

Dr. John Halamka

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Margaret Flinter: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter a weekly show where we speak to the top thought leaders in health innovation, health policy, care delivery, and the great minds who are shaping the health care of the future. This week Mark and Margaret speak with Dr. John Halamka, Chief Information Officer at Beth Israel Deaconess Medical Center and Harvard Medical School advancing technologies that will facilitate true personalized medicine through wearables, genomics, artificial intelligence, and health IT.

Lori Robertson also checks in the Managing Editor of FactCheck.org and looks at misstatements spoken about health policy in the public domain separating the fake from the facts, and we end with a bright idea that's improving health and well-being in everyday lives. If you have comments, please e-mail us at [chcradio@chc1.com](mailto:chcradio@chc1.com) or find us on Facebook, Twitter, iTunes or wherever you listen to podcasts. You can also hear it by asking Alexa to play the program Conversations on Health Care. Now stay tuned for our interview with John Halamka Chief Information Officer at Beth Israel Deaconess and Harvard Medical School.

Mark Masselli: We're speaking today with Dr. John Halamka, Emergency Room Physician, Chief Information Officer since 1998 at Beth Israel Deaconess Medical Center in Boston and International Health Care Innovation Professor at the Harvard Medical School, where he oversees all educational research and administrative computing for 18000 faculty and 3000 students. He's also chairman of the New England Health Care Exchange Network and is co-chair of the HIT Standards Committee. Dr. Halamka writes extensively on Health Information Technology in his popular blog Life as a Healthcare CIO. He earned his Bachelors of Science at Stanford, his medical degree from UC San Francisco School of Medicine and his MS at Harvard Medical School. Dr. Halamka, welcome to Conversations on Health Care.

Dr. Halamka: Well, good morning.

Mark Masselli: Yeah, you recently launched this new venture called Health Technology Exploration Center which is seeking to leverage emerging technologies like artificial intelligence, telemedicine, blockchain in the health care industry; and I'm wondering if you could share with our listeners about the new incubator center and your plans to bring some of these tech innovations more rapidly to scale.

Dr. Halamka: Well, so having been in the Harvard system for 25 years, what you see is an ultimate learning laboratory. Thousands of faculty and wonderful students, patients, and data and a sense that we need to make health

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care better; and you see today in private industry wonderful technologies and deep learning and mobile and Cloud, but very often these larger companies don't have the domain expertise to actually test out their products in real health care environments and make sure they're useful. This notion of the health technology exploration center is to provide that learning laboratory. It's not as if we're going to create technologies to sell to the outside world, it's taking technologies from the outside world and bringing them into a lab.

Margaret Flinter: Well Dr. Halamka, you've said that if data interoperability is to improve than the standards have to improve first and as the co-chair of the HIT Standards Committee, you have said there are three key areas where we should be able to meaningfully improve the standards in health IT. I wonder if you could share those with us on what you've learned through your experience developing standards within your network, which standards you see as having the power to improve health data liquidity as well as data intelligence?

Dr. Halamka: The standards are built by consensus so that means a vote of a thousand to one is a tie. It can be very challenging to get international consensus. As I've worked over the last 15 years on these particular issues, I've tried to move us from what used to be something very specific and slightly arcane to something that would be more the standard that a Google or an Amazon would use to create an ecosystem of products. Today if you're an engineer working with Google or Amazon environment, you're using a set of standards called the Javascript Object Notation or JSON. That particular technique has now been incorporated into health care data interoperability using the Argonaut Project. The Argonaut Project basically says we're going to take the common kinds of data use in health care and make it so easy that a 26-year-old in their garage without health care domain expertise can write novel apps but there must be security. There are certain kinds of standards OAuth and OpenID that help us with security and making sure that only the right actors get access to your data. Then finally we continue to work on vocabularies. When I say high blood pressure, hypertension, and elevated blood pressure they all mean the same thing, but yet we need to make sure that our data flow is such that we actually understand what data we receive based on what the doctor or patient meant.

Mark Masselli: You know I've been thinking about the change that we've witnessed since the passage of the High Tech Act which allowed many members of our health care system to switch from paper to electronic health records in a fairly short time and the obligation here was to meet the standards of meaningful use. You've said that's placed too heavy a burden on clinicians who are overwhelmed by data requirements in their daily workflow and that to spur innovation that is truly going to be helpful. We need to scale back on some of the regulatory

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restrictions and let the market drive the next way of innovation, but also, you're looking in terms of these regulatory requirements that have been foisted upon the health care industry and you're quite concerned about it. Talk to us about that.

Dr. Halamka: Well certainly and so let me just tell you how it happened. As I was chairing these committees in Washington, the FDA says we're very concerned about implants and things with batteries that fail so we better at every visit have a doctor key in a universal device identifier for whatever implants you have and all of us said wow that sounds great. Then the Centers for Disease Control says Ebola is bad. Therefore we better document your travel history on every single encounter. Before you know it at the end of all of these deliberations, we ended up with 140 data elements that every clinician must record on every encounter while seeing a patient in 12 minutes, being empathetic, and never committing malpractice. It's not possible. Hence this sense that we need better technology it isn't just more clicks. What if Alexa with appropriate security listens to what a doctor and patient said and then recorded a chart. Okay well that would reduce burden, or what if we recognize that there are certain technologies emerging natural language processing that can help us look at text and get data from text. There are fewer check boxes and things for doctors to enter. I mean this is the sort of direction we need to go in getting to a result without having to tell the doctors how to do it giving the vendors the latitude to innovate.

Margaret Flinter: Well Dr. Halamka, I understand that your genome was only the second to be fully sequenced by the Human Genome Project. I believe you're known as patient number two, but as we strive towards more personalized medicine with efforts such as the All of Us, Precision Medicine Initiative at NIH, the Cancer Moonshot; describe the importance of the role of genomics.

Mark Masselli: We often hear these terms used today personalized medicine and precision medicine. Well, let me distinguish between those two for a moment. Now, if you read the New England Journal, what it says is stop doing prostate specific antigen testing on 56-year-old males because the last 10 years have not shown a reduction in sickness or death. But my genome suggests that I'm going to die of prostate cancer someday. Wait a minute, for me absolutely do that every year. That's a bit more precise. I hope that as we move forward with more and more people getting sequenced, the care plans and not just you're a 56-year-old male but it's here's what your genome says your risks are and therefore this is what we're going to do.

Mark Masselli: We're speaking today with Dr. John Halamka, Chief Information Officer at Beth Israel Deaconess Medical Center in Boston and International Health Care Innovation professor at the Harvard Medical

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School. Dr. Halamka, you are big proponent of telemedicine which is starting to gain traction as payers increase their willingness to reimburse providers for such service, and yet you say there are still challenges when it comes to clinicians practicing across state lines. You say the fastest route to realizing telemedicine promises to facilitate the clinician to clinician connection. I wonder if you could talk about the power of telemedicine as we imagine a more high functioning health system and how do we scale it up across the country to all regions within the country.

Dr. Halamka: I do 900 telemedicine consultations a year. I am credentialed by Harvard to practice telemedicine, telecare, and malpractice insured. What do I do? I am the nations expert on poisonous mushrooms and plants and so whenever a child or an adult has a poisonous measure or plant problem, poison control gets involved. I get typically an image sent to my iPhone. Here is the mushroom, here is the symptom, and then I will say that is this particular variety and this is the solution and we treat the patient, but here's the challenge. I am licensed to practice in Massachusetts. What if I suggest that a medication needs to be given immediately but I'm not licensed to practice in the state where the medication is given. This is where we just need to work on the regulatory framework. Can I use my Massachusetts licensure to ensure a medication that's given in North Dakota? Well, at the moment no. At the moment that's where it's a provider to provider consultation and the person who's licensed in North Dakota actually gives the medication but think about it at a low cost in real time you're getting to the nation's expert with the best advice. That is clearly something we want to do more of.

Margaret Flinter: I want to touch on another aspect of your work. You've -- as we've noted you're the International Healthcare Innovation Professor at Harvard and you're traveling the globe and you're coming in contact with disruptive innovations in care delivery, and then you get to come back to that giant talent pool in Cambridge of students. Tell us about the kind of innovations you've brought back to your students at Harvard that look exciting and promising to you.

Dr. Halamka: When you work in countries like Scotland or the Nordic countries Denmark or Sweden, what you see is a whole new range of possibilities. Here we have 330 million people in the United States, but you go to Scotland there are five. How many emergency department databases are there in the entire country of Scotland? One and so if you go to an emergency department, every doctor in every emergency department immediately knows who you are, what medications you're on, what allergies you have, what laboratories you have. So you look at the smaller countries and their agility and the ability to create data liquidity and you say can't we do this here. If you were born in Norway today, what would your medical record number

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be? It turns out it's 2018, 0813 0001. It's a date plus a birth order, and every citizen has their entire record for life consolidated around a single number and imagine the power for both care and analytics of doing that. These are the sorts of things technology and policy you see that you say I wish the United States would have as well.

Mark Masselli:

You really have this incredible sandbox that you're engaged in. You're sort of at this intersection of so many of these emerging trends the use of wearables, you have talked about the voice activation power perhaps of an Alexa, but you're also engaged in the work and the capability of Blockchain Technology. You've just launched a new publication blockchain in health care today. Still it's something that I think it mystifies many of us in terms of how it will work in the health care system and wondering how do you envision all these technologies serving as game changers in the health care landscape as we move forward.

Dr. Halamka:

I think blockchain is a public ledger right. It's not owned by a corporation. It's not owned by a government and it cannot be changed. Think of it as a blackboard where you can write once and never erase. Ask yourself well what if a patient sues a doctor and the attorney says give me the medical record. Well, the attorney may say that medical record has been altered or changed. It turns out we could use blockchain as a means of hosting not the medical record itself but an extract of the medical record. We call this a hash one-way mathematical transformation that can actually prove the medical record has never been altered or changed. Blockchain is great for audit trails, blockchain might be a good place to store patient consent. I'm not putting my medical record on the blockchain but here are my consent preferences on this public ledger that is unalterable, and we could all consult that ledger whenever your medical record is exchanged. Some good possibilities. On Internet of Things on connected devices, I think increasingly as we move away from fee for service, you're going to get more home care. Getting information from your home what's your blood pressure, what's your pulse, what's your glucose, how is your sleep and using that with your consent to keep you healthy in your home is incredibly important. Yes in my home, my sleep is monitored, my weight is monitored, my blood pressure is monitored, and all that data is sent to my clinician and used as part of my total care program.

Margaret Flinter:

Well Dr. Halamka, you've said that the need for inpatient hospital care is going to drop dramatically in the coming decades and that we'll have to start thinking about how we're going to repurpose all those hospital beds and very sophisticated organizations for a different use in the future. Tell us what you're seeing in that vision.

Dr. Halamka:

Sure. I'm an emergency physician and so of course you're going to

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need emergency departments and ICUs for people who have heart attacks or strokes or get hit by cars, but the kinds of treatments we're delivering in what are called the ward beds, the standard unmonitored part of the hospital, can absolutely be delivered in the home. Why do we need you in a hospital if you're just getting a dose of antibiotics a day or a couple of medications to reduce the amount of water in your body if you have congestive heart failure? That sort of thing can be delivered in the home with appropriate monitoring. I can imagine the organizations of the future will have virtual lists. These are individual clinicians that are monitoring patients in their homes using appropriate technology and ensuring the kind of interventions that would have been made in a hospital bed. We'll have emergency departments, ICUs, and virtual lists.

Mark Masselli: Well that's very exciting. I wonder if you could just pull the thread a little. We talked a little earlier about the Alexas in the world are, are you doing any work in that area? Do you know of anybody who's doing work both to support patients, support clinicians or is it still too new of an emerging field?

Dr. Halamka: Well, here a little -- should we try something a little dangerous?

Mark Masselli: Yes.

Dr. Halamka: Alexa, ask BIDMC, what is my care plan for today?

Alexa: I am not sure.

Dr. Halamka: Well here you know, I must have been a little too close to the phone and the mike. We've done 30 Alexa skills and those are such things as when's my next dose of medication, when will my doctor see me, get a nurse; these sorts of things and they work really quite well. Alexa at the moment isn't covered by a business associate agreement. Amazon does by the end of the year plan to have business associate agreement coverage, so you can actually transmit protected health care information over Alexa but for the moment the experiments we have done really aren't transferring things like your name or things that would be used to personally identify you. We probably are safe with the early experiments but huge potential for the technology.

Mark Masselli: Try Alexa one more time. It may have just been -- just waking up.

Dr. Halamka: Yeah sure.

Mark Masselli: Alexa, ask BIDMC what's my care plan for today?

Alexa: Your care plan for today includes at 8 a.m. a blood test to measure a glucose level and blood count, at 1:30 p.m. an x-ray, at 4:45 p.m. your doctor will be checking in.

Dr. Halamka: Well there you go.

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Mark Masselli: Well that is perfect. That's a great utility.

Margaret Flinter: Absolutely. We've been speaking today with Dr. John Halamka Chief Information Officer at Beth Israel Deaconess Medical Center in Boston and International Healthcare Innovation Professor at the Harvard Medical School. You can learn more about his work by going to his blog Life as a Healthcare CIO at [geekdoctor.blogspot.com](http://geekdoctor.blogspot.com) and follow him on Twitter @jhalamka. Dr. Halamka, thank you so much for your contributions to advancing health information technology for your creativity and your enthusiasm for the future and for joining us today on Conversations on Health Care.

Dr. Halamka: Well my pleasure, thanks so much.

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Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award-winning journalist and Managing Editor of Factcheck.org a nonpartisan, nonprofit consumer advocate for voters that aim to reduce the level of deception in U.S. politics. Lori, what have you got for us this week?

Lori Robertson: Senator Bernie Sanders and Alexandria Ocasio-Cortez the Democratic nominee for New York's 14th Congressional District seat are pointing to a study they say shows Medicare for All would save Americans money, but the author says those comments appear to show a misunderstanding of his study. The study is based on the language of a Medicare for all bills proposed by Sanders last year that makes assumptions about reduced administrative and drug costs as well as deeply reduced reimbursement rates to health care providers under Universal Health Care System. The study's author believes those assumptions about savings are unrealistic. The study is a working paper written by Charles Blahous of the Mercatus Center at George Mason University. The center gets some of its funding from the libertarian Koch brothers and Sanders and Ocasio-Cortez both referenced that in their claims. The top line of the paper's abstract says that Sanders' Medicare for All bill "would under conservative estimates increase federal budget commitments by approximately \$32.6 trillion during its first 10 years of full implementation."

That's what the government would spend, not total health care expenditures. Sanders' office points to other figures that show that between 2022 and 2031, the currently projected cost of health care expenditures in the U.S. of \$59.4 trillion would dip to \$57.6 trillion under the Medicare for All plan. That's how Sanders arrives at his claim that the study shows that Medicare for All would save the American people 2 trillion over a 10-year period. The study's author, however, told us he doesn't think that's realistic. One reason is that

Sanders' bill says health care providers will be reimbursed for patients at Medicare payment rates projected by the Centers for Medicare and Medicaid Services to be roughly 40% lower than those paid by private insurers. The study which used the text of Sanders' Bill to guide assumptions cautions that the assumption is suspect. The report provided an alternative scenario estimate that showed a net increase in health care spending. We're not suggesting the assumptions made in the Sanders Bill are wrong, but they aren't the assumptions of the Mercatus Center study and that's my fact check for this week. I'm Lori Robertson Managing Editor of factcheck.org.

Margaret Flinter: Factcheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like checked, e-mail us at [chcradio.com](mailto:chcradio.com). We'll have factcheck.org's Lori Robertson and check it out for you here on Conversations on Health Care.

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Mark Masselli: Each week conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Charles Slaughter learned the value of entrepreneurship from an early age first as a paper boy growing up in Connecticut, later he took the passion globally as a field organizer for micro finance company. Then came his first successful venture TravelSmith a \$100 million online clothing supply company for serious global travelers. His travels also showed him another stark reality, the number of children dying in third world countries from treatable diseases due to lack of access to basic medicine.

Charles Slaughter: There's only three or four sort of major causes of this, the real disease malaria and pneumonia. What is shocking is that all of those things can be addressed extremely low cost, but the barrier is effectively delivering what we know works.

Mark Masselli: Chuck Slaughter speaking in a school foundation video highlighting his work. He wondered how we could put the power of healing in the hands of villagers themselves and he realized the successful model already existed.

Charles Slaughter: I'm thinking about that, I go wham and hold the phone isn't there a business model that excels at that? You start to think about Amway and Avon and Tupperware. For the research I actually enrolled as an Avon lady and tried to learn it from the inside.

Mark Masselli: He founded Living Goods a company that sells not makeup but lifesaving essentials like drugs to treat malaria and diarrhea.

Charles Slaughter: We recruit, train, and support networks of community health



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promoters who go door to door every day teaching families how to improve their health and wealth. Making a living by selling high impact health products like simple treatments for malaria and diarrhea, healthy fortified foods. Every agent works as an entrepreneur under Living Goods brand and now they get a Smartphone. That Smartphone has a Living Goods designed application on it that can help them with a guided diagnosis of childhood diseases that enables them to register and support pregnant women and reminds them to follow up.

Mark Masselli: There are now Living Good sale associates serving the needs of some 5 million residents through Sub-Saharan Africa and the results are quite impressive. In some cases, infant and child mortality is down 25% in the communities being served. Living Goods a simple grassroots business model facilitating the distribution of low cost life saving materials generating income while saving lives. Now, that's a bright idea.

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Mark Masselli: You've been listening to Conversations on Health Care. I am Mark Masselli.

Margaret Flinter: I'm Margaret Flinter.

Mark Masselli: Peace and health.

Margaret Flinter: Conversations on Health Care is recorded at WESU at Wesleyan University streaming live at [CHCRadio.com](http://CHCRadio.com), iTunes, or wherever you listen to podcasts. If you have comments, please e-mail us at [chcradio@chc1.com](mailto:chcradio@chc1.com) or find us on Facebook or Twitter. We love hearing from you. This show is brought to you by the Community Health Center.