

[Music]

Female: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter, a 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. Daniel Kraft Chair of the XPRIZE Pandemic Alliance Task Force, a coalition of 70 organizations, universities, NGOs, startups and corporations that are seeking to catalyze the dramatic amount of research going on around COVID-19. They're holding competitions for improvements on everything from rapid testing technology to building a better mask.

Lori Robertson also checks in, Managing Editor of FactCheck.org looks at misstatements spoken about health policy in the public domain, separating the fake from the facts. We end with a bright idea that's improving health and wellbeing in everyday lives. If you have comments please e-mail us at chcradio@chc1.com or find us on Facebook, Twitter, or wherever you listen to podcast. You can also hear us by asking Alexa to play the program Conversations on Health Care. Now stay tuned for an interview with Dr. Daniel Kraft here on Conversations on Health Care.

Mark Masselli: We're speaking today with Dr. Daniel Kraft Chair of the XPRIZE Pandemic Alliance Task Force seeking radical solutions to COVID-19 and future pandemics. Dr. Kraft is an oncologist inventor, entrepreneur and founder of the Exponential Medicine Conference which seeks to explore the potential of technologies to improve biomedicine and health care. He's also a Chair of Medicine at Singularity University.

Margaret Flinter: Dr. Kraft is an inaugural member of the Aspen Institute's Health Innovation Fellowship Program, he has launched several entities including Digital.Health in telemedicine and MarrowMiner, an FDA approved device for marrow harvesting. He's published numerous papers, books, won many awards and distinctions, including 40 smartest people in health care. Dr. Kraft, welcome back to Conversations on Health Care, it's been a while.

Dr. Daniel Kraft: Thanks for having me back.

Mark Masselli: Yeah. I think it's been seven years, and you caught our attention back then as we were looking at the XPRIZE competition. The challenge around the Tricorder competition being Trekkies, we enjoyed the sort of framing up of the opportunity followed. I think there were a family that might have won that, it was kind of exciting. You're back at it again, and certainly around the pandemic. I've been thinking how exciting it is for getting the seriousness of the pandemic of all of this research that's going on and sort of been thinking about what other

types of discoveries might we see out of this real focus on trying to stand up new platforms, the sort of all the collaboration goes on. Now you have a new role as Chair of the XPRIZE Pandemic Alliance Task Force competition. Maybe tell us a little bit about that, what you're hoping to find and how big is this collaboration?

Dr. Daniel Kraft: Thanks. The idea around the XPRIZE Pandemic Alliance is that one of the silver linings of this horrible pandemic is the amount of innovation, collaboration and ideas and solutions that are emerging. The challenge also there could be a thousand flowers blooming, and thousand flowers aren't helpful, you need one or two solutions that actually work. Part of the goal of the Alliance which is made up of 70 plus organizations, from NGOs, universities, to big and small startups and major organizations is to help collaborate, find the challenges and help foster the solutions and catalyze them to impact whether that's in testing, diagnostics, therapy, education and beyond.

One thing that's emerged out of the Pandemic Alliance into that key unmet needs is around testing, and that's one of our largest new initiatives that have launched. For folks who are listening or haven't been familiar with the XPRIZE, the idea is that often you can help speed and incentivize something with a prize model. Charles Lindbergh even crossed the Atlantic to win a prize, and there have been other XPRIZES, but the sort of model is quite effective. The Alliance itself is not all about prizes, but again, bringing smart entities and organizations together to help move things faster.

Margaret Flinter: Well, Dr. Kraft, let's talk about testing, something we have a lot of first hand experience with these days. We have a terrific research infrastructure here in the United States, obviously, NIH, FDA, the National Academy, CDC, but it just has continued to feel over these many months that we missed the opportunity to confront the crisis head on. Testing has been generally considered one of the greatest failures in our response. Let's take a look at the pandemic XPRIZE COVID testing competition with a goal of making testing frequent and fast and cheap and easy. What are you looking for from your participants and what do you think is really promising that you're already seeing out there in terms of game changing potential for what looks like will be with us for a while in terms of this pandemic?

Dr. Daniel Kraft: Yeah, I think one of the critical elements for this pandemic or for preventing any others, the basics of public health and contact tracing is to pick up infections early [inaudible 00:05:29] public health. We've had a major failure, particularly at the national leadership level in rolling out a national testing program, many other countries have been far ahead of us. One of the challenges is that today's testing is not fast, frequent, cheap or easy. It's not fast. Most of the test take at least a day or often four or more days in a backlog. They're not

inexpensive. They're over \$100 on average each. They're not easy.

Many of us I've had three tests, if you like the swab is going to the back of your brain and they're not that easy. You might need training, you need to have a facility. To get ahead of the curve, particularly on detecting cases early before patients even know they have them or can spread and be infectious, is to do fast, frequent, cheap and easy testing. To open up schools, we might want to test twice a week, to open up workplaces safely and to return to life. The instigation around this prize is to really move that forward together with the regulators and others. We have now over 500 teams that have done the initial registration.

The next stages which will open up will be narrowing those down the top 200 teams, will be getting sort of blinded test kits, will identify those who didn't have high sensitivity, specificity. The winners of that phase will go to on-site testing, and then the top five teams will roll out to actual sites where we can scale and demonstrate that you can really do this in an impactful manner. Then there's a lot of funds and support to bring those teams forward even faster. Not just for this pandemic, for preventing future ones we need fast, frequent, cheap and easy testing.

Mark Masselli:

Yeah, and I think we've heard that people are looking to have a whole strip of test that you have at home, you administer yourself, the whole country does it, you can determine whether or not you go into work. Specificity on those may not be as great, but the larger effect of having everybody tested is kind of exciting. Just thinking about these blocking and tackling issues of testing, but also we've seen a lot of articles on social distancing and mask wearing and, unfortunately, mask wearing somehow has become a political issue versus just the basics of science. But in the context of trying to get to efficient, effective and elegant on mask wearing, because you need a little elegance for people on mask wearing because it's a little cumbersome or seems to be. What types of work are you seeing out there in terms of development, is that an area that you are also focused in? Is there anything on the horizon that you know -- has that -- as I think back to the Apple success, it was all about design, right? Everything is about design. To the extent that a mask can mirror up that work, what are you seeing on the horizon?

Dr. Daniel Kraft:

I think to zoom back out, any sort of innovation particularly in health care needs, as you mentioned, smart design thinking, smart communication, integration of the workflow, whether that's an individual or a clinician. One of the XPRIZE Pandemic Alliance members is IDEO, which is a major design firm. They've done a lot of work with the Alliance and others to think about how do you message everything from social distancing, to wearing masks, to thinking not

just about our pandemic, but the infodemic. I mean, we have a huge percentage of the population, a big percentage that is resistant to wearing masks and let alone maybe getting vaccinated when a safe and effective vaccine is here. When you think carefully about how to message and make the design experience whether that's, in this case, a mask of which there is a XPRIZE challenge to make a much better sort of N95 level mask that doesn't have some of the barriers to wearing in terms of cost design, comfort, and affectivity. That's another example of leveraging the crowd to come up with new solutions and helping the best solutions move into the market.

Again, I think there's a big challenge around the whole design element for public health. If I was to think forward into where this almost practice pandemic can take us is to get as ready for the next one, how might we have the next generation Tricorders or test that can be on our smartphones? How do we think about even having a volunteer, global health, public health corps like we have volunteer EMTs and firemen that can be in their local neighborhoods to help do contact tracing, educate their neighbors and help lower the social economic disparities when they're present.

Margaret Flinter: Well, my pick up on the idea of crowds and speaking of crowds, we're in a bit of a quandary right now. We have the global pandemic, but it's happening in the midst of a vaccination resistance movement, which has actually been going on for some time, but has really accelerated and intensified I think. We're gearing up for flu season, everybody in primary care and public health is doing that. Even in a good year with all of our messaging and all of our education, we might get 50% of vaccine compliance, even though it kills tens of thousands of people a year. Of course, the memory of the measles reemergence due to vaccine resistance and anti vaxxers is always fresh in our mind. Given so many people just refuse to believe vaccine science, how are you addressing vaccine resistance in your competition, sort of on the soft side of science. What kind of convincing science might alter the course of this pandemic and sway the vaccine resistor so when it's finally available, we can actually make progress with it?

Dr. Daniel Kraft: It's such a complex issue. I think in general we need to be thinking proactively instead of reactively like we do in health care we need to immunize against so the anti vax movement, not just for measles, but for other elements. Part of that is education, understanding what basic immunology and vaccines are. Then making things somewhat, uberized. We live in this exponential age and companies like Uber didn't invent the smartphone, GPS online maps, online payments, they connected the dots, and even Uber and other companies are now sort of enabled -- and it was in New York City originally, press a button on your app and a nurse would come to give you a flu shots, how do we make things sort of easy, provide the personalized

information that matches someone's age, culture, language, or biases? It's like, we want to do precision precise medicine, the right pill, the right person, right time, right dose. That goes to how you might educate -- not everyone where I am in the Bay Area of California drives to Tesla and has an Apple watch, very different modalities in how you want to communicate to folks in different parts of the country living around the world. I think it's a bit of a combination effort, there's no one silver bullet.

Mark Masselli:

We're speaking today with Dr. Daniel Kraft, Chair of Medicine at Singularity University and founder of the Exponential Medicine Conference. He's also Chair of the XPRIZE Pandemic Alliance Task Force competition, seeking groundbreaking solutions to challenging unleashed by the COVID-19 pandemic. I wanted to sort of pull the thread on the work that you're doing on exponential medicine. I think that's a term that our audience would find of interest, a sort of a definition. But, you know, you're talking about leveraging the crowd, and it sounds like exponential medicine is really how it can be a force multiplier.

Really, I'd like to -- sort of, you were talking about specific things that people might have, but artificial intelligence really hasn't been leveraged to its fullest extent. It seems to be the next horizon for us. There's sort of the technology side, but it's the large aggregation of data and how we apply that. I may not need to have -- it may tell me that I need a flu shot and somebody may arrive before I have to get on my smartphone to do something. What are you seeing in that area? But first start out with exponential medicine so our listeners can have a sense of what that means, and then segue over to its use, how it leverages AI and other tools.

Dr. Daniel Kraft:

Sure, a bit of the theme about exponential medicine is that many technologies from AI to big data to 3D printing to low cost genomics to digital are moving -- sometimes exponentially, sometimes quickly. The theme of exponential means our brains are somewhat wired linearly 30 linear steps, I'll be across the room, but 30 exponential steps doubling to 2, 4, 8, 16, 32, 64 by the 30th step you're in a billion, 26 times around the planet. That's acceleration that we see in our mobile devices. This is my 10 year old iPhone 2, Moore's law encapsulated in a supercomputer in my pocket. This is amazing 10 years ago. Now, it feels antique.

We're seeing accelerations in AI, machine learning, virtual reality, nanotech and others that are coming together in the theme of exponential medicine, exponentialmedicine.com is how do we break upon the silos and health care from different forms of clinicians to investors, to technologies, to patients, to see what's at the interface? What's coming together, the convergence that enables to reimagine

health care from where it is today, which is as we all know, sick care. We have intermittent data that we only get usually in the clinic setting. We're reactive, we wait for the heart attack, stroke or pandemic to arrive. Part of the theme of exponential medicine is to reimagine where we can take existing technologies and let alone what they'll be in 2, 5 and 10 years.

You mentioned AI, that's one area that's moving very, very quickly and now fits in our supercomputers, in our pocket. The trick is, as clinicians, we don't want data coming at us. We're already overwhelmed. We want to be synthesizing that to actionable information. I think part of the potential of AI meets sensors, meets our digital exhaust is as we as clinicians and as empowered individuals and patients can enter this age of digital mobile connected health to connect the dots between the data, the insights and things that will be personalized to prevent disease, to diagnose it early, and then to manage it in smarter more connected ways, using AI machine learning to make sense of that data and personalize it to the individual.

Margaret Flinter: Well, Dr. Kraft, I want to go back for a moment to your XPRIZE competition, because I'm not sure if this has been done before in a competitive way, so we're really curious about this. One of your pandemic XPRIZE competition centers on the need to create new ways to upskill the health care professionals and paraprofessionals too I imagine, to respond rapidly to some of these dramatic new threats. From your perspective, how's the pandemic exerting pressures on health care workforce training to respond to a growing set of threats? Tell us about this particular XPRIZE.

Dr. Daniel Kraft: I think, broadly, the world is accelerating around us. We all need to be continually learning what we learned in medical school is often out of date, a year after we graduated. For many folks, they're being left behind in this age of technology. We talked about Uber earlier, the uberization of lots of things have disrupted fields. What's happened to taxi drivers can next happen to maybe primary care doctors as some forms of technology can overtake or integrate. I would argue we need to start upskilling the nurse practitioner, the community health worker, the individual CMO, Chief Mom Officer at home, to use some of these new tools and technologies for health, but also more broadly as we want to reskill our entire society to enter sort of this evolving age.

There's a new XPRIZE, called the Reskilling XPRIZE not focused purely on health care, but how do we take some of our new learning engines, flipped classrooms, ways to think -- you don't need to get a PhD or even a master -- a traditional university degree to learn how to code or to build a virtual reality platform or to solve challenges in public or global health. In general, that new prize is focus on how do

you take folks reeducate them into the new skill sets and integrate them into the market. Given that the world is digitizing becoming more democratized, and many of our old technologies that were on our shelf have now been amplified, and that changes the game for many fields including health care.

Mark Masselli: Well, I mentioned earlier, Dr. Kraft, that you're an oncologist, inventor, entrepreneur. But tell me, you do a lot of these interviews, what question do you look for people to ask you because you're a custodian of a lot of information. What do you think people need to know about the work that you're doing?

Dr. Daniel Kraft: I think one of the -- there's a famous quote, "The future is already here, just not evenly distributed". That's particularly true in health care, we have so many health care systems, there's so much fragmentation and misaligned incentives. I would say, one of the themes I would say is don't wait for the future to happen. As clinicians, ourselves or as patients, we don't need to wait for some of these tools. If you [inaudible 00:17:57] atrial fibrillation, you can get an EKG on your watch or smartphone, you can prescribe an app for managing hypertension or smoking cessation or stress reduction. I built an early platform called Digital.Health, that's the website Digital.Health to try and find some of those tools and solutions you might start to prescribe as a clinician or find and use as an individual.

Part of it is about thinking about not just with the technology is today in 2020, which is already pretty amazing. What's going to be here in a couple years, how to put those together to solve pain points as an individual as a clinic, as a hospital system, in a public health, right, and to not have a failure of imagination as to what's possible. To move to this area of continuous proactive true health care to not just manage sickness but to extend healthy lifespan, and just sort of extend our imagination into the possibilities of what can come. One of the silver linings, again, of this pandemic is that many technologies are being put together new ways, new collaborations internationally, new learnings, what was learned in the hospitals of Wuhan came to New York City have now come full circle and running, hopefully accelerate moving from data to information to point of care knowledge in a faster, better way.

Mark Masselli: One thing that we've been doing at our Weitzman Institute is looking at the social determinants of health and trying to reach out to the AI tech world about who's trying to solve this housing, food insecurity of the like, because right now what people are doing is just measuring -- it's a very small scale. Really we'd love to have one of our folks reach out to you, because we've brought a lot of innovators around the table who are trying to scale this up. This is the biggest challenge. It's not so much what happens inside our clinical walls, it's what happens

Dr. Daniel Kraft – Exponential Medicine

outside. I'm wondering, as you look at the work that you're doing, do you have people who are focused in on social determinants of health?

Dr. Daniel Kraft: You've had a big focus at exponential medicine which seems technology focused about social determinants, how to understand them, how to leverage technology in new ways to address them. There's that famous quote, "Your genetic code is less important than your zip code." Now this pandemic, certainly, as you know in New York, amplified the disparities and the outcomes from that. I think we can use technology newest -- having a smartphone in your pocket with little AI triage system can give almost anybody without regular access to care, early proactive information, or a smart connected app or the ability to virtualized care which has exploded in our COVID era. Now, we can do virtual visits, just like we're talking, a virtual tumor board. All those can lower disparities. We need to get folks basic internet access in some parts of the country, but I think there's so much we can do at that 80% of health care's related to our social determinants and our behaviors doesn't require fancy technology, but new thinking and new collaborations that starts with housing, clean water, good food, social connection, so lots of basic blocking and tackling that technology can also enable.

Margaret Flinter: We've been speaking today, with the Dr. Daniel Kraft Chair of the XPRIZE Pandemic Alliance Task Force, founder of the Exponential Medicine Conference, and the Chair of Medicine at Singularity University. You can learn much more about his groundbreaking and exciting work by going to danielkraftmd.net, that's Kraft with a K. Join as many followers on Twitter. You can find him @daniel_kraft. Dr. Kraft thank you so much for taking all of your intellect and curiosity and applying them to some of these great health challenges of today and for joining us again on Conversations on Health Care.

Dr. Daniel Kraft: Thank you.

[Music]

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 US politics. Lori, what have you got for us this week?

Lori Robertson: This week we'll fact check a claim about COVID-19 from Democratic presidential nominee Joe Biden's acceptance speech at the Democratic National Convention. In critiquing President Donald Trump on his handling of the coronavirus pandemic Biden said, "Just judge this president on the facts. 5 million Americans infected by COVID-19. More than 170,000 Americans have died by far the worst

performance of any nation on Earth.” Biden is right that in both coronavirus cases and deaths, the US has the most of any other country, and his figures were correct as of August 20th when he made the statement. About a week later, according to Johns Hopkins University, there were nearly 5.8 million confirmed cases in the US and more than 178,000 deaths from COVID-19, the disease caused by the novel coronavirus, but by other metrics the US does not have the worst record.

When population is factored in seven other countries had more cumulative COVID-19 cases. This includes Qatar with more than 40,000 cases per million people, and Bahrain, San Marino, Chile, Panama, Kuwait and Peru, the US places eight with 16,706 cases per million. These figures come from Oxford University's Our World in Data for August 20th. On deaths per capita the US also does not share the worst. Our World in Data shows the US with the 10th highest death rate, better than San Marino, Belgium, Peru, Andorra, Spain, the UK, Italy, Sweden and Chile. In a similar data set from Johns Hopkins, the US does better than an additional country, Brazil.

Although harder to interpret and heavily influenced by the number of coronavirus tests performed, the US also does substantially better on it's observed case fatality rate or the proportion of people identified with the virus who have died. In the US, 3.1% of those known to be infected with the virus have died, a lower rate than 55 other countries in the Johns Hopkins analysis. 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 www.chcradio.com. We'll have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

[Music]

Mark Masselli: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Students of public health are often tasked with devising interventions for addressing some of health's biggest challenges. For Harvard T.H. Chan School of Public Health students, Dan Wexler and Priya Patel, their idea netted an award and launched a business idea at the same time. The students were tasked with addressing food insecurity in underserved parts of the world, including in neighborhoods in their own backyard families living in high poverty, low resource area in finding fresh, affordable, healthy food in neighborhoods with no grocery stores or food markets. They thought of the current trend of healthy meal or meal services like Blue Apron and wondered what if

we modified that business model to serve the needs of those living in food deserts.

Wexler and his partner sourced food delivery companies that could provide pre-packaged meal kits, with all ingredients included even spices, dressings and recipes. Instead of home delivery approach, they designed refrigerated kiosk that could easily be placed in local neighborhoods. Wexler says they wanted to make the idea of healthy eating and meal preparation as simple as possible,

Dan Wexler: I think the biggest change is that there is no delivery system door to door per se. That by going and setting up these kiosks in the community, you can have a very lean design, you can have -- you don't need a storefront, you don't need to pay for shipping, you don't need to have in-box refrigeration. You are very much addressing the needs of access by physically saying, hey here is healthy food. It's convenient, because everything you need is in the box. The directions are simple, they're very picture based, there's a lot of literacy issues. Just really thinking about how can we take all those lean design principles to facilitate access, that really, I think, making a solution that has the potential for impacts.

Mark Masselli: They also conducted research with local ethnic groups to create recipes that would resonate with their families.

Dan Wexler: Then we just went down to community and did taste testing at the Farmers Market and talk to people and said, do you like this? What do you want to be able to eat for dinner? How do you want to cook? It's basically we have some dishes that are similar textures, similar spices. One thing that we found is there's a little bit of contention between parents who want to eat more traditional foods and kids who want to eat more American foods, and we try to alleviate that and bridge those gaps are one of our recipes, for instance, is there's a chicken pot pie pasta. It's kind of American, it's fun sounding, but also we use a lot of traditional seasonings and spices.

Mark Masselli: Customers can simply walk to the kiosk and purchase their meal kits with the snap cards or cash and the added benefits. The Kiosk will be run by the residents of the neighborhood, giving them an opportunity to purchase the kiosk and run them like a franchise, offering an economic benefit to the community as well. Their idea earned them the Rabobank-MIT Food and Agribusiness Innovation Prize, and \$15,000 in startup money to launch their enterprise. A low cost portable, healthy meal service placed in portable kiosk and food desert neighborhoods, offering families a simple solution to address the problem of poor nutrition, providing an economic opportunity at the same time. Now that's a bright idea.

[Music]

Dr. Daniel Kraft – Exponential Medicine

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

Margaret Flinter: And I'm Margaret Flinter.

Mark Masselli: Peace and Health.

Female: Conversations on Health Care is recorded at WESU at Wesleyan University, streaming live at www.chcradio.com, iTunes, or wherever you listen to podcast. If you have comments, please e-mail us at 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.

[Music]