in a vertical sense, but can create virtual companies that effectively operate together as one to share information, to engage patients, to reward or influence providers, and that we can essentially rebuild the underlying operating infrastructure, the operating system of the healthcare industry.

I conclude by saying healthcare is not an area for negativity. In fact, this is the most entrepreneurial period in healthcare’s history, with a combination of the amount of data the government is making available about healthcare, the opening up of the health IT systems through these connected applications, and the ability to shift and influence payment models at your pace, which allows people to take the bull by the horns and own this moment. I cannot imagine a more exciting time to be in healthcare than right now.

Dr. Klasko: You just tweaked me about something. One of my complaints is that when you really look at what has been done by the private sector in response to the Affordable Care Act, and you look at some of the people that have taken advantage of some of the opportunities you just mentioned, it is a very exciting story—insurers and providers with creative partnerships, industry and academics working together, and even individual entrepreneurs and physician groups moving from volume to value, much of which was spurred by the changes you mentioned. But for whatever reason, it seems like we have let the—to use a bad word—the naysayers take the communication platform. You know, it does not seem like there are a lot of folks going around saying, “Let me tell you that in Pennsylvania or Ohio or Colorado, the CEO of this 300-bed hospital took advantage of their ability to make their own bundled payment system, and this is what they did. That exciting message never materialized.

“I cannot imagine a more exciting time to be in healthcare than right now.”
Mr. Chopra: I would say to you, there were many factions supporting the president that had different voices. A few of us represented that excitement and enthusiasm. Yes, I personally believe you are in a very important place.

And frankly, your Journal, to be blunt about it, could play an important role in helping to surface stories of people who have leveraged the tools that are in the law that may not be as widely understood to really bring about some incredible changes.

Mr. Gomes: This is a perfect segue into the next question that I have, and that is, you have dedicated a good portion of your career to understanding the role of interoperability and data sharing in healthcare, and even in education. If you could tell us what drives you to that end. We know you are passionate about these kinds of goals, but what are your core beliefs behind that drive?

Mr. Chopra: Yes. Thank you, Neil. If you believe in the value of open innovation, that people will be collaborating to help students succeed or to help building owners reduce their energy consumption, or to help patients achieve greater value for their dollars spent in getting the healthcare outcome they deserve, in each of these stories you will find there are entities collaborating at the edge.

And in today’s Internet-based economy, much of this requires us to connect often sensitive data. And so one of the market failures we have tried to overcome in the public policy domain are, how might we allow institutions to connect information, especially regulated data, that has historically eluded us for lots of reasons? And the spirit of this is not new. I took inspiration from, believe it or not, President Herbert Hoover when he was secretary of commerce in the late 1920s, just after World War I.

What Secretary Hoover had considered was a new role for government. He called it the associative state. That is to say, there were many who wanted him to have the government invest directly in industries that needed a propping-up. His bias was that government really should not be picking winners and losers, but did not want to sit back and let industries fail. His response was, the government could play a convening role to lower barriers to entry and to foster more collaboration on the
research and development front, as he had done with aircraft manufacturing with the predecessor to NASA, focused on building airfoils and engine cowlings.

To answer your question about interoperability of health and education and energy, we wanted to achieve the spirit of an associative state role, where we can collectively agree that even though each individual organization has access to its own version of a patient’s health data, we should standardize the patient summary file format wherever a patient chooses to direct that it be sent.

If you are a utility, here is the metering data, and here is how it is shared with your home appliances that want to connect, if the consumer wants it, and so forth. And that has become an incredible role, a bipartisan role of government. The federal government right and left has been asked to carry that spirit along to foster interoperability standards on cybersecurity, on energy, on health and education, and the like.

Mr. Gomes: If you were looking at it from a patient perspective, if you wanted to do one major thing that could change that, what do you think of the National Patient Identifier? Would we solve a lot of the interoperability issues if we started this as a foundation for interoperability and data sharing?

Mr. Chopra: I believe the answer is to empower the patient with full access to their records and their data. The National Patient Identifier would be an option if behind the scenes we wanted to connect all the organizations around the patient’s information, which has a lot of security and privacy challenges, and it is a costly proposition to do this behind the scenes.

My general opinion, if I had one sort of magic wand, would be that every node in the healthcare delivery system points the data back to the patient or, more to the point, to the secure endpoint that the patient would designate that would be the custodian of his or her health data. And that would do more to bring about interoperability.

I am pleased to report that is how Meaningful Use Stage 3 is designed—basically, to regulate that every healthcare organization must provide the patient a secure digital endpoint where they can have their data in a form they can control. The result is that it will give rise to organizations, and perhaps an academic medical center such as Jefferson might become the custodian of patient data, not just in the Philly market, but wherever and however it wishes to have impact.
And so we are going to see the rise of this movement of basically people earning the trust of their patients to be the repository for the data that they have the right to access. And that is what HIPAA requires. While HIPAA has been perceived as a barrier to information sharing, it actually is quite the opposite. It is a legal requirement that if a patient requests a copy of their data, it should be provided. And all we are doing in the tech community now is agreeing on the technical standards and the ease by which that patient can access and organize their data.

Dr. Klasko: If you came down from Mars and you looked at the Affordable Care Act, you would have said, “All right, well, one of the things that really should not happen, since we have to standardize some of this stuff, is that everybody should have to decide, should I spend $300 million to get an Epic system or a Cerner system or whatever?” Was there any thought to mandate an open-source coding model?

Mr. Chopra: This is perhaps the biggest myth I wish, if I could do it all over again, we would clarify, because our thesis was not about whether an electronic health record is a noun, but rather a collection of verbs, computing ability that performed functions, decision support, patient engagement, provider order entry. And so what we did in the regulation is we required that electronic health records be certified at the feature level. We called it modular certification. Unfortunately, most of the buyers of the industry did not necessarily hear that message, and so they ended up just buying the single integrated package, although it is today possible to acquire multiple compatible, substitutable modules. And I had hoped, and I will take a personal point of blame on this, which is, we got the policy wrong in terms of getting the word out that really being a healthcare delivery system of the future, you need to have the capacity to conduct a lot of these verbs, to conduct decision support, to think about order entry, to think about prescribing in new ways. And each of those features should have a vibrant and competitive marketplace that you can substitute out.

It is not so much an open source. I think there are very important, valuable assets that people are building, but they must be open from a connection standpoint at the edge for their modules.

By the way, that is what we have today in Meaningful Use 3, which means that while you might have the Epic MyChart as the home page that Epic gives to you by default, it is quite likely you might build an entirely substitutable patient-facing experience that is connected, like a module, to the rest of the machine, but you are not constrained by it.

I believe the answer is to empower the patient with full access to their records and their data.
And so you are right, we did not go open source, but we did believe in open APIs, which allow you to connect modules, and really it is a marketplace failure that we did not see more of that activity show up. More organizations did not fit together discrete modules to meet the goals, so that is fine. That was where we ended up.

**Dr. Klasko:** Let me switch gears for the last couple questions. What amazes me is how the same group of people that might cancel their Uber if it takes more than 6 minutes are willing to literally put up with days of waiting for appointments and hours in the waiting room because they do not want to upset their doctor.

Now, I think that might be generationally changing. I hope it is. But I would love your thoughts about how do we construct a “Braveheart” moment and inspire patients to demand more patient-focused healthcare and work with us to realize it? Too often patients say, “Yeah, I know it is really bad service, but I guess that is what you have to deal with in healthcare.”

**Mr. Chopra:** First of all, if I had the answer to this question, I think we would all be in a better place since everybody would solve it. But here is my humble opinion, which is, when this country shifted from pension plans to 401(k)’s, we essentially democratized all of this choice about something critical to people’s lives, their life savings.

And what happened was on the one hand we created democratization, choice. And then on the other hand we created a regulatory framework with the following assumption: There may be an entirely new industry born that would stand up to help those consumers make sense of those choices, and those were regulated at the outset as fiduciaries—**Vanguard, Fidelity, et cetera.** I believe we are on the cusp of a new role in healthcare, which is the role of the digital health advisor, or the information fiduciary, to whom the patient will entrust all of this information in order to make better sense of what they can or they cannot do. And that fiduciary will be an agent of change on a patient’s behalf to really bring about the information choices that are there.

Suppose the average patient today, **Dr. Klasko,** when they take a Medicare Part D plan, they fail to enter all the meds that they are on, so they get a bad estimate on price. They choose premiums, not estimated out-of-pocket costs. They leave $500 on the table. A digital health advisor would say to that patient, “By the way, I could save you 500 bucks. I know the meds list that you have based on the doctors that you see and what you are on. Let me get you the right plan.”
And so who is going to be the digital health advisor? Will it be the local hospital or health system? The academic medical center? Will it be Walgreens or CVS? Will it be a Silicon Valley startup that we never heard of? Will it be the insurance company? I think it is an open question, but I personally believe that is the new horizon we are going to see people organizing around, and it is going to be that change agent that will bring about the service features on data and operations that would allow us to bring that Uber-like experience to healthcare.

Mr. Gomes: If you had $10 million to invest in innovation, where would you invest it, and how would you distribute your investment? Would you put it into consumerization, primary care, into telehealth, into health IT, into inpatient services, primary care? How much in each, and why?

Mr. Chopra: I would defer to accomplished healthcare investors like Bryan Roberts and Bob Kocher. Here are three simple observations.

Number one, tech-enabled services that boost productivity in each of the verticals you described are on the move. For example, a service that ensures a hospitalist rounds on the right patient at the right time to optimize discharges. Every role in the system can be tech-enabled to be smarter about the coordination and the opportunity.

Number two, process. I would generally believe that because we are in maybe the first or the second inning of a nine-inning stretch to redesign the healthcare delivery system. In an era where there is less maturity about what to invest in, and more green-field opportunity, I would set aside low-dollar funding for doctors, nurses, caregivers within the organization that have hypotheses worth testing. I would basically create a sandbox that would fund startups that came from within, because in this transition, great ideas are not exclusively the domain of the few on each coast. Your own staff should have as much of a role in shaping the future as anyone else to say, “Maybe what we want to do is create a new service for patients with back pain, which is a combo of the Rothman Institute plus some other tech-enabled patient services,” and the design of that experience itself might become a startup.

Part of the sandbox is that it opens up all the access in the organization to allow folks to merge, mash up, try, fail fast, and try again. As a matter of process, I would invest within more than I would in these categorical units.

The third element of this, in my humble opinion, is, as a broad statement about population health, we do not really have good mechanisms for feedback loops. Each silo in the system today only covers their specific aspects. Telemedicine gets the patient when they show up and when they leave, but they do not have the feedback loop about where that encounter contributed to that 6-month journey.
of the patient who is suffering from a particular condition. And so I think as a horizontal infrastructure investment, I do think we are going to need to do more to harvest feedback loops.

If you go to Amazon.com, they know that you bought something after a few clicks, and so they can calculate, when I show up on the homepage, what is the probability I am going to buy X, and what might I recommend to encourage folks to maybe buy Y? Whereas in healthcare, each silo only has the data about their silo, and as we stitch together silos to design a single feedback loop, we can effectively run an Amazon-style recommendations engine for patients entering the care delivery system, such as, “You are here for X. Maybe we want to encourage you to access service Y because it will give you a better outcome.”

Dr. Klasko: I think as you look at the Amazons and the Apples of the world, one of the things we do not do as well is turn technology into vision. So I think what we can do a better job of is communicating what we are doing and what we hope to achieve. If as a CEO of a health system, I just say, “Hey, I am doing something on telehealth,” and people say, “Well, that is just a gimmick. You are the head of an academic medical center.” But if I say, “Look, you know, we are going to fundamentally change the model so I can get the great things about Jefferson, our care and caring, out to where patients are, get our care out to their homes, as you said the right procedure in the right place at the right time,” then patients say, “Yeah, that makes sense.”

Mr. Chopra: I agree that we have to begin investing in-house. We have to change the DNA of healthcare one doctor at a time. We cannot have a healthcare system run by a bunch of doctors and nurses that have learned the old way and expect them to live in this new world. It is like they just got abducted and put onto another planet. Most of us do not even understand the language of the new consumerism and technology platforms. We have to invest the dollars not only in innovation and technology, but also in communication and leadership. If I was in government, I would have put more money into places that are willing to really, if you will, retrain their physicians around being more innovative about
healthcare. Yes, this idea of a product can be a confusing word. It is the bundle of services that address the needs of a patient segment, and that line of thinking is not traditionally seen, I think, in the delivery system.

Dr. Klasko: Aneesh, one last question. I told you that we see Healthcare Transformation as a cross between Health Affairs, JAMA, and People magazine, so this is a People magazine question. I am a little jealous. I was just on CNBC with Jack Welch and they said, “Oh, yeah, you want to be a healthcare version of Jack Welch,” but you get to be on Jon Stewart and get compared to George Clooney. How did that change your life? My kids would have been a lot more impressed if I were interviewed on Comedy Central!

Mr. Chopra: Well, let me say, it made my wife look at me in a whole new light.

Dr. Klasko: Aneesh, I cannot tell you how much this means to us. I do think this is going to be a fun opportunity for people from all over the country and beyond to really start to get a say in how we transform healthcare. I think having you, when we look a few years from now, as the face of the inaugural journal will have been a smart move.

Thank you.

There are many takeaways from Aneesh’s insights, but here are the three that stuck with me:

1. Joy’s Law: “No matter who you are, the smartest people working on the issues you care about work for someone else” is reversed in healthcare. “No matter what is wrong with the system, there is someone else to blame.”

2. We have reached a nexus point in consumerism in healthcare. Like it or not, we are no longer going to be able to justify our nonentrance into the consumer revolution. The only question is whether we as healthcare professionals will be watching it from the inside or the outside. Walmart, Walgreens, CVS, and many smaller companies view the consumer “revolution” in healthcare as a greenfield. Do we play on that field or bury our head in the sand?

3. There is a synergy between Aneesh’s comments and an interview with Jack Welch that you will read later in the Journal. Their background and their experience could not be more different, but part of their message was the same. If you are going to disrupt or transform a culture—whether in government, healthcare, or General Electric—you need consistent and constant messaging and communication about mission, behavior, and consequences. The healthcare organizations that can figure that out are the ones who will be “more optimistic about their future than their past.”
America’s Corporate Legends Tackle Academic Healthcare:

An Interview with Jack and Suzy Welch
What would happen if America’s most legendary corporate leader looked at academic healthcare? In this interview, Editor-in-Chief Dr. Stephen Klasko finds transformative advice from co-authors Jack Welch and Suzy Welch who apply lessons from their recent book, *The Real-Life MBA*.

As Chairman and CEO of GE, Jack Welch grew the company’s value 4,000%, with initiatives that defined American corporate history in the late 20th century. Suzy Welch is a nationally renowned journalist, author, columnist and commentator. She is a former Editor-in-Chief of *Harvard Business Review*.

Now they are taking on business education for healthcare. Having developed the fastest growing online MBA in a partnership with Strayer University, they are expanding into changing the “DNA of healthcare” one physician or healthcare professional at a time. They have developed a relationship with Thomas Jefferson University toward the goal of creating a new generation of healthcare leaders. In a no-holds-barred interview, we took on two of the nation’s most transforming industries—academics and healthcare.

### How to Lead:
**Define Mission and Behaviors, Banish Jerks**

Dr. Klasko: I want to get right to your new book. One thing that stuck with me is your advice to “banish jerks.” And let me just put this in the context of healthcare. A lot of my research has been about what makes physicians different than, depending on the audience, either other people or normal people. We still accept students based on science GPA, MCATs, and organic chemistry grades, and we are somehow amazed that doctors aren’t more empathetic. How do you take high-functioning physicians and scientists, who are great at what they do, but were not selected and trained for business teams?

Editor’s Note: What better way to adorn the first issue of a journal entitled *Healthcare Transformation* with a couple who has lived their professional lives working on the human factors related to positive transformation and creating leaders. For me, the takeaways from the book authored by Jack and Suzy, *The Real Life MBA*, which were accentuated in this interview, are the importance of aligning mission, behavior and consequences. You cannot market your patient centric clinical delivery system unless you “live it” and unless physicians, nurses and staff know there will be consequences if the patient is not the “boss.” Similarly, you will be challenged to convince millennials that there is value to their university education if there are no consequences for faculty who consistently show poor student engagement or have poor faculty evaluations. It requires “speaking the truth,” “expanding the humanity and authenticity” we give to patients into our leadership roles, and communicating a consistent vision, mission and “way of doing things” both within and without the organization. As a healthcare leader, even during tumultuous times, that will lead to an organization more optimistic about its future than its past.

If you want more information on the Jack Welch Management Institute at Strayer University, including its new healthcare MBA incorporating courses at Jefferson, visit healthcare.jwmi.com

If you want more information about population health degrees at Thomas Jefferson University visit http://www.jefferson.edu/university/population-health.html

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Mr. Welch: In building any team, whether it is a team of doctors or a team of businessmen, you start out by setting the core question, “where are we going?” You define a real mission. And then you say: How are we going to get there? We’re going to get there through a series of behaviors. They might be speed. They might be collegiality. They might be to share ideas. They might be how many have you promoted. You decide what behaviors will drive your mission in your circumstance.

And here’s an example. I ran a conglomerate. And the conglomerate too often operates in stove pipes. You might have a neurology department, you might have an internal medicine department, but if you’re not getting the intellect across departments, you’re not maximizing the intellect of the people playing the game. You’ve got to raise the intellectual level of the organization, and you want to get out of stove pipes. Stove pipes kill you. A value is sharing ideas, crossing boundaries, and you reward people for behavior that does that.

Every promotion you make is worth 100 speeches. Never forget that. You can talk all day about culture, and “we believe this,” and “these are our behaviors,” but you put in some horse's ass that doesn't have anything to do with that, and all of a sudden you've destroyed the whole place, and all your speeches are just air, because everyone in the organization knows who the horses' asses are. The organization knows who the winners are and who the losers are. And when you make a bad promotion, you wipe out all your speeches.

The problem with jerks is when they destroy those behaviors you want. In a business community, it's the horse's ass that gets the numbers, squeezes the people, kisses up, kicks down. And the whole organization knows they're a jerk, and in promoting them, you lose all your credibility. The key is to make your expectations transparent, so that everyone always knows where he or she stands.

Dr. Klasko: I guess you don’t have tenure at GE?

Mr. Welch: No, and I don't have tenure in my university. We built a university around a model of no tenure. Our students’ average age is 38. They're spending their own money; they're old enough to judge what they're learning. If you're that student, the worst thing you can do is work all night while your kids are crying, while other people are having fun, and you turn in the paper, and all a teacher writes is something lame like:
“Nice job.” When that happens, it is a disaster. You need to have a dialogue. The classes are 20 in size, so the faculty has to engage all of them. Faculty engagement is a key part of the measurement. Our students rate the faculty every term, and their rating is a significant factor in faculty retention.

Be the “Chief Meaning Officer”

Dr. Klasko: How do you rally an organization undergoing change to have mission, behaviors and consequences match?

Mr. Welch: I think that is fundamentally the hardest thing you have to do, because you’ve got too many people that say: “That’s not the way we used to do it.”

Dr. Klasko: You must have been spying on our meetings!?

Mr. Welch: Look, we had annual meetings of our top 500 to 600 leaders. We used to have speeches, and my predecessor did a great job, but he used to talk about the Company being the Queen Mary. No matter how bad the storm was, the ship was big enough “we could weather the storm. We’ll always be the Queen Mary.” And most of the Company employees wanted to be the Queen Mary. When I got the job, I said we wanted to be a cigarette boat: fast, agile, speedy. And we put those values in: Speed, bias for action, hate bureaucracy – behaviors we wanted. Then we talked about them all the time, until we gagged. You have to repeat this over and over and over. You can’t say it enough. You want everybody from Jefferson to be on a plane and have your friend say to you: “I was sitting next to somebody from Jefferson, and they told me all about the mission and where you’re going, and how you’re going to get there.” And when that gets into the skin of every doctor in the class, and every doctor that’s in the program, and they really feel a mission to not be 106 years old, but instead to be a fresh, 21st-century medical institution taking on the biggest challenges of our time.

Ms. Welch: You don’t want your mission to be too abstract. You have to paint a very vivid picture of it. Because words are just words. People have to have in their mind this sense of what it is, what will it look like in five years.
Be Authentic About Health

Dr. Klasko: Suzy, let’s take this to healthcare for a minute. You were able to take something, technology, that could have really decreased interpersonal relationships, and then you made it more personal. We’re doing that with EMRs now, and decisions analysis support. A lot of people are concerned it will depersonalize healthcare. What advice can you give us to use this technology to actually help the doctor–patient relationship?

Ms. Welch: You’re right that there is this very intimate relationship. It is not the typical consumer–transactional relationship. But at the end of the day, customers—or in this case patients—want to get the best service. And you hear people complain about their doctors all the time, and they feel sort of trapped. I’ve got to believe that the way that healthcare is going, people are going to lose some of that intimacy, that you have your doctor for your whole life, and now you have to shop around for other doctors. And that’s going to change the relationships.

Dr. Klasko: Why do you think more people don’t ask more from their doctors?

Ms. Welch: Well, because there’s that built-in awe of your doctor from our generation. And I think it’s changing, as doctors have been demystified as time has gone on. A lot of that because of TV, and the depictions of doctors on TV is that their humanity is showing. But from our generation, you were in awe of your doctor, and he knew a lot of stuff or she knew a lot of stuff that you didn’t know. But now, with the great big Doctor in the Sky, the Internet, where everybody gets to diagnose themselves—and my doctor gets so mad at me when I say, “I looked it up online.” But I think that that relationship’s going to change.

Dr. Klasko: If you were on my Admissions Committee, you know, you’re now running a university, what would you look for in a medical student?

Mr. Welch: I would go to all kinds of lengths to bring humanity and authenticity to the profession. I would talk about it a lot. I would talk about bedside manner 30% of the time. I would absolutely make authenticity an important part of the whole curriculum. I would role model people that do it well. I would make them heroes of the school. Not just the person with the best marks, the best grades.
Eat and Dream at the Same Time

Dr. Klasko: Right before I started this job, I was giving a talk, and the guy before me said, “Well, the two things you don’t want to run for the next three years—eventually they’ll be OK, because they’re totally transforming 180 degrees—are academics and healthcare, because you can’t succeed for the next three years.” And when I went home, I said, “Honey, I just took a job in academic healthcare.” But it hit me, something you said today. You said, “The modern CEO has to think short and long. The modern CEO has to eat while he or she dreams.”

Mr. Welch: I think during change you can’t blow the place up and talk about, “I’ll fix it down the road.” You’ve got to deliver while you’re planning the future. Any manager in the world, any leader in the world, can do a short-term job by squeezing. Any manager can say, “Come back in 10 years, I’ll let you see what I’m doing.” You’ve got to eat while you dream. And so they can measure you, and you’ve got to have short- and long-term goals. You’ve got to be building that facility while you’re doing something else over here that’s very short-term to fund it. Eating and dreaming are what a leader does all day, and how well they eat while they dream determines how well they will lead.

Case in Point: Mergers Are About Culture

Dr. Klasko: The past few years have been filled with mergers of the healthcare system; each trying to find ways to deliver value to populations; each trying to streamline. With your experience growing GE, you might be the world’s expert on merging corporations. The question I have for you is: What’s the greatest danger in merging two companies?

Mr. Welch: Well, we’ve seen a lot of pitfalls. Do you want to start, Suzy?

Ms. Welch: I’d just say, the first one is that we would say, “Uh oh. They had the conqueror syndrome.” And this is very common in acquisitions. When Jack was at GE they had an incredible number of acquisitions every year. And when they got it wrong, it was often the conqueror syndrome. That is when the bigger organization said, “Well, we bought you. Let’s just see how we can get rid of your people and put our people into your place.” And it just kills the energy, and you don’t reap any of the benefits of bringing these two organizations together.
Mr. Welch: You didn’t buy buildings, you bought intellect—that is what people forget in 90% of the acquisitions. Suzy said the right word—we call it the “conqueror syndrome.” And unless you blend the best of each, you have rubble left behind. You’ve got to pick the best people, independent of who came with you, to man the new ship.

Take an employee of your new acquisition who is thinking: “What does this merger mean for me?” He was happy the day before the merger. And now the merger’s occurred. You’ve got to show him how he’s part of your vision going forward, and you’ve got to make clear to him what’s in it for him or in some cases not.

“I just believe that a value of authenticity overwhelms everything.”

Dr. Klasko: What advice do you have, as CEOs get more and more—or deans or presidents get more and more—in their glass towers, what advice do both of you have to communicate to folks that you’re really there to help them succeed?

Mr. Welch: I just believe that a value of authenticity overwhelms everything.

Ms. Welch: The thing, also, with alignment, is that it has to go along with behaviors and consequences, so you can talk about the mission statement, but you have to tell people how you get there. What are the behaviors? Is it speed? Is it sharing of ideas? Is it informality? What are the behaviors we value? And then the consequences are that people who demonstrate those values get promoted or get lauded or get celebrated.

Mr. Welch: Well, I think you create an atmosphere where only truth is accepted. Ideally, you’d have in every conference room: “Only Truth Spoken Here.” You know? No spin. No self-promotion. No coming in the side doors. Just truth.

In today’s information environment, everybody in an organization knows just about everything. Start with that premise, and build trust, so that people can be truthful. You say, “We’re a risk-taking organization.” Then they take a risk, and you shoot ‘em? That’s the end of that program.
It doesn’t work. So you’ve got to constantly back up every word with an action.

**Ms. Welch:** As we’ve been on this book tour, we’ve been talking a lot about truth and trust. Because you know what? There’s just so much written about leadership. I mean, a leadership book comes out every single day. If you type the word “leadership” into Twitter, there’s like a zillion quotes going around. For this book we really wanted to boil down what we had learned about leadership in the past 10 years. And leadership has changed a lot, because the business environment has changed a lot, and Jack kept on coming back to these two words at high-functioning companies. In the companies that did change, the companies that were resilient, there was an absolute preponderance of people speaking the truth and seeking the truth. Every meeting was about speaking and seeking the truth. No spin, no agenda, no politics, just what is the truth. And that there was an environment of trust, where you could say what you were really thinking and you wouldn’t be shot for it, and so forth.

On the book tour, I’ve been saying to groups, ever since we thought about truth and trust, I think it would be interesting to go back to your organizations and sit with your team and say, “Do we have truth and trust here?” And the first time I said it, I was very surprised to see the looks of horror on the people in the audience, because immediately they’re thinking, “Maybe we don’t have truth and trust.” And it’s the kind of conversation that if you start it, people start saying, “Hey, you know what? I’m not so sure truth is actually being spoken in this room right now,” or “I’m not so sure I’m feeling trust from people about this.” Then you start building that environment, and that allows change. That allows the kind of swift change. It makes everything else possible, and it really sort of sweeps away all the other noise and gobbledygook around leadership. Just truth and trust.

“In the companies that did change, the companies that were resilient, there was an absolute preponderance of people speaking the truth and seeking the truth.”

**Generosity Is Inherent in the Best Managers**

**Ms. Welch:** The “generosity gene” is something we talk about in the book, because when you’re in a medical setting, you don’t want to throw around the word gene too much, because you all sort of really know what genes are.
Somewhere between nature and nurture, there is a characteristic that some leaders have, and that is to be generous and to have a natural generosity of spirit. They love to give raises; they love to give promotions; they love to see people grow; they don't steal ideas; they don't kick up, kick down, or kiss up. This does not mean they are not performance-driven and demanding. They are. When you think back on all the good bosses that you’ve had, they all have this—you love them because they both raise your game and have the generosity gene. You would do anything for them. And you know when you’ve had terrible work experiences because you had somebody who was tight: emotionally tight, financially tight, they were just not generous in any way, right?

Now, it is a very good question you ask about whether you can nurture this, whether somebody is born with it. I think if you have it, and obviously some people are raised and born with more of this quality than others—and it comes from families, we see a lot of family members who are like this. But if you have it as an organizational value, and the leader is saying, “You know what? We love this thing that you call the generosity gene, and we actually promote people who have it because we really care about it.” That’s the way you cultivate it, by creating it as a value.

Mr. Welch: And watching people. Keep your eyes open! Look for it. You will see it. It’s a winning characteristic: Be generous as hell with your employees financially and emotionally. Self-confidence allows them to take risks. Praise them. It’s just the right thing to do.

Ms. Welch: People have a strong tendency to go sort of into tribal mode and feel they have to play politics and to build little cabals. There are evolutionary biologists who would tell you that we’re hard-wired to go into cliques, and we say it in the book many times: Love everyone. Right? Every time you feel yourself being drawn into a clique, or being drawn into a group where you’re going to start excluding other people, and your circle gets smaller and smaller, fight that and just love everyone.

“[When you think back on all the good bosses that you’ve had, they all have this—you love them because they both raise your game and have the generosity gene.]”
Mr. Welch: And we tell our working kids to put in the drawer of their desk a sign we gave them that says, “Love everybody.” Every time they pull that drawer open, “Love everybody” hits them.

Mr. Welch: Steve, let me ask you a question. Why does medical school, the internship, the residency, why is it so long?

Ms. Welch: It doesn't seem right.

Dr. Klasko: Excellent question. You’re absolutely right.

Ms. Welch: It’s crazy.

Dr. Klasko: It’s segmented; it’s siloed. We say to students, here’s your undergraduate four years. Here’s your medical education. Here’s your residency training. We keep adding to the steps instead of integrating them.

Ms. Welch: And why do doctors have to be 35 before they’re making any money?

Dr. Klasko: Well, because we still believe, falsely, that we can teach everything in science for your specialty. We still believe, falsely, that if you’re going to be a neurosurgeon, you have to learn everything about family practice, etc. In my specialty of OB/GYN, if I’m going to be a gynecologic oncologist, and never deliver another baby, I have to go through four years of general OB/GYN.

Ms. Welch: Sounds like a racket.

Dr. Klasko: It is a racket.

Ms. Welch: Somebody’s making money off of this!

Mr. Welch: Who wins in this game?

Dr. Klasko: Really, more than anything else, it is the accrediting bodies. After six years of multiple choice tests, we’re ready to let medical students see patients, and what do they have to pass first? Another multiple choice test. They’re not tested on whether or not they’re emotionally equipped to treat and guide a patient.

Ms. Welch: Why doesn’t somebody blow that model up? I mean, in business, when a model is that broken, somebody comes in and blows it up.
Telemedicine: Point/Counterpoint
The future of healthcare or the end of personal medicine?
To debate the merits and pitfalls of telemedicine and telehealth, two leading experts in the field came together for a discussion on different topics surrounding telemedicine. Judd E. Hollander, MD, is a professor of emergency medicine and the associate dean for strategic health initiatives at the Sidney Kimmel Medical College at Thomas Jefferson University. He is leading the enterprise-wide telemedicine initiative at Thomas Jefferson, and he took the “pro” side of this argument. Charles R. Doarn, MBA, is a research professor in family and community medicine and is the director of the Telemedicine and e-Health Program at the University of Cincinnati. He is also one of the editors-in-chief of the Telemedicine and e-Health journal and serves as the managing editor of the journal Soft Robotics. He served as the representative to the “con” side, or counterpoint, of the argument. While both are invested in telemedicine, they recognize that there are risks and benefits to the implementation of new technology.

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To debate the merits and pitfalls of telemedicine and telehealth, two leading experts in the field came together for a discussion on different topics surrounding telemedicine.

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**Charles R. Doarn, MBA**, is a research professor in family and community medicine and is the director of the Telemedicine and e-Health Program at the University of Cincinnati. He is also one of the editors-in-chief of the *Telemedicine and e-Health* journal and serves as the managing editor of the journal *Soft Robotics*. He served as the representative to the “con” side, or counterpoint, of the argument. While both are invested in telemedicine, they recognize that there are risks and benefits to the implementation of new technology.

There are data that support the fact that many patients like telemedicine and telehealth, and what is going to happen is that patients who like this idea may be mismatched to providers who do not like this idea, and those providers are going to find themselves without patients. It’s one of these things where if you do not jump on the train, you might find the train is running over you.

**Dr. Antonia Chen**: What are the benefits of telemedicine and telehealth?

**Dr. Judd Hollander**: I think the benefits are really simple. Telemedicine or telehealth is really an ideal way to deliver care to patients when and where they want it. It also enables providers to interact with other providers to improve the care of the patient. It’s really short and simple, we bring care to patients rather than patients to care. We could also bring providers to providers already caring for patients (for example, consultants) rather than making the patients go for a second appointment.

**Prof. Charles R. Doarn**: While I agree with you, there are a number of doctors in various states who believe that they were not trained that way. They want to see the patient in their office, especially if they live in a rural area, and they worry that they cannot get reimbursed for it. There is a paradigm shift with the newer medical doctors just coming out of school, and it may be more difficult for older doctors to adapt. Additionally, some people have a problem with the term “telemedicine,” and they want to call it “telehealth.”

**Dr. Hollander**: I talk about adapting to telemedicine a lot, actually. When I am speaking with groups of providers about the merits of telemedicine, they tend to go through a process analogous to the Kübler–Ross stages of death and dying. At first, they just deny the fact that telemedicine is happening. However, after they think about it and see it work a couple times, they gradually move toward acceptance.

I would also like to comment on your point about living in a rural area. We should spend more time talking about access and less time talking about geography. Someone living in the middle of the Dakotas might have a problem traveling 50 miles to see a physician doctor, and we should help those patients. On the other hand, someone living a block and a half from the hospital in a major city may not be able to get to a physician any faster. Given the shortage of clinicians, nurses, physician assistants, and nurse practitioners, living near a healthcare facility does not guarantee prompt medical treatment. The key is access to care—not location.
Dr. Chen: Can patients trust the quality of service being provided across the Internet or across a web-based tool? How do medical personnel get reimbursed for the work that is performed?

Dr. Hollander: For the question on quality, it is important to break this into two questions: (1) Can patients get equivalent quality of care via telemedicine compared to office-based care, and, maybe more importantly, (2) Can patients get better quality of care via telemedicine than no care? Many have no alternative. The care in the office depends on various diseases and conditions that patients have, and in fact, it is dependent on the quality of the provider. On the other hand, it is easy to see that a video visit is better than no visit. The best way to answer the first question is with evidence, and the right studies should be conducted to answer this question.

Reimbursement is another issue, and it is one of the things that makes it very difficult to facilitate change in medicine. However, the reality is that with new high-deductible plans, with patients assuming a higher percentage of the costs of their own care, reimbursement becomes a little less relevant. If you take a patient with a high-deductible plan and they are paying out of pocket for their first $5,000 worth of care, they would probably strongly prefer to pay $40 or $50 for a telehealth visit than spend $1,000 for an emergency department visit.

With regard to providers, as we shift our work to a value-based care world, telemedicine reimbursement takes care of itself. Effectively, a health system may be given a pot of cash to take care of a patient over the course of a year, so taking care of them in the least expensive way means more money in the health systems pot at the end of the year. However, the key is to remember that medicine isn't all about the money. When I am having a conversation with a resident or someone who seems to have lost their priorities, I like to find a subtle way to ask them to go back and read the essay they wrote to get into medical school. I have not yet met a physician whose medical school essay said that they only want to take care of patients who pay.

Prof. Doarn: With regard to the question about the quality of service being provided, the challenge is that evidence must be produced to support this. Some studies have been published in different journals, such as *Telemedicine and e-Health*, but the study patient population is not large enough in scale. Previous
studies from Veterans Affairs (VA) cannot easily be generalized to other populations. Thus, we must prove that telemedicine actually works, because a lot of physicians that I work with or am familiar with often say, “How do we know that telemedicine works? How do we know the person on the other end of the video or phone actually is who they say they are?”

**Dr. Hollander:** Your last point is interesting, and we discuss that a lot in our legal circles. I am an emergency physician. I do not care who the patient says they are, right? My responsibilities through the Emergency Medical Treatment and Labor Act (EMTALA), as well as ethically and morally, are that when somebody rolls through the door, I take care of them. If they come in with a laceration, I am going to fix the laceration. If they use the wrong name, I still treat them. Now, I do not want to help patients commit insurance fraud, but I am just taking care of someone, and that is why we clinicians went into medicine. If I wanted to be checking everybody’s identification, I could have been a customs officer.

**Prof. Doarn:** But in emergency medicine, you actually see the patient. It is a little more challenging when somebody on the other end is complaining about severe chest pain and wants a drug, and the person getting the drug may not be the right person.

**Dr. Hollander:** I can tell you that when I see patients in the emergency room, there are people who come in and use their sister’s insurance card because their sister has insurance and they do not. So, it is not clear to me that there is going to be any more deception through video medicine than there already is in person.

**Dr. Chen:** We have talked about patient populations where telemedicine might be beneficial, but which patient populations may not benefit from telemedicine?

**Prof. Doarn:** We actually wrote a paper about this at the federal level. Congress was interested in developing a federal definition for telehealth and telemedicine, and one of the key things is that many of the federal agencies and/or departments have unique populations. For instance, NASA, the Indian Health Service, the VA, and the Department of Defense all have unique patient populations that they must care for. Thus, the rules and regulations are slightly different in each department when comparing an emergency situation in the streets of a major city that may or may not be the same as on the battlefield in Afghanistan or in the space station above Earth.
Within the federal government, Health and Human Services (HHS) must define what healthcare is and how it is done across the country, and the structure of medical care in some areas is more robust than others. For instance, we might see more telehealth solutions in Alaska or Montana than we see in Ohio. This is due to local leadership, people's beliefs, training, and reimbursement. Patients with chronic conditions may do well with monitoring, such as those with congestive heart failure or chronic obstructive pulmonary disease (COPD) using remote spirometry. Others that may need more intensive care may not benefit from telemedicine.

**Dr. Hollander:** I think we should not limit the scope of telemedicine contacts. There is a tremendous benefit, sometimes even for patients I cannot treat. I may not be the right provider to take care of a patient who is having a stroke, who is calling from home, but yet we have a 30-plus hospital neuro-stroke network run by Dr. Robert Rosenwasser who provides great provider-to-provider stroke care.

Many of my colleagues will ask, “What if someone calls you with chest pain, or what if someone calls you with abdominal pain?” I do not want to have a restriction so that if someone calls in with chest pain, I am not allowed to see them. If the patient is 18 years old with chest pain, I might be able to address the problem well using telemedicine. If the patient is 65 years old with hypertension and diabetes and has chest pain, the odds are overwhelming that I cannot treat the patient, but I can help them.
I like to address this point by discussing what I call an “activation threshold.” When patients get sick (think chest or abdominal pain) they spend some period of time trying to figure out whether or not they should act on it, or whether they should just hope it goes away or take Mylanta®. Thus, if you are going to sit at home with chest pain for an average of 3 hours before you go to the emergency department, which is a reported number, I can help you if your activation threshold to call telehealth is considerably shorter than your activation threshold to go to the ER.

We should be clear, I do not want patients with emergent problems to delay going to the emergency department by using telehealth, but if they are not sure if it is an emergency and otherwise did not plan on acting, I would encourage use of telehealth. Paradoxically, I may save your life when you have a condition that I cannot treat just because I get you to the right place sooner.

Prof. Doarn: What if I am far away and I cannot get to the emergency room, and you diagnose me over the phone? What if I am misdiagnosed, and I have a bad event or bad outcome? I think that one of the fears with much of the technology is the physician may see a patient with all the bells and whistles, but the bells and whistles may not work right. The cell phone might drop out when I am trying to do something. Thus, I would be concerned that the patient may be having a bad outcome that could have been prevented if they would have been transported instead.

Dr. Hollander: In the scenario you just gave me, patients who call a telemedicine service first will allow an initial screening. Let’s say that the patient has a heart monitor at home. If the monitor does not work, and I cannot see the data point, I may have to send that patient to the emergency department even though I started down the pathway with them. Once the patient is at the hospital, there are certain conditions that cannot be taken care of in the emergency department. Some patients may need to be admitted to the hospital for a period of time. It would be foolish to think we could take care of everything by telemedicine, but we can help move patients to the appropriate level of care faster, whether it is a condition we can treat and resolve, or it is a condition that we can refer somewhere else. The other thing that we have found telemedicine really useful for is reassurance. In many cases, patients are really asking us, “Do I really need to go to the emergency department now, or am I okay to stay at home?”
**Prof. Doarn:** If we do go down this path, and we develop a robust telemedicine system, then the physicians in the emergency department will have to now be trained on multiple systems when they did not have to be trained on multiple systems yesterday. For example, if you are the emergency physician on the previous telehealth call and you are interacting with this patient, and he or she has all these devices, you will now have to train the emergency department staff on how to harness this data because the patient is not physically present. This will cost the emergency physician, the emergency department staff, and the chairman of that department more money to train people.

**Dr. Hollander:** Absolutely. To address this, one of the things that we are doing at Jefferson under Dr. Stephen Klasko’s leadership is creating the Institute for Emerging Health Professions. The first program that we are putting out it is a certificate of added competency in telehealth. It is designed less at the physician level, but more for support and nursing staff to learn the right skill set to deal with telehealth.

That said, medicine has evolved over the time that I have been practicing, and we have to learn new technologies all the time. I am old enough that I was practicing medicine before CT scans were available. We had to examine bellies and sweat out the decision-making in people with belly pain. Were we going to empirically operate on someone with appendicitis, or did somebody have blood in the belly after trauma? We did not have a test to figure it out. Then we got a test, and then we had to learn how to utilize that test. Telemedicine is similar. We are not done with our education when we graduate medical school, and we have to continue to learn as we get continuing medical education credit and integrate new technologies. The question is: Does all of this enhance patient care? If we believe that this enhances patient care, and we can prove that it enhances patient care, then we just need to do the right thing for the patient.

**Prof. Doarn:** I am concerned that my department will have to pay more money, and the benefit may be seen by a different organization.

**Dr. Hollander:** That is a real issue. I think that we just have to be smart as physicians and institutions when we are negotiating with payers and employers that if we are adding technology to drive down their costs, we have to be able to get some of the shared savings. I think it is ironic that Centers for Medicare and Medicaid Services (CMS) are the first people to recognize that, so they are at least kicking some savings back into the pot. However, the point that you highlight is critical. Institutions and providers just cannot keep spending money on infrastructure and make it less expensive for healthcare insurance companies and not share in some of the gains.
Dr. Chen: Texas might be the only state that really has a problem with implementing telemedicine. Why is this?

Dr. Hollander: Consumers should drive medical care, not a handful of people sitting on a medical board who may have a conflict of interest. State medical boards make decisions that are in the interest of the members of their group, their local physicians. If you had a state medical board that was composed of patients rather than physicians, you would probably have a different approach to all of this. As state medical boards often have more experienced physicians, it may be that they have a panel of the least technologically capable physicians and thus they tend to prevent innovation.

Dr. Chen: What are the medico-legal implications of implementing telemedicine?

Dr. Hollander: In most states, the standard of care is defined as what the average practitioner would do for a like patient in a similar environment, or some such words, which means the standard of care for me in the emergency department is not the same as the standard of care for a neurosurgeon. It would mean that the standard of care for me out on the sidewalk would not be the same as the standard of care for me in the emergency department, although I am the same patient.

What the standard of care should mean, and we do not know if it does or not yet because there have not been enough cases, is that I am held to a standard for telemedicine that is different than the standard I am held to in the emergency department, the office, or the intensive care unit. I should not be able to commit malpractice. However, if a patient calls me, I cannot listen to their heart and lungs. That is obvious. The terms of use in most platforms say that. The average patient should know that. I should not be held to the same standard as someone who can listen to the patients’ heart and lungs, because it is not like the patient came to me and I refused to do that. The patient chose to engage me in a manner that did not give me that option. On the other hand, if there is a situation where I think it is critical that I know that information, then I have an obligation to send the patient someplace where either I or another provider can listen to their heart and lungs.

It will be interesting to see how malpractice case law evolves around telemedicine. I do not personally believe that physicians will likely be held to a standard that they are held to in an office-based, in-person physical exam condition, even though many people think they will be. Time will tell.
Prof. Doarn: This introduces the concept that can pit two doctors against each other. These two doctors could both be trained in the same university, the same medical school, and both licensed in the same state. However, one physician does things with a telemedicine system and occasionally sees patients in a hospital, while the other one never uses telemedicine. Over time, doctor A who uses telemedicine will practice medicine slightly differently than doctor B, and over time, we may find that there are some discrepancies in the way in which patients are being cared for. This could be a dangerous thing, or could improve efficiency. We do not know yet, and we do not know how the law will account for this difference.

Dr. Chen: Is videoconferencing necessary for implementing telemedicine? Are photos enough?

Prof. Doarn: Having done a lot of this over the last number of years, I have heard people say, “telemedicine is just video teleconferencing.” No, it is not. It is actually remote monitoring, where patient and physician are separated by some distance—it could be across the street, it could be in different countries, and it could be on a different planet!

If you have very simple video tools, you can observe things that cannot be observed by photos alone. If you need to watch someone’s gait, or if you need to observe a tremor, you can take a short video snippet and send it as an e-mail attachment so that you can make a decision on whether or not to see that patient in person. Some of the physicians that I have talked with over the years like the idea of being able to see their patient, even though they do not really need to physically see them. Remote monitoring helps us with this.

Dr. Chen: Are there privacy concerns or confidentiality issues with using telemedicine?

Prof. Doarn: When you go to the ATM machine, nobody stands near you, and nobody tells you how much money they have in their bank account. However, patients talk about their health condition all the time, about how they have high blood pressure or certain diseases. This is less concern about one’s medical condition than their financial situation.

Dr. Hollander: I work in the emergency department, and we have people lying in hallways sometimes. Regulators may argue that everybody should be in a private room, and every interview should be 100% confidential and soundproof so that
nothing could get out. Well, we still live in the real world, and we just need to do the best we can do to make sure patients are taken care of.

Dr. Chen: With regard to the future training of doctors, is it worth creating a new path where the telemedicine specialist can track important things and send them to emergency rooms? Or should it be within the specialty, and you only select a few people to play this role?

Dr. Hollander: I think that you still need to have broad medical training for everybody. It is like only training some people to use a stethoscope, when it is a tool that everybody is going to need sometimes. For postsurgical patients, they may call with concerns about their wound and you cannot answer that on the phone. Do you really want someone that just had hip surgery or knee surgery to have to get into their car 3 days later and drive back 35 miles just so you can look at the wound? Wouldn’t it be perfectly acceptable to see it via videoconferencing or maybe a text message and save them the trouble of driving?

I think there are many areas that we could be providing care to patients the way they want to receive care, and it should not be restricted to a few individuals. Like everything else, there are people who are good communicators, and there are people who are bad communicators. There are physicians that make great eye contact, and they make patients feel comfortable. On the other hand, there are people who are totally standoffish toward the patient, and patients do not have a good, warm interaction.

The same thing is going to be true in telemedicine, but telemedicine is just one tool that I personally believe every provider needs to learn to use. Then, they can deploy it as their patients wish or as they wish in the right situation. However, I do not think there are too many practices, exclusive of some that only require verbal communication, that will be done predominantly by telemedicine. It is just one thing that medical personnel will have in their toolkit to provide the best care for their patients.

Prof. Doarn: I think about all the information that medical students have to learn in a four-year period of time and how most of it is book knowledge. In some medical schools, they do not start seeing patients until the third and fourth year. However, the curriculum in many medical schools is beginning to change so that they actually get real patient engagement sooner than later and not just interaction with standardized patients. If every medical student receives some kind of telemedicine or telehealth training early on, whether it is a series of
lectures or a laboratory component, it is a method by which they can interact with patients sooner. We need to be aware of the opportunity cost—what if we do not train our medical students on telemedicine? If we graduate medical students moving forward who do not know anything about remote monitoring, how to look at health informatics, or how to look at electronic health records, will they miss the boat in effectively treating patients? You can either get on the boat now, or you can wait on the boat dock. Eventually, the boat will pull away and you are going to be left standing there. Then you will be left reading the fine print, “That was the last boat.”

Dr. Hollander: There is a great cartoon that Dr. Stephen Klasko uses in his talks, when he ends. It shows a pair of animals standing on a rock watching the Ark float away. And it says, “Oh, that was today.”

We have to use telemedicine to engage our patients. I think that patients are looking at healthcare as though they are consumers now. They never did that before. Before, patients had to do whatever their doctors and providers wanted them to do. Now, they have options, and they vote with their feet. The two numbers and three letters that I like to float around are 180 million, 130 million, and CVS. The 180 million is the number of people who visited urgent care centers in recent years. The 130 million is the number of people who vote with their feet and go to the emergency department, not because they are critically ill, but because it is more convenient. And the three letters, CVS, you know what they mean. That is the retail health chain that is the largest provider of healthcare in the country. I think that if primary providers or physicians at an institution do not want to cater to patients, patients are not going to want them, and they are going to have exactly what they asked for: no patients.

**Conclusion**

As this discussion demonstrates, telemedicine and telehealth have the opportunity to improve patient lives by reaching those who do not have access to healthcare and to expand the capabilities of current healthcare providers by reaching more patients in an efficient manner. While telemedicine and telehealth cannot be used in all medical situations, they give physicians the opportunity to remotely monitor patients’ chronic medical conditions and provide cost-effective care compared to regular office visits. Furthermore, the barriers that have long been impediments to wider adoption and integration are slowly being resolved. Future legislation and agreements with insurance companies must be established to protect physicians from liability and provide appropriate reimbursements, while also protecting patients from improper medical care. Telemedicine and telehealth can change how healthcare is being performed today, and future medical school training should reflect those changes to advance patient care.
Omni Channel Health: Envisioning Sarah’s Retail Consumer Experience in Healthcare

Praveen Chopra
It is a beautiful Friday morning and a great start to the spring in Philadelphia as the trees begin to flower and the birds chirp happily. Sarah, a retail professional, is getting ready for her spring vacation with her husband, Mohan, and 10-year-old son, Jacob. They have been looking forward to this vacation for a few years, since Jacob was diagnosed with asthma and seasonal allergies.
Sarah is working through her last-minute checklist before they fly out tomorrow to Florida. As she packs her swimsuit, she notices a small rash on her left arm. “I will get it checked when I come back,” she murmurs to herself, and continues packing.

Then she vaguely remembers receiving an e-mail from her employers about the launch of a new telehealth program. The e-mail said something about being able to see a doctor any time and from anywhere. She grabs her iPhone and searches for “telehealth.” The e-mail pops up and she starts scrolling down … “easy app download…virtual visit with a physician…no fee.” She’s not sure exactly how it will work but decides to give it a try. She clicks on the quick registration button from the e-mail to download and register the app on her iPhone. “Wow,” she thinks to herself, “if the first step was that easy, I should try this for my rash.” Within the app she scrolls through the physician listing and is thrilled to see the name of her primary care physician. All of a sudden, after clicking the name to initiate the telehealth session, Dr. Goldberg’s face pops up and she hears “Hello, Sarah!”

Sarah went on to share information about her rash and asked if she needs to cancel her vacation. Dr. Goldberg asks to see the rash, and after examining through the iPhone, gives her the green light to proceed with her vacation. Before signing off, Dr. Goldberg asks to see a picture of the rash using secure messaging on the patient portal. “An iPhone picture is fine.” Lastly, he asks for the nearest pharmacy to her house so he can send a prescription for a rash cream that she can pick up on her way to the airport.

Sarah takes a deep breath of relief as she sits back down on the couch and realizes what just happened. In less than 15 minutes, the physician was available through her smartphone, her packing was essentially uninterrupted as she was in her pajamas, and she didn’t have to leave the house! She continues packing while humming to her favorite music, only to be interrupted by a text notification from her pharmacy that her prescription is ready for pick-up. She chuckles and carries on…

The next day after reaching their seaside hotel, Sarah, Mohan, and Jacob go for a leisurely walk on the beach followed by a relaxing dinner. Just minutes after lights out, Sarah and Mohan wake up to a loud wheezing noise. They run to Jacob’s room to find him gasping for air. It is not the first time Jacob has been through this, but it has been a while since he had a similar episode. Sarah and Mohan know what to do. They rush Jacob to the nearest emergency department. The attending, Dr. Salinas, first asks if Jacob is on any medications and if he has any
related allergies. While she doesn't have the information handy, Sarah knows that information is catalogued within Jacob's virtual medical home in Philadelphia. Dr. Salinas' eyes light up, and he asks for the medical home name and location. Next thing they know, the attending uploads Jacob's medical information from Philadelphia directly into the local system where Dr. Salinas is able to access it immediately. He administers the proper medication and within 3 hours of arriving at the emergency room, Mohan and Sarah are back at the hotel putting Jacob to bed.

After what is a much more peaceful night's rest, Jacob wakes up just as playful and active as if the incident at night never happened. Mohan and Sarah are relieved and energized by the seamless, convenient, and hassle-free experience they just encountered. They are grateful that through new technology, Dr. Salinas was able to access the right information at the right time. Just as they are walking out the door, Jacob's pediatrician, Dr. Elizabeth Carr, calls from Philadelphia to let them know that she received an encounter notification about Jacob's emergency visit and that she has debriefed the encounter with Dr. Salinas at the Florida hospital. Everyone is effectively and efficiently on the same page and there is no need to worry. Dr. Carr asks Sarah to bring Jacob for a check-up when they return from Florida.

Mohan, Sarah, and Jacob enjoy the rest of their day on the beach. Later that night, Sarah logs into her patient portal to schedule an appointment for Jacob. At the top of the screen she sees a new notification. She clicks on the button and is pleased to

More than 1,800 retail clinics have 10.5 million visits annually.
learn there is an ambulatory care center near her house where she can get an appointment for Jacob. She also notices her primary care physician has office hours in the same location. Since the rash is still on her mind, she schedules office visits for both Jacob and herself on the same day and location upon their return from Florida.

The next 5 days are a breeze. It has been a long time since they have been able to relax as a family, and after a rocky start, it only gets better.

They return to Philadelphia refreshed and energized. Sarah visits the doctors at the ambulatory care center the next week and returns with a clean bill of health for both Jacob and herself. Dr. Carr also prescribes a wi-fi-enabled inhaler for Jacob that is synchronized to an asthma app on Sarah’s iWatch. The app monitors pollution and pollen levels to provide a proactive health monitor for Jacob at Sarah’s fingertips, or should we say her wrist.

Mohan smiles and takes Sarah’s hand. They can hear Jacob waking up from his nap. They look at each other, smile, and walk into the house.

“Dr. Carr also prescribes a wi-fi-enabled inhaler for Jacob that is synchronized to an asthma app on Sarah’s iWatch.”
Response: Ninfa Saunders, DHA

This story captures a human journey in a large transformation of healthcare toward what we call retail medicine.

The following weekend Sarah and Mohan were sitting on their patio enjoying the spring scenery while Jacob was taking a nap. Sarah looks at Mohan and exclaims, “Aha … welcome to retailization of healthcare. Over the last few weeks, we just saw healthcare at its finest—a consumer-centric retail experience where the location or channel no longer dictate how you receive care. Instead, you have the care coming to you, just as a product we order arrives when we need it. I can relate! Omni Channel Health is here to stay, and it makes me feel safe and secure. I love this new way of living.”

Our world is full of Sarahs, Mohans, and Jacobs. They are taking charge, navigating healthcare systems on their own, and directing their care. They know they have options and the right to choose, and they will make that choice!

But this human story raises the key question for us: How do we as providers, insurers, and guides help this economic trend become a win–win for our patients? I believe it can be done.

The Institute for Healthcare Improvement’s (IHI) framework for optimizing healthcare and patient experience revolves around right access to the right care at the right time. At the same time that we are pursuing the IHI’s framework, we’re experiencing the compendium elements of payment reform, insurance reform, delivery of care reform, consumerism, and price transparency. The result: the accelerated emergence of alternative care delivery systems, in particular, the “retailization” of healthcare. Kaufman Hall defines retail care as a consumer-driven approach to care delivery that is grounded in retail principles and compelled by market forces that empower and incentivize patients to become consumers of healthcare and well care services.

This phenomenon is driven by factors that include:

• higher out-of-pocket costs for insured patients
• transparency of price and quality data (or perceived quality) leading to actionable consumer information
• new and competitive entrants to the industry
• consumer expectations related to convenience and service
• new technology, high connectivity, and virtual one-click apps

Consumer choice has become a growing determinant of care access and utilization, and alternative care models have emerged and have grown exponentially, primarily outside the confines of traditional healthcare delivery systems. Harvard professor Michael E. Porter’s Five Forces of Rivalry in a Competitive Market has found its place in the healthcare industry where new entrants and threats of substitution have become a stark reality.
May it be too shocking to suggest that, in part, because the care delivery system has been so successful in the past, it is quickly (maybe quicker than we think) becoming a legacy system, less capable of meeting the rapidly changing demand of the marketplace?

Retail healthcare is all around us. We see it in CVS, Walgreen’s, Walmart, Target, and many others. Consumers are able to obtain diagnostics and prescriptions through mobile apps and telemedicine that are accessible virtually anywhere. Theranos diagnostic lab promises that one day, for a few drops of blood, we will see lab results on a quick turnaround and for an unprecedented low price. Imagine Walmart providing imaging services at its stores, offering 24/7 service.

This disruption and innovation are everywhere—we merely have to look around.

The healthcare industry must be willing to transform its current state and embrace disruptive innovation. If we do not disrupt ourselves, someone else will. The uberization of healthcare is here and patients turned consumers are using it. We must meet the patient-consumer in their expectations of their healthcare journey as they consider the drivers of care, including choice, convenience, out-of-pocket cost, and self-navigated care. Ultimately, if the consumer demands it, the innovators will design it, and the payers will adopt it.

By no means am I positing that retail would completely replace the full spectrum of the care delivery model. I am, however, asserting that the purchasing behavior of the patient turned consumer is demanding alternative models of access to care at a competitive and transparent price point. The millennials are certainly leading the way, and Gen Y and the boomers are happy to oblige.

My colleague Jim Conway advises us not to focus on projects, but instead, focus on developing a framework capable of speed and sustainability. This focus on flexibility, creativity, and speed are worth thinking about as we develop adaptive plans. This is

55.9% said the ability to access walk-in appointments was a major reason they chose retail care.

48.1% said the convenience of the location played a role in their decision.

38.7% said lower costs were a reason.
“no longer our father’s economy.” Contemplate we should and act we must if we plan to compete in this marketplace and ensure that the outcomes of disruption are good for our patients.

Ninfa M. Saunders
President and CEO, Navicent Health
Cofounder, Stratus Healthcare
Email: saunders.ninfa@navicenthealth.org

Healthcare Without Walls: Platforms of the Future

1. Mobile health (mHealth) and telehealth become a starting point for health and healthcare. Together, retail medicine and telehealth take over large segments of primary care.
2. Internet of things (IoT) becomes a fabric connecting various devices to exchange data.
3. Healthcare will enter the “one-tap economy.” Consumers will choose e-prescriptions at retail pharmacies, online management of appointments, and personal control over electronic health records redesigned for users.
4. Artificial intelligence generates customized and actionable health alerts for habit change and lifestyle guidance.
5. Neighborhood-based healthcare becomes common via pharmacies, grocery stores, emerging health professions, and new patterns of clinician deployment.
6. The shift of primary care to neighborhoods will create opportunities to reduce issues of racial disparities and economic access.
Training the Next Generation of Care Providers: Focus on Telehealth

Dimitrios Papanagnou, MD, MPH, EdD Candidate1, Shoshana Sicks, MEd2, Judd E. Hollander, MD2

Abstract

The rapid growth of telehealth for healthcare delivery has exposed the lack of training available in North America to prepare all levels of clinicians for this modality. Issues range from care coordination to legal and ethical implications to new ways of engaging patients. This article describes a comprehensive curriculum for telehealth training developed at Thomas Jefferson University. The core curriculum is intended for all levels of clinicians as telehealth facilitators and uses the Jefferson Interactive Curricula Experience (iCE) Platform and Application. A targeted curriculum has been developed for a fellowship in emergency medicine to prepare high level researchers and leaders in telehealth.


The Growth of Telehealth

The anticipated shift from fee for service to value-based care has created the need to develop new care delivery models that encompass both the provision of chronic care as well as acute unscheduled (or on-demand) care. The JeffConnect telemedicine program at Thomas Jefferson University (TJU) includes patient-friendly solutions around the whole continuum of care: whether the patient is seeking chronic care while at their baseline; is becoming “a little sick,” while falling off the baseline; or requiring acute care interventions in a distant setting. Next generation providers will need to be able to deliver next generation medical care, including telehealth.

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Developing a Telehealth Curriculum

To address this shift in healthcare practice and care coordination, we describe a series of training programs to facilitate incorporation of knowledge of telehealth into medical training. In this article, we focus predominantly on the telehealth facilitator certificate program, but also briefly describe other programs being offered within our university.

Domestic and international healthcare organizations, practitioners, patients, families, policy makers and legislators are increasingly recognizing the value added by the integrated use of telehealth. The major benefits are threefold: (1) this powerful means of healthcare delivery has the potential to significantly broaden access to healthcare; (2) increase efficiencies and reduce costs; and (3) enhance patient safety, quality of care, and ultimately, patient outcomes. As outlined in Telehealth Benefits and Adoption: Connecting People and Providers across Canada commissioned by Canada Health Infoway in 2011:

Research shows that telehealth can enhance quality of care by better supporting chronic disease management, application of best practices, and improvements of knowledge and skill development in local care providers and improvement of care coordination. Telehealth demonstrated improvements in timeliness of care, leading to improved outcomes. Furthermore, there were numerous examples of telehealth being the catalyst for leading practice changes which result in better quality of care (p. 8).

The 2020 health report Healthcare without Walls: A framework for delivering telehealth at scale (2010) adds, “...through a comprehensive redesign of care pathways, international and local evidence suggests that 'full function' telehealth can enable an incredible 40% reduction or more in the level of unplanned hospital admissions” (p. 7).

Given the high impact potential of telehealth, RNCOS BUSINESS CONSULTANCY SERVICES predicts that it will experience an 18.5% annual growth through 2018, inevitably resulting in spiking demand for training and coordination. The 2020 health report states, “…the introduction of new telehealth and telemonitoring requires new skills and inevitably new ways of working that will change roles and responsibilities and create new groups of staff” (p. 48). The Canada Health Infoway study validates this assertion, naming professional development as a critical factor in the ability of telehealth to achieve its massive potential and noting that new roles and training are essential. Yet, strategic thinking about and implementation of such redesign and preparation of the workforce remains woefully underdeveloped, as does formalized training for clinical staff on assessing telehealth needs (2020health, 2010).
It was in response to this accumulating evidence in support of new telehealth roles and education that Thomas Jefferson University developed the telehealth facilitator training program. With experience in piloting telehealth successfully and little competition to prepare a skilled telehealth workforce to meet rapidly growing demand, TJU is well-primed to corner the market to equip tomorrow’s telehealth professionals with the required tools to fulfill the potential of telehealth both locally and nationally.

The Unmet Need

To date, there are few academic programs that offer training and/or certificate programs in telehealth. The University of Alaska Southeast (in partnership with Alaska Federal Health Care Access Network) is one of the few institutions in the U.S. that offers a telehealth certificate program (for continuing education). The University of Arizona, University of California-Davis Health System, and Waldo County General Hospital (Maine) also run similar programs, but to our knowledge, do not award certificates. Other non-accredited, short-term training and educational resources exist, most notably through the Cal Telehealth Resource Center (also for CE credit) and the American Telemedicine Association (ATA). There are no sizeable general telehealth programs in the northeast United States. It is predicted that there will be a growing market for telehealth training given trending demands in the United States.

The Telehealth Facilitator Certificate Program

The Telehealth Facilitator Certificate Program, developed and offered by the National Academic Center for Telehealth (NACT) at Thomas Jefferson University, is an instructional training program that was designed for current affiliates of healthcare or health-related fields interested in further developing their careers by acquiring the skills needed to facilitate clinical telehealth encounters at their respective organizations.

Through a series of five self-directed, self-study, online learning modules, students enrolled in the Telehealth Facilitator training program learn how to improve patient healthcare access, efficiency, and safety, as well as improve patient outcomes, by acquiring an arsenal of telehealth skills enabling them to
successfully facilitate, evaluate, and advocate for telehealth within their respective healthcare organizations. Students are immersed in modules that promote the skills needed to support clinical telehealth encounters, including, but not limited to, using telehealth in inpatient and outpatient settings, and providing technical assistance when needed. Through a hands-on practicum module, students have the opportunity to deliberately practice skills covered in previous modules, as well as circumvent common troubleshooting encounters and/or resolve common issues faced during typical telehealth encounters.

Paramount to the successful delivery of telehealth is the application of effective interpersonal and communication skills required to assume the role of telehealth facilitator on the interprofessional healthcare team. These concepts are a recurrent theme across all modules. On completion of the program, participants receive a certificate of completion and continuing education credits. Participants also have the option to complete subsequent coursework, which will further build upon the telehealth facilitator skillset.

Learning Objectives: The Telehealth Facilitator Training Program

While the NACT’s Telehealth Facilitator Training Program was conceived as a basic introduction to the practice of telehealth, several lower- and higher-order learning outcomes are expected to take place in learners upon completion of the course. Learning outcomes are listed in Table 1 (below).

<table>
<thead>
<tr>
<th>Table 1.</th>
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<tbody>
<tr>
<td>Upon completion of the Telehealth Facilitator Certificate Program, learners will be able to:</td>
</tr>
<tr>
<td>1. Define the appropriate applications of telehealth for the individual, families, communities, the healthcare team, healthcare organizations, and the broader population.</td>
</tr>
<tr>
<td>2. Define the limitations presented by the use of telehealth for the aforementioned constituents.</td>
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<tr>
<td>3. Cite the differences between telehealth and standard healthcare delivery.</td>
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<tr>
<td>4. Describe the most common applications of both outpatient and inpatient telehealth.</td>
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<tr>
<td>5. Identify and demonstrate basic working knowledge of available telehealth platforms.</td>
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<tr>
<td>6. Perform basic troubleshooting of common network, telecommunications, connection, audio, picture, and call quality issues.</td>
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<tr>
<td>7. Examine regulatory standards and ethical principles of virtual healthcare.</td>
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<tr>
<td>8. Describe the role of the telehealth facilitator on the interprofessional team and differentiate between the roles of each team member.</td>
</tr>
<tr>
<td>9. Summarize strategies for using appropriate customer service skills, cultural awareness, and electronic and ethical etiquette in coordinating telehealth encounters.</td>
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</table>
Theoretical Considerations for Pedagogical Selection

The platform selected to host the modules for the Telehealth Facilitator Certificate Program is the Jefferson Interactive Curricula Experience (iCE) Platform and Application (described below). Unlike other learning platforms (i.e., Blackboard), iCE is primarily a self-directed learning platform for learners enrolled in the program. Consequently, the iCE platform leverages learners’ self-directedness throughout the program, and may be used as an exemplar for self-directed learning in adult education.

Malcolm Knowles defined self-directed learning as a “process in which individuals take initiative, with or without the help of others, in diagnosing their own learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate strategies, and evaluating learning outcomes” (Knowles, 1975). While there have been different theoretical and philosophical adaptations for self-directed learning over the decades, the three main goals of self-directed learning include: 1) enhancing the ability of adult learners to be self-directed in their learning; 2) fostering transformational learning as central to self-directed learning; and 3) promoting emancipatory learning and social action as an integral part of self-directed learning (Merriam, Caffarella, and Baumgartner; 2007, p. 107). While it would be challenging to achieve transformational and emancipatory learning across only five modules, the Telehealth Facilitator program via the iCE application adequately allows learners to be self-directed in their acquisition of telehealth facilitation skills.

Educational research has identified self-directed learning as an important skill for medical and healthcare graduates.

Educational research has identified self-directed learning as an important skill for medical and healthcare graduates. In a field in which the half-life of information and skills may be ten years or less, close to half the information a physician acquires at the age of 30 may be obsolete by the time he/she is 40 (Ramnarayan and Hande; 2005). With this in mind, self-directed learning addresses one of the most enduring problems in medical and healthcare education: the exponential
growth in medical knowledge. “Medical courses cannot teach everything that [health providers] consider relevant, and continued additions can lead to curriculum hypertrophy” (Abrahamson, 1978). Self-directed learning has been suggested as the methodology of choice to prevent this hypertrophy (Murad et al., 2010; p. 1057). If telehealth is to join this compendium of evolving healthcare practices, it only seems intuitive to have self-directed learning approaches embedded in telehealth skills acquisition.

Knowles also explained that effective learning occurs in self-directed and problem-oriented processes for adults, tapping into an intrinsically oriented motivation to learn (Knowles, as cited by Tagawa, 2008; p. 381). To be a life-long learning health provider, therefore, self-directed learning is an essential factor for continued development. While the format chosen for the TJU training program represents an ideal delivery of information for telehealth for learners in the healthcare industry, it also prepares its learners to adopt the skills that would lend to developing competence as self-directed learners.

The literature suggests that self-directed learning is a successful theoretical framework for training program development for adult learners in healthcare education. In a study by Pololi et al. (2001), investigators designed a three-day interprofessional course for medical school faculty to promote self-directed learning, teaching skills, personal awareness, and collegiality. Results indicated that the three-day course was highly effective in initiating a long-term faculty development process.

Based on a Web-based survey of medicine and pediatric residents that asked participants to report barriers to and strategies for achieving self-directed learning goals, Li et al. (2010) proposed a conceptual model for self-directed, lifelong learning. Their model allows for the creation of learning goals and plan development based on individual reflection and self-assessment, and continued revision of goals and/or plans based on degree of goal attainment.

A systematic review by Murad et al. (2010) suggests that “self-directed learning in health professions education is associated with moderate improvement in the knowledge domain compared with traditional teaching methods, and may be as effective in the skills and attitude domains in physicians.”

We believe qualified telehealth providers will be in demand.
The Interactive Curricula Experience (iCE) Platform

In 2015, the Center for Teaching and Learning launched the interactive Curricula Experience Platform and Application (iCE) through a collaboration with Digital Wave. iCE is a web-based platform and application that allows for interprofessional collaboration on course development throughout the TJU academic community. It allows content to be delivered to enrolled learners through a user-friendly iPad application. Faculty members across the six colleges at TJU are currently in the process of building modules and coursework on the platform.

Faculty members have the opportunity to share course materials (i.e., lectures, presentations, interactive quizzes, videos, and articles) on the iCE platform. Additionally, iCE fosters cross-campus collaboration among the faculty in the six colleges at TJU, further promoting interprofessional collaboration. The platform creates a central repository where faculty can create or download resources, edit resources to match the needs of their students, and package resources into courses. Resources are then shared to students based on their course registration.

Modular Design

Content for the certificate program was developed and spread across five asynchronous modules. Each self-directed learning module is expected to take anywhere from 90 to 120 minutes to complete. At the end of each module, a link directs the learner to an assessment. The format for the assessments are a combination of multiple choice and free response questions on module content. Learners must pass each assessment before moving on to the next module. Additionally, there is an opportunity for learners to ask questions and engage in a dialogue with one another via chat threads in the Blackboard Learning Management System (linked to the iCE platform).
The five modules for the Telehealth Facilitator Certificate Program include:

1) An Introduction to Telehealth
2) A Deeper Dive into Telehealth
3) Settings for Telehealth Facilitation and Delivery
4) Troubleshooting in the Telehealth Experience *
5) The Essence of Telehealth Facilitation

Innovative Curricular Application of Telehealth to Graduate Medical Education Programs: Focus on non-ACGME Fellowships

In parallel with programs developed in the NACT, and to complement the University’s efforts to immerse telehealth skills into various facets of health delivery, THOMAS JEFFERSON UNIVERSITY is proud to offer four new robust training programs for post-graduate trainees that offer the opportunity for telehealth skills acquisition in the graduate medical education (GME) program: 1) the Telehealth Fellowship Program; 2) the Emergency Medicine Medical Education Fellowship; 3) the GME Telehealth Elective, and 4) Medical Student Telehealth Elective. We provide brief overviews of these programs in this manuscript.

The Telehealth Fellowship Program

Because we believe qualified telehealth providers will be in demand, and given the scarcity of training for telehealth providers, we created our one-year fellowship program. We are aware of only two programs that offer telehealth fellowships on a small scale and are specific to provider specialty.

The mission of the Telehealth Leadership Program is to train physicians in the knowledge, skills, and attitudes necessary to become independent telehealth researchers and leaders. The program is guided by the belief that through experiential learning, mentorship, and a rigorous academic curriculum, the fellow will graduate with the ability to successfully conceptualize, develop, and implement telehealth programs, while building the evidence-based literature on telehealth.

*Module 4 represents a hybrid module. After completion of an abridged, asynchronous module, learners will schedule a session at the Robert and Dorothy Rector Clinical Skills Simulation Center, where they will undergo a simulated telehealth encounter. Learners will be expected to apply their learning and address several troubleshooting scenarios during this experience.
Utilizing team-based learning, hands-on application of knowledge, and simulation training, curriculum is informed by the principles of experiential and self-directed learning theories to foster knowledge in four core areas of study. These core areas and their associated competencies continuously complement one another and work to build a foundation of telehealth and leadership success. These areas include: (1) Leadership & Management Skills, (2) Entrepreneurship, (3) Research & Education, and (4) Clinical Skills.

The curriculum is tailored to the fellow's personal interests, allowing for individualized concentrations of research and knowledge application, as well as the option to complete an advanced degree or certificate.

To demonstrate their acquisition of knowledge, skills, and attitudes throughout the duration of the program, fellows will be required to complete a capstone use-case, applying the core competencies of the program. The capstone will complement the entrepreneurial rotations, as the fellow builds financial and marketing models alongside developing the legal supporting documentation.

The Emergency Medicine Medical Education Fellowship

The Department of Emergency Medicine at Thomas Jefferson University Hospital began its one-year Medical Education Fellowship for graduating emergency medicine residents in the Fall of 2015. The fellowship program was conceptually designed for motivated residents seeking to advance their training in adult learning theory, instructional design, and design thinking. The overarching goal of the fellowship is to prepare the fellow for a highly successful career as an educational leader in academic emergency medicine.

Informed by the principles of Experiential Learning Theory, Transformative Learning Theory, and Self-Directed Learning Theory, the Medical Education Fellowship offers potential fellows the skillset to adapt to an ever-changing learning environment and educational landscape. The fellowship provides structured opportunities for formalized training in adult learning in clinical and academic medicine. It uses simulation, telehealth, and patient safety and clinical quality tools as vehicles to inform educational initiatives in undergraduate and graduate curricula, as well as faculty development programming and continuing medical education. In addition, the fellow has the opportunity to identify a specific area of academic interest in the realm of education, and is given the resources and time to develop his/her productivity within this specified domain.

“Development of robust training models to assist tomorrow’s physicians in the care of patients is essential.”
The mission of the Telehealth Leadership Program is to train physicians in the knowledge, skills, and attitudes necessary to become independent telehealth researchers and leaders.

While fellowship programs of this type are offered at other institutions and departments across the country, the fellowship program at TJU is unique in its inclusion of telehealth, which serves as a vehicle for the application of educational concepts covered. Fellows have the unparalleled opportunity to work with interprofessional health delivery teams across the hospital system to develop and support educational training curricula, as well as train telehealth providers.

Through involvement in the undergraduate and graduate medical education programs and the faculty development program within the Department of Emergency Medicine, the fellow will gain experiences across three thematic areas: instructional design, simulation and educational tools, and from fellow-specific elective specialization (Table 2).

Alongside these academic responsibilities, the education fellow works clinically as an attending physician in the Emergency Departments of Thomas Jefferson University Hospitals.

The Telehealth Elective for Resident Physicians and Medical Students

This elective for residents and medical students is a 4-week (minimum) rotation designed for those wanting to explore all aspects of novel care delivery systems. There is a base educational curriculum with an opportunity for learners to further pursue interests appropriate for their degree of training. In addition to basic readings and an interactive curriculum specifically tailored for their level of education, all learners will participate in conception, development, and implementation of various telehealth use cases throughout the health system, regional Accountable Care Organizations (ACOs), and large community groups. In addition to broad exposure to telehealth operations, learners will also be given the option to choose an area of focus be it administrative, clinical, or research.
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### Table 2. Academic Expectations

<table>
<thead>
<tr>
<th>Instructional Design</th>
<th>Simulation</th>
<th>Educational Tools</th>
<th>Elective</th>
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<tbody>
<tr>
<td>ACEP Teaching Fellowship</td>
<td>Weekly ED simulations</td>
<td>Ultrasound</td>
<td>Professionalism</td>
</tr>
<tr>
<td>GME, UME, &amp; FD</td>
<td>Harvard CMS Instructor Course</td>
<td>Telehealth</td>
<td>Administration</td>
</tr>
<tr>
<td>Theory Group</td>
<td>CHSE Certification</td>
<td>Research</td>
<td>Global Med</td>
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<tr>
<td>SSH / IMSH</td>
<td>IMSH Participation</td>
<td>Diversity</td>
<td></td>
</tr>
<tr>
<td>Funding for Masters Degree</td>
<td>In-Situ Simulation</td>
<td>Simulation Research</td>
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All learners will participate in all major telehealth-related work group meetings, including the monthly enterprise-wide leadership committee; weekly team strategy meetings; weekly innovation committee meetings; and biweekly research-in-progress meetings. They will receive formal training in provision of telehealth services, as well as participate as an instructor in telehealth training sessions.

Learners will spend 12-24 hours per week providing/observing telehealth care in a variety of use cases (i.e., virtual rounds, on-demand urgent care, and scheduled outpatient appointments) and performing follow-up surveys on select groups of patients/family receiving telehealth interventions.
Conclusion

Reimbursement and healthcare delivery models are changing from ones that have thrived in a fee for service model, to ones that are value based. Telehealth is an avenue to both improve access and deliver high value care in a patient-centered manner. Development of robust training models to assist tomorrow’s physicians in the care of patients is essential. We described one model that aims to train all individuals working within the delivery system, including providers, staff, residents, and students.

References


Readers interested in more information about any of our training opportunities should reach out to the JeffConnect team at jeffconnect@jefferson.edu
The cries for healthcare reform, or the reform of reform, will grow during the election year of 2016. This guarantees an ongoing national perseveration about whither, what, and how the provision of healthcare in America will transform. Stakeholders in the complex system of providing and paying for America’s healthcare have come to specialize in slicing off and manipulating sections of the system to further their own goals.

Politicians and the media, for their part, feed off simplification and the sensational flame-fanning that it enables. As complex technological, economic, and social forces reshape and transform the U.S. healthcare system, we need to move away from oversimplified and reductionist thinking, and we need to consider change in a holistic and systemic way in order to find possible interventions to improve the system. In other words, thinking more systemically and holistically about our system of healthcare only becomes more important in these times of change. Thinking in this way amounts to innovating by going back to the future, namely by employing older frameworks to see the current world both differently and, the authors argue, more productively.

Publisher’s Note: Part I of this article appears in this issue and Part II in the next. Part I will introduce the subject by presenting a sample of common viewpoints of healthcare in America and how to improve it before going on to begin the presentation of a systems perspective and how it might influence how we think about and therefore act to improve America’s healthcare system. Part II will further develop the systems perspective, revisit the initial list of remedies presented in Part I, and suggest guidance for how we might proceed from there.

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©Gregory P. Shea and Bruce Gresh, 2015; published by Mary Ann Liebert, Inc. This Open Access article is distributed under the terms of the Creative Commons Attribution Noncommercial License. (http://creativecommons.org/licenses/by-nc/4.0), which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.
Introduction

Consider the following quote concerning healthcare in America.

Adequate emphasis should be given to facilities that are particularly useful for prevention of diseases—mental as well as physical—and to the coordination of various kinds of facilities. It should be possible to go a long way toward knitting together facilities for prevention with facilities for cure, the large hospitals of medical centers with the smaller institutions of surrounding areas, the facilities for the civilian population with the facilities for veterans.

We offer two observations concerning this quote. First, it takes a systems perspective on healthcare. It speaks of the whole even as it speaks of major components such as prevention and cure of mental and physical ailments, various facilities, and civilian along with veteran populations. Second, Harry Truman spoke these words on November 19, 1945, seven months into his presidency when healthcare comprised 4% of America’s GDP, as opposed to more than 17% of America’s current GDP.

This article dusts off and reapplies that perspective to America’s healthcare today, going back to the future in an attempt to avoid Ambrose Bierce’s definition of hope, namely, “Hope, n. Desire and expectation rolled into one.” We respectfully rewrite this definition to fit more snugly the topic at hand: “The act, often repetitive and infectious, of expecting a desired and clearly more favorable future absent change of any sort on the part of the desirous and expectant.” We suggest that we need to change how we think about healthcare. Thinking affects how we see and thus how we act. We would benefit in particular from retaking a systems perspective, from going back to the future.

Section 1: A Popular Question and a Flawed, Almost As Popular, Answer

Q: Why does healthcare cost so much in America while ranking so low in international rankings?

A: It costs so much because it’s the best in the world. After all, people who are really sick with really bad diseases and maladies often choose to come to the United States for care if they can.
But: If this is the case, then why is it not supported by methodical international comparisons such as the Commonwealth Fund’s Mirror, Mirror on the Wall analysis, which ranks the United Kingdom much higher than the United States in effective care, safe care, coordinated care, and patient-centered care—while per capita healthcare spending in the United Kingdom is 40% of that in the United States?

Top U.S. hospitals and physicians provide highly specialized services that rank among the best in the world, but the United States lags behind many other countries in survival rates for many diseases, and the typical experience of U.S. healthcare consumers is variable quality, mediocre patient experience, and very high cost.

What are some of the key dynamics behind the U.S. dilemma of unsustainably high costs and poor performance? Let’s start with a bit of international context:

- In 2014, U.S. healthcare spending was 17.1% of GDP, compared to the OECD average of 8.9%.
- In 2013, U.S. life expectancy at birth was 78.8 years, compared to the OECD average of 80.5.
- The U.S. has fewer physicians per 1000 population (2.6) than the OECD average (3.3), and fewer hospital discharges per 1000 population (125) than the OECD average (156), but it has over twice the number of MRI exams per 1000 (107) than the OECD average (51), and over twice the per capita pharmaceutical spending ($1,034) than the OECD average ($517).

Nearly everyone reading this article most likely finds these numbers familiar—worth repeating and familiar. This article focuses on how we tend to understand and discuss what produces these numbers and the connection of “how” these numbers occur with “what” we recommend and with what will actually work.

Section 2: Elixirs in Good Standing and Abundant Supply

Remedies to the U.S. dilemma of unsustainably high costs and relatively poor performance abound, and they include the following, all of which are in play at the moment:

1. Provider consolidation will be good for you. It will bring the blessings of care coordination, economies of scale, and better care for lower costs.
2. We need to eliminate barriers to access and affordability, so that every American can receive access to world class health care at every point in his or her life. If we can provide services, we should.
3. The triple aim is the solution. We need to improve population health, decrease per capita expense, and improve the patient experience. That will solve our problems.

4. Health care consumers need skin in the game, and transparency will empower them and improve value dramatically. It will bring the power of the market to bear and drive providers toward efficiency and effectiveness.

5. We need more regulatory oversight of providers, insurers, as well as drug and device companies, and the government should use its purchasing power to keep costs in line.

We are all well experienced in hearing and in providing these answers. Yet, if they are the right ones, then why the rampant frustration? And why the continued and often frenzied recycling of finger pointing in the apparent hope of disabusing one another of folly? Ambrose Bierce provides a potentially useful perspective on our tail-chasing, finger-pointing folly, “Disabuse, v.t. To present your neighbor with another and better error than the one which he has deemed it advantageous to embrace.”

Let’s start by taking a more systemic perspective.

SECTION 3:
Toward a Systems Perspective

If we think about healthcare in America as a complex and dynamic system, then we forgo the comfort of easy sound bites and simple unidirectional causal thinking. In exchange, we can gain useful perspective on the ways in which policy choices and stakeholder actions might realistically play out over time. In this section, we will consider two important characteristics of complex systems and their applicability to healthcare.

Dynamic interconnectivity and feedback

The naturalist John Muir observed that “When we try to pick out anything by itself we find that it is bound fast by a thousand invisible cords that cannot be broken, to everything in the universe.” His observation referred to the natural world, but it also applies to most issues in healthcare. Consolidation in the hospital industry (Elixir 1 in the previous section), for example, has often been described as a path to economies of scale, more efficient allocation of resources, and, combined with the acquisition of physician practices, better coordination of care. Those claims, while not strongly supported by empirical evidence, also tend to ignore the potential ties to broader systemic effects, such as the interplay between hospital/health system consolidation and insurer consolidation.
This same pattern reappears with many complex issues—unidirectional causality and a lack of attention to other potential systemic connections and effects. As healthcare evolves and is transformed in complex ways, we need a more holistic and systemic paradigm for thinking about change. One way of creating, developing, and testing more systemic theories of issues like consolidation is to use diagrams that show potential causal relationships within systems. For example, a simple systems diagram of hospital consolidation might look something like Figure 1.

In this representation, hospital consolidation might lead to improved efficiency, but it might also lead to increased pricing power. The actual effect on hospital costs would depend upon the relative strength of consolidation on efficiency and pricing. In addition, increased hospital pricing power via consolidation might encourage increased insurer consolidation, leading to increased insurer pricing power. If the hospital consolidation effect is stronger on pricing power than on efficiency, then both the hospital and insurer consolidations might lead to higher costs.

This kind of systemic formulation of a complex issue can help focus research efforts (i.e., Is this model correct or not and how strong are the effects?), inform policy development, and guide strategy development by industry stakeholders. In addition, it can help us identify potential unintended consequences. The Patient Protection and Affordable Care Act (ACA), for example, encourages the coordination of care by aligning hospitals and physicians in accountable care organizations (ACOs). Providers have responded to this regulatory change by increased consolidation to gain scale for initiatives such as population health management and assumption of risk.
If consolidation does indeed have an impact on pricing as represented in Figure 1, then we might want to incorporate the effects of consolidation into the results that we expect from the ACA. Figure 2 shows the ACA as a response to the problem of unsustainable healthcare costs. It suggests that, if the ACA encourages consolidation, and if consolidation leads to increased pricing power by providers, then we may see an unintended consequence of the ACA become increased pricing power of providers. If the higher costs associated with increased provider pricing power exceed the savings achieved due to better care coordination, then the ultimate effect of the ACA could be rising costs.

The ACA, of course, touches many aspects of healthcare, and the benefits of better care coordination and greater access might outweigh any increased costs. Nevertheless, we ignore the potential unintended consequence of higher costs at our own peril, particularly since unsustainable healthcare costs were the raison d'être for the ACA. In systems thinking, the pattern of an intended outcome (such as better care coordination), being accompanied, and perhaps overshadowed, by a potential unintended consequence (such as higher costs due to greater provider pricing power) is sometimes referred to as a “fixes that fail” pattern.

Media sound bites and ideologically driven political arguments about the ACA will continue. However, the prominence of healthcare in the U.S. economy, and the importance of it in our day to day lives, suggests that

“ If the higher costs associated with increased provider pricing power exceed the savings achieved due to better care coordination, then the ultimate effect of the ACA could be rising costs.”

Figure 2: Affordable Care Act (ACA) reconsidered.
deliberate consideration of the systemic effects and potential unintended consequences should provide a more holistic (and effective) framework for evaluating the impact of this and other legislation. In addition, a systemic perspective can inform strategy development and identify business opportunities for numerous industry stakeholders.

While the consideration of potential unintended consequences can prove valuable, it also presents the practical problem of attempting to include second and third order effects into strategy analysis or policy development. This is complicated by another characteristic of complex systems—unclear boundaries.

**Unclear boundaries**

The often-cited international comparisons showing America’s extraordinarily high level of healthcare spending and poor performance on public health measures such as life expectancy suggest that Americans do not receive good value for the amount of money that they spend on healthcare. However, they may also suggest that we should consider broader social issues that influence health status in our analysis of healthcare spending. We need to consider explicitly the appropriateness and clarity of the boundaries we place around what we define as constituting “the system” under examination.

For example, in 2013, the life expectancy at birth was 72.3 years for black males and 76.7 for white males; the 4-year gap in 2013 was an improvement, but not a dramatic improvement, over the 6-year gap in 1960. Access and provision of healthcare may play a role in this difference, but a complex set of socioeconomic factors clearly plays a role as well. A simple systemic view of health outcome disparities might look something like the diagram in Figure 3.

In this diagram, “how people live their lives” represents the combined impact of the various social and economic factors that influence longevity. Those factors, in addition to influencing life expectancy, influence the consumption of, and spending on, medical care. The use of broad public health metrics such as life expectancy to judge the efficacy and effectiveness of spending on healthcare services may lead to overstating the role of medical care and understating the role of “how people live their lives.”

![Figure 3: Life expectancy.](image)
Similarly, overemphasis of the role of medical care on an outcome such as life expectancy may increase the risk of our allocating medical resources in a way that fails to improve health and that generates other unintended consequences. For example, if we frame diabetes as primarily a medical problem to be solved with medical interventions, we may divert attention away from lifestyle factors that influence diabetes. As a result, we may end up treating diabetes as an acute and expensive medical problem, rather than focusing on lifestyle interventions to prevent and/or control it in the early stages.

In short, the combination of unclear systems boundaries with dynamic interconnectivity and feedback produces a great deal of complexity and interacts with other characteristics of complex systems—such as nonlinear cause and effect, tensions among stakeholders, and difficult tradeoffs. These tradeoffs carry particular importance whenever we attempt to change a system. We will discuss these characteristics in Part II of this article.

Section 4: What Happens When We Try to Change a Complex System Without Consideration of the Complexity and Systemness?

Daniel Kahneman has observed that when people are presented with complex problems, they tend to solve simpler problems. Based on our own experience, we would also suggest that when people apply simple solutions to complex problems, the result often amounts to shifting or reallocating the burden from one part of the system to another.

Health insurance affordability, for example, is a longstanding problem in the United States, and the ACA addresses the problem by using health insurance exchanges and subsidies to expand coverage. Although decreasing the number of uninsured and providing better access to care certainly qualify as well-intentioned social goals, we still need to understand and address the root cause of the problem (very high costs) and ask whether the long-term effect of coverage expansion through subsidies solves the problem or makes it worse. Figure 4 shows the use of health insurance subsidies as a “shifting the burden” pattern. In this representation, the high cost of health insurance encourages the use of subsidies (a symptomatic fix), which in turn enables otherwise unsustainably high costs. More fundamental payment reform would be more complex and take much longer, so the reliance on subsidies, being easier, receives primary

![Figure 4: Addiction to subsidies?](image-url)
emphasis. At the same time, the provision of subsidies creates an addiction by numerous stakeholders (e.g., those insured through subsidies, providers who see a reduction in bad debt because more people are insured, insurers who can expand their markets, etc.). This shared addiction to subsidies generates combined stakeholder pressure to maintain them and decreases the urgency to make more complex and difficult payment reforms.

Given the above, the questions about how to change the system change along with the determination of the most likely foci of change. Which fundamental reforms might actually obviate the need for subsidies? How and when might subsidies be phased out? How will we deal with the problem of stakeholder addiction? Overall, what fundamentals drive the high cost of health insurance, and how can we influence them?

In addition, we might expect that in the absence of a systems perspective, emotionality makes clear thinking and effective intervention more difficult. Fragmented, partial thinking about complex systemic issues fosters shifting the blame and passing the buck. In this example, decreasing or eliminating subsidies, regardless of the presence or absence of fundamental payment reforms, is likely to elicit highly emotional responses by the various stakeholders, some of whom will almost certainly portray themselves as victims.

The resulting narrative will play out in a personalized and emotional tone: “If only they would do X, then all (or at least much more) would be fixed.” “X” can equal any one of various “greedy” or “careless” or “narrow-minded” stakeholders. “X” can equal focusing on a single variable such as utilization or price transparency. Or, “X” can equal adopting an orientation such as consumerism or meaningful use. These approaches, especially the first one of focusing on a given stakeholder, leads to personalization and opacity. Points and counterpoints fly. Emotions escalate and somehow what seemed clear turns cloudy. A large part of that turning occurs because the responsibility of a given player, significance of a variable, or impact of most orientations cannot match the overall power of the system. Much of that background noise, that acoustic cloudiness, comes from the system. It is, in effect, the other unnamed, unaccounted for variables washing out the impact of one stakeholder, a single variable, or a given reorientation.

Frustration mounts. The search for a scapegoat heightens. Whack-a-mole becomes a national sport. One more split screen appears filled with talking heads fighting for air time to highlight one aspect of but one surface behavior. Anxiety
grows and American voters and consumers of healthcare throw up their hands and return to trying to make the system as it exists work sufficiently well to care for their families without hobbling or even breaking them financially.

Questions such as what is the full cost and benefit or value of any given healthcare choice drift further from the national debate. For any of a myriad of conditions, what is, for example, the real value of a visit to an ER versus to an Urgi-center or a Skype consult? Should it be compared to an office visit or to having no medical attention and in the presence of what other variables configured in what way?

How might we go about thinking and improving a system as complex as American healthcare? Systems thinking stresses that much of what one sees follows from a collection of variables interacting. Identifying the variables and describing their interactions can increase our understanding and guide our actions. In the next issue, we will expand consideration of systems thinking principles and describe how they might inform strategy and policy.

Author Disclosure Statement

No financial conflicts of interest exist.

Notes

Best of the Web: Site Surfing

Think I for Internet. Websites on health care innovation and technology provide good resources. **HT WebWatch** will be your official guide, pointing out sites of interest and rating them. A bold idea.

**Cyclica *** [http://www.cyclicarx.com]

Big data meets big pharma with Cyclica, a company that’s using its proprietary software to rapidly identify potential protein–drug interactions. Coupling its novel software analytics to cloud computing through a partnership with IBM Research, Cyclica has the potential to revolutionize pharmaceutical research and development.

Website offers nice description of current challenges and Cyclica’s solutions, easy to navigate

Text-heavy design **Rating:** Very Good

**Kuveda **** [http://www.kuveda.com]

No two cancers are alike, and Kuveda is on the forefront of personalized medicine to help oncologists identify the best treatment plan based on the specific molecular profile of an individual patient’s tumor. Kuveda provides a specialized network analysis engine to rigorously analyze genomic and proteomic data in the context of a patient’s genomic profile in service of better-targeted therapies and improved outcomes.

Beautiful site, great deal of information for patients and oncologists

Nothing major **Rating:** Excellent

**Cocoon Biotech *** [www.cocoonbiotech.com]

Cocoon Biotech is taking inspiration from nature and is currently developing a technology for the intra-articular injection of silk proteins to treat osteoarthritis. The company’s website provides some general information about this innovative technology and a summary view of the product pipeline.

Nicely organized site, good design

Only brief overview of technology **Rating:** Very Good

**NeuroTrack *** [https://www.neurotrack.com]

Can eye movements predict the onset of Alzheimer’s disease? A substantial body of research suggests they can, and NeuroTrack is translating that research into a computer-based diagnostic tool that has the potential to transform detection and treatment of this devastating disease.

Primary research articles available for download from site

Pages are slow to load **Rating:** Very Good
**Twiage ★★★**
http://www.twiagemed.com

Twiage is pioneering mobile solutions for emergency responders and emergency departments when time is critical. With its HIPAA-compliant cloud-based platform, Twiage lets emergency responders relay patient videos, EKGs, and other real-time vital statistics to emergency department care teams while en route to the hospital.

- Website provides information for hospitals and EMS, embedded Twitter feed
- Only static screenshots of mobile platform provided

**Website**

Rating: Very Good

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**Diagnostics for All ★★★★★**
http://www.dfa.org/index.php

Diagnostics for All has its eyes set on transforming healthcare on the global scale through the development and deployment of technology. The website highlights the organization’s current projects, which span diagnostics, nutrition, telemedicine, and health monitoring.

- Provides information on mission, projects, and ways to get involved
- Nothing major

Rating: Excellent

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**Proteus ★★★**
http://www.proteus.com

It used to be the stuff of science fiction, but ingestible biosensors are now reality thanks to the pioneering patient-monitoring technology of Proteus. Sensor-enabled pills couple to a wearable patch that monitors medication intake and other vitals such as heart rate, rest, and blood pressure, and all of this information can be viewed by the patient via an accompanying app.

- Nice graphical design, good information on the technology
- Lacks news feed or other real-time updates like Twitter feed

Rating: Very Good

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**Editas ★★★**
http://editasmedicine.com

High-throughput, multiplexed genome editing technology could revolutionize healthcare, and Editas is well poised to be the trailblazer in that arena. The company is developing human therapeutics based on TALENs and the more recent CRISPR/Cas9 technologies, and links to posters and some published articles on these technologies are provided on the website.

- Links to scientific references, news, and career opportunities listed
- No general description of the technology for nonexperts

Rating: Very Good

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**DermTech ★★**
http://www.dermtech.com

A welcome breakthrough in diagnostic technology for anyone who has ever had a skin biopsy. DermTech provides an innovative, proprietary, patch-based method to extract RNA for genetic analysis of skin tissue. Their website provides general skin cancer facts and an overview of the technology and products.

- Highlights specific products for potential consumers
- Text-heavy

Rating: Good

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**Key**

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One More Thing...

Michael Hoad, MA,
Executive Editor

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