

Mark Masselli: This is Conversations on Health Care. I am Mark Masselli.

Margaret Flinter: And I am Margaret Flinter.

Mark Masselli: Well Margaret, the Super Bowl is behind us. The Baltimore Ravens are the national champions. And there were some mighty fine commercials to watch.

Margaret Flinter: There were, and it was pretty exciting when that blackout happened as well, even at the Super Bowl. And I was struck of course Mark, I think everybody in health care is by the power of the hits these athletes take and so pleased to see the NFL is going to try and tackle the rampant problem of head injury, too many blows to the head and neck.

Mark Masselli: And also President Obama spoke upon that matter before the Super Bowl so we hope it brings everyone's attention to a very serious crisis.

Margaret Flinter: Of course, there is the threat of thousands of former players filing lawsuits against the NFL for life-altering injury sustained on the field. But it's all about prevention and research and I am pleased to see the league is partnering with GE to research and develop better diagnostic tools.

Mark Masselli: And hopefully, they will find better ways to reduce these injuries to athletes.

Margaret Flinter: So from the battle on the gridiron to the battle over health care funding and let's predict that President Obama may be relenting on the call to reduce Medicare spending as one strategy to address budget issues.

Mark Masselli: The entitlement discussion is very likely going to dominate the budget debate. But I saw something else regarding the health care law that will likely be the discussion at many state levels. A report out this week looked across the country, and 39 states have no laws in place protecting consumer rights pertaining to the Affordable Care Act.

Margaret Flinter: The Commonwealth Fund issued the report cited this lack of consumer protection laws for people seeking insurance, especially the provision that guarantees coverage even if they have preexisting conditions. And I guess I am surprised, I didn't realize the states had to act on this one.

Mark Masselli: They do. And states like California, Connecticut, Maryland, Rhode Island, Oregon, not surprisingly, are the states ahead of the curve in terms of setting up insurance exchanges, which many states are opting not to do.

Margaret Flinter: So it appears once again the federal government will have to step in with some protective measures for those states that don't have these consumer protection laws on their books.

Mark Masselli: And as we get the health law off the ground, this year I suspect we will see more states moving towards adoption of the law provisions in the future.

Margaret Flinter: And speaking of the future Mark, our guest today has a particular focus on the future and what health care is likely to look like.

Mark Masselli: Dr. Daniel Kraft is the Executive Director of FutureMed at Singularity University, analyzing how advances in technology are going to change the way we consume and deliver health care.

Margaret Flinter: And some of the best innovators in the industry are gathered this week at FutureMed 2013 so lots of exciting new ideas should emerge from the gathering.

Mark Masselli: Lori Robertson checks in with FactCheck.org but no matter what the topic, you can hear all of our shows by Googling CHC Radio.

Margaret Flinter: And as always, if you have comments, email us at [www.chcradio.com](http://www.chcradio.com) or find us on Facebook or Twitter because we love to hear from you. Now we will get to our interview with Daniel Kraft in just a moment.

Mark Masselli: But first, here is our producer Marianne O'Hare with this week's Headline News.

Marianne O'Hare: I am Marianne O'Hare with these Health Care Headlines. The Obama Administration attempted to quell the ongoing controversy surrounding the provision of the Affordable Care Act that all women be provided contraception free of charge by their health plans. With over 50 lawsuits aimed at challenging the law's provision, mostly from religious institutions, the administration offered a compromise last week. The institutions filing objections due to religious beliefs would be exempt themselves from funding contraception for employees but even self-insured institutions like the Catholic church would have to hire a third party insurer to handle the contraception issue. The offer was meant as an olive branch to smooth over vociferous objection to that aspect of the health care law but it's not being well-received by a number of the parties involved. A lawyer representing those objecting the ruling say that for-profit family-owned private companies should also reserve the right to object to that mandate.

As the budget debate looms in Congress, it appears Medicaid will be left relatively unscathed. The national health plan that covers one in five Americans living at or near the poverty line will see their access to Medicaid and CHIP

continue unabated. Medicare had been included in the list of programs up for discussion in the deficit reduction talks.

And in the progress, not perfection category, kids are making ever so slight progress in some parts of the nation where obesity is concerned. In cities like New York and Philadelphia, where aggressive prevention and nutrition programs are in place, there has been a slight reversal in the numbers of kids determined to be obese or overweight. And now, snacks sold in US schools will need to be lower in fat, salt and sugar and include more nutritious items like fruits, vegetables and whole grains under new standards proposed by the US Department of Agriculture. The proposal calls for a limit of 200 calories on items sold during the school day at vending machines or other venues outside the school lunch line.

I am Marianne O'Hare with these Health Care Headlines.

Mark Masselli: We are speaking today with Dr. Daniel Kraft, Chair of the Medicine track at Singularity University at NASA-Ames in Mountain View, California in the heart of Silicon Valley. He is the Executive Director and Curator for FutureMed, a program which explores convergent, exponentially developing technologies and their potential in biomedicine and health care. Both an internist and pediatrician specializing in hematology oncology and stem cell transplantation, Dr. Kraft is also founder in telemedicine, an organization focusing on promoting data-driven personalized medicine. Dr. Kraft received his medical and scientific training at Harvard and Stanford. Dr. Kraft, welcome to Conversations on Health Care.

Dr. Daniel Kraft: Great to be here, thanks.

Mark Masselli: I am fascinated with the concept of Singularity University founded by Ray Kurzweil and some of the world's top thought leaders in innovation and disruptive technologies across many disciplines. Your mission is to assemble, educate and inspire leaders who can facilitate the development of exponentially advancing technologies and apply these tools to address humanity's grand challenges. Give us an idea of some of the most important disruptive technologies you are focusing on both in medicine and biotechnology.

Dr. Daniel Kraft: Well, I think one of the aims of Singularity University and the FutureMed program is to get it out of any one sort of technology bucket and mix them together. So one of the relatively new things we do here is get folks out of their usual silo, whether it's in any technology bucket or academic field, and it's really where these things are coming together and converging whether that's (6:38 inaudible) 3D printing which is starting to impact the world of health care from printing prosthetics to organs to world of Big Data in IT, and the world of mobile is exploding and the world of digital health care and mobile health care. These things coming together across multiple disciplines as you mentioned

where things get exciting and help inspire people to see where the puck is going and what the potentials are to reinvent major fields, including elements of health and biomedicine.

Margaret Flinter: Well, let's talk for a moment, if we can, maybe about the medicine piece or the medical piece because one of the many roles you play at Singularity is the executive director of the FutureMed program where each year, I understand, you bring together some of the most forward-thinking minds, the cutting-edge people we would think in medicine and biotech. Tell us more about the mission of FutureMed specifically. And can you maybe give us a little bit of insight into the topics that you expect to dominate this year's FutureMed 2013?

Dr. Daniel Kraft: Sure. Here at Singularity University, we every quarter or so run executive program to bring folks from different fields together. And one of the areas that really turns people on from different arenas is health and medicine with how technology touches upon that. So we decided a couple of years ago given all that interest to create a program called FutureMed, and what's interesting there is that instead of the usual medical conferences (7:56 inaudible) go to hematologist; I go to the American Society of Hematology, or cardiologist, I will go to the American Society of Cardiology, is we get people mixed together from different fields and with different perspectives on both the clinical arena, pharma, data, IT and beyond.

And the mission is really to get people thinking a bit differently and to cross-fertilize and to recognize how fast certain technologies are moving. See iPad, for example, now about 70% penetrations from the physicians in the U.S. owning those, and that's changing the way we are doing health care. And so at FutureMed, we bring all these elements together to give people a bit of deep dive in education into what's happening and let them think about how they might reinvent elements of health and medicine.

So some of the hot topics, for example, thought leaders will bring in will be the lead physicians from IBM Watson, looking at where Artificial Intelligence can take health care and where it's already impacting our ability to leverage all these masses of information and smart ways for diagnostics and therapeutic decisions. We are bringing in well-known investors the Vinod Khosla who co-founded Sun Microsystems but is looking at how – and is funding smaller companies that are part of this now new set of milieu of startups and devices that when they come together have the power to really shift the needle in the way that physicians and patients deal with medical data, how we collect it, how we interpret it.

And one of the hot areas that I mentioned that we have some focus on is the world of **OMAX** in personalized medicine. One of the fields that's changing exponentially is that of the speed and price sequencing genome, that's now about \$1,000 and can be done about a day. And that has massive implications to have clinicians and individuals understand their own information but also

challenges about how we bring that into the clinical landscape, how do the primary care doctors take your pharmacogenetics, for example, and make that useful when they prescribe a drug or therapy.

Mark Masselli: And you really walk through that waterfront of changes that are going on in technology and diagnosis and in health care. (10:00 Inaudible) sort of the paradigm that the stethoscope which remained relatively unchanged for over a century, and you say that your stethoscope is now digital and you know that there is an app for that. But it's a paradigm, and it's reflective of the overall trend in medicine where technology is making everything faster, smaller, cheaper and better. And while technology is certainly disrupting the status quo, tell us how you are addressing the problem of really what seems to be intransigence within the health care community to adapt technology.

Dr. Daniel Kraft: Sure. Well, the medical community in the health care system is really multiple systems, and too often, the incentives are sort of misaligned. And the challenge with some of these new technologies is “who is going to pay for it,” whether that’s a digital stethoscope or a new app that can help prevent someone who is pre-diabetic or moving into diabetes by better managing their exercise and their blood sugars and being socially connected. And we can talk a bit more about the big changes in health care economics. But today, we spend about 80% of our health care dollars on those who are chronically sick or in the last couple years of life.

There is a bit of a shift now to rewarding, incentives, and to keep people healthier and more on top of their early diagnoses or disease days. And that can have a huge paradigm shift. And when a physician now – let’s say a primary physician is rewarded for keeping their patients with good blood pressure control or good blood sugars for the diabetics, that changes the needle. It can take devices now like if you walk into a Best Buy or an Apple Store, you can see a shelf now of consumer health care products whether their blood pressure cuffs that connect to your smartphone and can transmit blood pressure numbers or glucometers that are built into attachments for iPhones or others, or this new (11:41 inaudible) of quantified self devices that can help track exercise.

And as those things start to show their value and big payers like Medicare or some of the big insurers see the value on that, they can get start rewarding those, and that’s where the shift starts to happen, and that’s turning to happen as some of the big payers are even buying app companies and integrating them into their bigger plans. And some larger associations like Kaiser or the **DA** where they are both the payer and the player can start to pilot these programs and see the value of, for example, a connected blood pressure cuff and take things forward.

Margaret Flinter: It's so interesting because you lay that out so clearly, and we recognize there is a slew of data gathering devices that are out there; we have

seen them at the recent consumer electronics shows that have apps and gadgets for all kinds of metric gathering. But where we still seem to lag is having a system that actually collects all that personalized data into a cohesive picture of where we are as patients and what we would call actionable data for their primary care teams or the specialist teams, what people can actually respond to. So what's in your crystal ball in terms of a unified path that might pull all these technological advances and diagnostics together?

Dr. Daniel Kraft: Well, one of the big challenges in health care is that often the data collected is not on the same platform or language. And one of the opportunities we have now with still pretty much consumer devices that I am wearing, for example, a Basis watch that measures my motion and activity as well as my heart rate or there is ones that measure your sleep, the challenge is they are creating huge amounts of data, and they are all from different streams and different buckets. The trick, as you mentioned, is to pull all together.

I like to use the analogy of the modern car which has hundreds or sometimes thousands of different sensors, one on each tire, piston, oil, etc. And as the driver, you don't care about the pressure in piston #3. You care about when you check, engine light comes on, and then hopefully you bring it to mechanic before the engine blows up or you blow a gas kit. And they can help plug in the diagnostics and look at all the data from your engine and prevent major mechanical issue. Or God forbid, if you crash in your car so many systems like the UnStar system or call 911.

And I think we are starting to see startups and entrepreneurs and bigger systems start to integrate all these data streams that you have your own set of check engine light for the body, kind of like the UnStar for the body. And as new players are opening up their APIs so people can share these data streams, I think we are going to see this thing integrated, and that's going to, frankly, require smart algorithms, learning engines, Artificial Intelligence, which I like to actually call intelligence augmentation, so that you as an individual or as a caregiver or as a physician can not leave through a pile of genetic code, but it integrates that for you and says, "Well, this patient has this genotype, has had this activity. We know they check at the gym two times but McDonald's six times, and that they haven't been sleeping as well as normal. Maybe we need to adjust this medicine based on their genetics and their activity and their diet."

And as we start to crowdsource all that, I think we have a huge amount of opportunity, and I think we can soon sign up to be data donors, health data donors. And by pulling these information streams together from hospitals, individuals, practices, we can get start to have a dashboard for ourselves as well as our practices and a whole population.

Mark Masselli: We are speaking today with Dr. Daniel Kraft, the Executive Director of FutureMed and Chair of the Medical Track at Singularity University in

Mountain View, California, which is committed to leveraging the technology to improve health care and biomedicine. Dr. Kraft, let's pull the trigger a little more on your futuristic vision of health care, and I am particularly interested in one of the seminars at FutureMed, and that is how to identify a need, develop their prototype, then go to the marketplace. Currently, standard from bench side to bedside is around 15 years in the drug research protocol arena, almost sort of the wild west of innovation that's going on now. How do you advise today's biotech developers to navigate these new orders?

Dr. Daniel Kraft: Well, I think partly it's bringing together different parties. I think we are seeing a new generation of accelerators and incubators. One of them is Rock Health which I advise up in San Francisco bringing in new thought leaders and innovators from outside of health care, people from IT and gaming and people who build Facebook platforms and consumer devices. And the challenge and opportunity is for them to really understand what the unmet need is. I was fortunate as a fellow at Stanford to go through the Biodesign program, and it was starting up about a decade ago. And the key thing really is to understand the unmet need, to spend time in the clinic, understand what drug or therapy is needed, what that device is going to do.

We used to require a million-dollar lab. It can now be done almost in your garage, whether that's with synthetic biology or 3D printers to build early prototypes. There is the ability to now innovate more quickly and access some of this big data that's part of the NIH repositories, and finally to understand where the puck is moving. It's like you are building a system that keeps some of these technologies in mind, if we are going to have a \$100 genome in a couple of years, should your database have a space for that and then finally understanding the incentives for the physician, for the patient for the payer, so that the solution you are building ends up creating value. It should be built for when we have the iPad 7 and the low cost genomics and sequencing available to almost all of us.

Margaret Flinter: Daniel, I am still stuck with the image in my mind of how much easier health care would be if the check engine light came out for all of our patients. But in all seriousness, I want to talk about the costs in health care for a minute. We have just had a report that for the third year in row, the actual trend in the rise of health care costs has been the slowest rise since we started keeping track. So clearly, some things are moving in the right direction. What's the focus in terms of looking at the impact overall of this advancement of faster, smaller, cheaper, better technologies? Looking at that, where is the creative work going on there in understanding the impact on cost?

Dr. Daniel Kraft: Well, part of it is being leveraged by the digitization of health care data, Electronic Medical Records which have been very expensive to implement, unless you have – on our faculty this year, (17:31 Inaudible) who is the head of the UNC who I was the resident with at Mass General, and they are laying some of the groundwork, some of these expensive tools to put in

meaningful use, and Electronic Medical Records have some certain costs and challenges. But as we start to have more connected health care, when we can have that, what I would like to call, (17:49 inaudible) medicine where there is that check engine light helping you pick up cancer diagnosis or signs of heading towards a stroke or heart attack earlier, you can save massive amounts of dollars downstream.

So I think we look where again is the puck going with these technologies, where do they start to touch each other and enable us to reinvent things. For many of us, it almost seems (18:10 inaudible) to go and rent a video or a CD from a video store. Now it's streaming. The way we take photos is dramatically changed in the last decade. How we read, how we get books has all dramatically shifted and disrupted entire field. That's starting to happen in health care whether that's sort of e-dermatology; it's starting to happen with telemedicine where visits don't require a three-hour wait. Those are all (18:34 inaudible) coming together. And as the incentives again shift, if you can show to your insurer that you quit smoking, that you are going to the gym, that you are burning these many calories, and you are doing 10,000 steps a day, that can incentivize lowering your premium.

If we can start to leverage some of these tools together in smart ways and integrate them as you mentioned, we have the opportunity to start focusing on the prevention and not where we spend most of our dollars now in the super high tech end where folks have already had the stroke of the heart attack, the late stage cancer diagnosis. So it's no one piece; it's all those together. And what we hope to do at FutureMed and Singularity University is start to open people's eyes to the piece of change, the opportunities and challenges and how they can reinvent some elements of traditional health care.

Margaret Flinter: We have been speaking today with Dr. Daniel Kraft, the Executive Director of FutureMed and Chair of the Medicine Track at Singularity University at the NASA-Ames Campus in Silicon Valley. You can find out more about the work they do by going to [Singularityu.org](http://Singularityu.org) or to [Futuremed2020.com](http://Futuremed2020.com). Dr. Kraft, thank you so much for joining us on Conversations on Health Care today.

Dr. Daniel Kraft: My pleasure. Thank you.

Mark Masselli: At Conversations on Health Care, we want our audience to be truly a minnow when it comes to the facts about Healthcare Reform and policy. Lori Robertson is an award-winning journalist and managing editor of [FactCheck.org](http://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: Well, Mark and Margaret, we are continuing to see many claims being made about gun control, a public health issue. In particular, the 1994 Assault Weapons Ban has taken center stage. Both sides in this debate are cherry-picking portions of academic reports on that ban. The CEO of the National Rifle Association Wayne LaPierre told the senate committee that the ban “had no impact on lowering crime.” But the study, as you **cited**, said it was too soon to make a definitive assessment of the ban’s impact. On the democratic side, Senator Dianne Feinstein who recently introduced new legislation banning the assault weapons said the old law did reduce crime. Well, that’s wrong, too. The study said it could not conclude that the ban was responsible for a national drop in gun violence.

Both sides are fighting a series of three studies that concluded with the 2004 report on the ban which lasted from 1994 to 2004 and banned the manufacture of many firearms. Any pre-ban assault weapons were grandfathered in, meaning there were still an estimated 1.5 million such weapons in circulation. The studies said that the ban had mixed results. Crimes involving assault weapons did decline, but there was an increase in the use of other guns. The research found it was simply “premature” to make definitive assessments of the ban’s impact.

The author of the study recently said the ban might have modestly reduced shootings if it had lasted longer, but the impact would be modest. Assault weapons were used in only 2% of gun crimes before the ban. And that's my FactCheck for this week. I am 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 would like checked, email us at [Chcradio.com](mailto:Chcradio.com), we will have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

Each week, Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. When Piya Sorcar was a graduate student in public health at Stanford University, a trip to India changed her whole perspective. In spite of the massive efforts underway to curb the spread of HIV and AIDS, 2.5 million people are still being infected around the globe every year, and she realized that many of the barriers to properly educating the public were cultural in nature.

Piya Sorcar: Because of the taboos and because of the stigma, HIV is extremely difficult to talk about, let alone, teach about, especially in certain parts of the world. The knowledge levels still remain pretty low.

Margaret Flinter: And in many parts of India, sex education is banned. That set Sorcar on a four-year quest to perfect the training materials being used by

multiple health workers in the field. And she discovered that because of taboos, the education videos had to be animated much more simply.

Piya Sorcar: We have explicit images which are extremely clear. However, a lot of educators don't want to use these pictures. Students feel uncomfortable using these kinds of pictures. But even more importantly, we know that when you are uncomfortable that that limits learning. And in many parts of the world where sex education is banned or it's difficult to talk about AIDS education, such pictures are actually not allowed.

Margaret Flinter: And she also found that translating the copy into different languages could completely alter the meaning of the words. So they set out to ensure that translations were fully vetted and cross-referenced before being deployed.

Piya Sorcar: And you find all these problems in your original translation. So then you go back to the translation, make corrections there and then create yet another back translation. You do this over and over and over until your final English translation is very similar to your original English translation.

Margaret Flinter: Sorcar took that four years of research on creating more effective AIDS training videos and launched TeachAIDS. Her videos have been translated into 30 languages, are deployed on the ground in 70 countries and are being utilized by 180 non-governmental organizations on the ground, trying to stem the spread of AIDS. And each video is delivered in the vernacular of the nation where it's being shared.

**(Video clip)**

Margaret Flinter: She hopes to deploy the free video program to the top 50 nations in the world who have a million or more people living with HIV AIDS. A simple, well-researched video designed to be specific to all end-users and the cultures in which they live, now that's a bright idea.

This is Conversations on Health Care; I am Margaret Flinter.

Mark Masselli: And I am Mark Masselli. Peace and health.

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