Dr. Eric Topol

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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 healthcare of the future.

This week Mark and Margaret speak with Dr. Eric Topol, Founder and Director of the Scripps Translational Institute. He is a renowned cardiologist, author, and health data evangelist who designed the AI platform for the All of Us Precision Medicine Initiative of the NIH as well as the platform for the Apple Heart Study. He is using that platform to conduct real time data surveillance on the COVID-19 pandemic.

Lori Robertson also checks in, the 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 well being in everyday lives. If you have comments, please e-mail us at chcradio@chc1.com or find us on Facebook or 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 our interview with Dr. Eric Topol here on Conversations on Health Care.

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Mark Masselli: We're speaking today with Dr. Eric Topol Founder and Director of the Scripps Translational Institute. He's the Executive Vice President. Dr. Topol, is globally renowned cardiologist, health technologist and innovator who help lead the Cleveland Clinic to a first place global ranking for the treatment of heart disease. He's awarded a large NIH grant to build a digital platform for the All of Us Precision Medicine Initiative and has assisted the UK's National Health Service with the adoption of AI technologies.

Margaret Flinter: Dr. Topol has published more than 1200 peer reviewed papers and a number of bestselling books including The Creative Destruction of Medicine and Deep Medicine: How AI can make Healthcare Human Again. He is the editor in-chief of the online publication Medscape and hosts a popular podcast with Dr. Abraham Verghese Medicine and the Machine. Dr. Topol, we are so pleased to welcome you back to Conversations on Health Care.

Dr. Eric Topol: Oh, thanks so much for having me.

Mark Masselli: Yeah, Dr. Topol the global pandemic has really impacted our scientists, our infectious disease experts, health care delivery systems. COVID-19 is a crafty deadly pathogen, really shaking the world in America in particular. I'm wondering, as you look at the impact of

COVID-19 around the world here in the United States, how would you assess the depth of the crisis we're in right now? Do you have a prescription for how we should move forward from this point?

Dr. Eric Topol: Well, we're in a crisis unfortunately, in fact, a good part of it is self-induced and that's the sad aspect. It all started, of course, when we didn't have testing capacity when the first patient came here. That went off for two months, so that led to the first remarkable surge. But then when we reopened early in May where most of the states were reopening in the middle of cases going up, no less not having achieved suppression. Now, what we've seen is a most hospitalizations since the pandemic started. We've also are seeing the death start to rise again. Most of this is because of not being patient with the stay at home, measures that were equivalent to a lockdown.

Interestingly, we've seen great success within the US even in places like New York and New Jersey that were so hard hit in other places in the northeast, and of course we learn from other countries. All throughout Europe, the worst hit places like Belgium and France and Spain, Italy, they all waited before they reopened and they've had great continued suppression. It really is a dilemma about how long you can wait in terms of the economy versus preserving health and trying to keep the virus at bay. We made some very bad choices unfortunately in this country, now we have to try to dig out of this.

Margaret Flinter: Dr. Topol, in the background there's always this issue of reliable data or the lack thereof of about the pandemic here in the US. I think you recently tweeted the data is inconsistent, incomplete, and inaccessible in all 50 states, so no wonder we're failing at this. The testing infrastructure in many places is still problematic. You are many things, but one of them is a believer in data in AI in real time monitoring. What's your thoughts on how we get more timely data to manage the crisis?

Dr. Eric Topol: So in order to do any great analytics you got to have good inputs, and we don't have a lot of the inputs. The CDC basically failed. There was a no show here and so that led to this volunteer COVID-19 tracking project that the Atlantic put together. This is a team of pure volunteers that are collating the data throughout the states as best they can, but we don't have a lot of data that we should. It was only in recent days that the third most populous state in the country, Florida, was willing to give their daily hospitalization data but we need to know much more than that. We know that many ICU stuff, these states that have had severe explosive growth in new cases have also now stripped their hospital resources and beds and particularly ICU beds. This is just amazing to have to fail in this respect. We can't really do artificial intelligence when you have such compromise inputs.

It's really unfortunate that we don't have our finger on the pulse

because we're starved for data. When I was involved with the review of the NHS I learned about how they put an emphasis on this. They have a group that has every single hospital admission throughout the UK. They basically, in real time, are tracking every patient in the country. Now, obviously the UK is not as big as the US but that country and many others has real time data, Germany does, South Korea and so many other places. Why can't we do that, because then you know how to allocate resources, you know how to plan, all the things that you need to do when you're facing a crisis like this.

Also, the issues about suppression knowing that you want to get down to around 10 cases per million, and we were still going forward with opening states when we're 50, 70 million now we're 400, 500 million cases. The lack of the data is so critical to making major decisions, particularly when they were relegated to states rather than done as a national coordinated plan that is absent.

Mark Masselli: Yet, I think the crisis has provided some unforeseen benefits here in the States. Health institutions are, as I said earlier, rapidly adapting, but we're seeing this includes this widespread adoption of telehealth. You've adapted the smart watch technology you created for the Apple Heart Study to now help volunteers contribute data to the COVID-19 surveillance program. I'm wondering if you've been keeping an eye on new technologies as they impact the health care ecosystem. I'm also interested in the observation on the research side, we have a couple of vaccine candidates that were using a new platform. You have almost all of the research institutes focused in on this virus. I'm just wondering with all that activity, is anyone looking at collateral discoveries or is it too early to assess?

Dr. Eric Topol: Right, well, let me first start off with two technologies that I'm very excited about, because I am remaining optimistic. Firstly, you touched on the fact that 100 million people in America have either a smart watch or a fitness band of some kind. It gives heart rate and physical activity. It turns out that's a very crisp signal to be able to pick up COVID-19 as we already published for flu earlier this year. We adapted an app called Detect Study and we have 40,000 Americans all every state is covered, although we need hundreds of thousands to do better.

Fatigue is a very important part of early COVID-19, as is a resting heart rate. Fatigue is subjective. But when you're sleeping more and you're having less physical activity, along with a resting heart rate that increases, you can now at a diagnosis at least in a group and a cluster is likely. That technology we think is really vital because if we get into digital surveillance it's very complimentary to testing because testing you can't do in 330 million people on a frequent basis. You have a one off measurement, whereas a smart watch that people have or fitness

band all they have to do is put it on and keep the battery charged and you have a way to have surveillance of the country.

Germany has already initiated that in over 560,000 people, they call it the National Fever Curve, and they can look anywhere in the country to see if there's anything lighting up. That technology is exist today, it's basically just analytics and participation. Since we have no CDC to support this, unlike Germany, which its CDC have got fully behind it, and that's why they have such a large participant group.

Now, the second technology that I think is coming in the next couple of months, which is transformative are the rapid diagnostic test. These are 15 minutes, pretty darn accurate, relatively inexpensive, even down to $1 no less $5 and you get the answer like on a paper strip, just like a pregnancy test, and then you know you're good for the day. Those are two technologies that have nothing to do with drugs or vaccines.

Now, you asked about the vaccines and I think we have many that are looking very promising mRNA types there are a couple of those and there's many others. But I'm not so worried about we're going to have vaccines to choose from. I'm much more concerned about getting people to take the vaccine. We have a problem with getting people to use a mask and that doesn't even require a shot. Vaccine, the risk is going to be small, it's like the unknown, there's going to be some risks, no matter what vaccine. But we have an anti-vax, anti-science, subcult of this country, it's a sizable group. We've got to work on that because we can't achieve this herd immunity artificially, if you will, vaccine, herd immunity without getting most people to have the vaccine.

Margaret Flinter: Well, Dr. Topol on a serious note six months into this pandemic, even walking down Main Street in our local community, people just don't seem to have gotten the memo. As Dr. Fauci told you recently on your podcast, it is not like it's rocket science, we're asking people to wear a mask. What are your thoughts on how we scale up this call to action for everybody in this country to do the right thing to protect each other? What are your thoughts about how we protect our students and our teachers who may be ordered back to school or may not have the opportunity to go back to school? We all, I think, fear the potential for a dramatic rise. What are your thoughts on that?

Dr. Eric Topol: Well, the first part is pretty easy if we had a real president that was modeling that this is important. Right from the get-go in March, that mask, it's a respiratory virus and a mask will help and we don't want people to get sick or to die. Rather than saying you don't need a mask, making fun of people that were wearing mask and saying that it's 99% harmless, which you couldn't be further from the truth. We have problems with leadership and that has set off this mask problem to be

much worse.

We can have the person that a lot of people look up to a good 30% of the country and they're being told you don't need to have mask. That's for people that are -- I don't even want to go there too far. Okay, now the second part of your question was about schools, which, there's where we could put some signs. We have low risk places in Maine and even New York, New Jersey, Connecticut, places that have really figured out how to keep this suppression in check of new cases. They're at the 1% level positive test, which is where you want to be. We have parts in the country that are at 20% to 30%. Anyway, there's where you start. You open schools in a very careful way. You have your testing, rapid testing ideally, you have your tracing, and you have isolation if need be.

Now when you do that, and you'll also get samples for genomics to track transmission. I know that this child gave this staff person or this grandparent precisely this virus, that's what we need to do to show what is safe because we don't know about children transmission that much. We know it happened, we don't know how often, that mode is very fuzzy right now. If we did that, we were careful about it in low risk zones. Be patient a month to learn from that and then get that word out to other places and then scale up to places that have mild spread and moderate. We don't wind up with what has happened in Israel right now and South Africa and many places that opened schools and then wound up having very serious outbreaks.

Now, there are places that have had terrific school reopening, but there are places that have had very good control contained their outbreak, so we're not in that position. We only have some places within the US that fit the bill. But it is absurd to demand that all schools open. We're not in a position for that, and hopefully at some point we will be.

Mark Masselli: We're speaking today with Dr. Eric Topol, Founder and Director of the Scripps Translational Institute. He's Executive Vice President at Scripps Research. He's been named one of modern healthcare's most influential physician leaders. Dr. Topol, I want to go back and pull the thread on the conversation about vaccines. Obviously, the government is spending billions of dollars. It announced a purchase with Pfizer the other day. There are dozens of other viable vaccines in the queue that look quite promising. I think the public is very anxious that this happened, but I think as a scientist we have never had a successful coronavirus vaccine outside for livestock.

We didn't develop one for SARS and MERS, the early phase one and two. But what do you worry about, or you have enough confidence that we've heard leading scientists say they're confident, but you know those phase three trials are going to be very important. Talk

about your confidence level and what if we don't get a vaccine, what if we're like SARS and MERS and we can't identify one?

Dr. Eric Topol: First, let me say that why I'm optimistic. Structural biology, we're going to be all knowing about structural biology in the months ahead. Many people don't even know what cryo-EM is and the fact that you can have a crystal structure of the antibodies and the virus, and you can go atom by atom to fashion a vaccine. No less what -- we can talk about the neutralizing monoclonal antibodies, which are even more imminent than vaccines and probably quite a bit safer. But the vaccine is so likely because we have science moving at a velocity we've never seen before. The vaccines knowing so much about the virus and the way to attack it, all the different business sites that are -- every single atom of this virus we've never -- this is not like what was in 1918. This is 2020. What's really interesting what you're bringing up is, we've been so pathetic in our public health response, and our lack of national coordination, but our science is excelling. I'm just so impressed with it.

We have four different vaccine programs imported out and they all have great neutralizing antibodies. They have T-cell specific response. We're seeing a really good mimicking the SARS and that's very promising. I think we will get there. I'm more upbeat on the vaccine and when I talked to Tony Fauci and he's told a story last week, about they got the Chinese virus in January. Within five days they had a template for a vaccine. Within 62 days they were in clinical trial. That tells you that they took off years of normal effort. The acceleration on top of the science, the managed competition, that's a good one. When I have a problem with this, why there's 10s of billions of dollars being invested in these programs, when there's almost nothing being invested in rapid diagnostics, which is we need that too. We need that badly and that's more than here now.

The other thing I just want to mention is, the monoclonal antibodies don't get enough attention. They're going to cap in more quickly than vaccine, they're in clinical trials multiple. We've already seen how they block or they prevent in a non human primate and they also can abort the infection in the early phase. That is as potent as you can get. It last for many weeks and it can be used for high risk people and even there's a possibility of self-injection without having to go to a clinic. I think the monoclonal is particularly excitement.

Margaret Flinter: Dr. Topol, while COVID is getting the focus of our attention, we want to draw our listeners' attention to another we think very important long term research project underway at the NIH that you've been very engaged with as well led by Dr. Francis Collins, and that's the All of Us Precision Medicine Initiative to amass the genomic and real time health data writ large of a million volunteers in this country to help

scientists and citizen researchers, as they say, gain deeper insights into population health across all ethnicities. Your team at Scripps is deeply engaged in this project. We would really welcome you talking a little bit about the research and the platform that you've developed for the All of Us project and your vision of the potential power of this new approach to personalized medicine. Not only in how we treat disease but hopefully improve population health by preventing disease. I would add to that in these last painful months where we've been so focused in equity, by race, by income, this may really offer some tremendous benefit that we've not seen before, so we'd love for you to comment on that.

Dr. Eric Topol: Well, I think the All of Us is something we should be proud of as a country, that commitment. It actually, it was four years ago when the grantees were announced, so it didn't enroll for at least another year and a half. We have over 350,000 people who are participants who are partners in the project, and more than a half are underrepresented minorities. There's never been a clinical research project in American history and no less I don't think any history of that size with minority representation like that, so we're very proud of that. Now, that's going to eventually be many decades of follow up like a Framingham study that was started in 1950, but this is a 21st century version.

We're going to learn a lot about individualized medicine because these people are going to not just have genomics, sensors, likely their microbiome, all sorts of assessments. What happens over time, that is, can we prevent illnesses that people might be at risk for? Can we better manage those chronic conditions that either they already have or develop over the course of time? To get us out of this mode that there's this one way to treat people to learn about what it takes to be effective at the individual level. This term of precision medicine which I prefer individualized medicine, but it's very exciting because it turns out that we don't respect the fact that we're unique. If we now can determine what is it that makes us so different than other person in terms of risk or in terms of prevention or treatment or whatever it is, we can do much better for preserving health in the future.

Mark Masselli: Well, that's great. Our organization which provides care to the underserved as part of the IRB process with the All of Us set up and we think it's a very important program. I'm wondering, as a visionary, a realist and optimist, you should sort of think about this inflection point in the healthcare delivery system. Think about some of the advances that we've made in genomics and AI, real health time monitoring. What opportunities you see about redesigning a system of healthcare delivery that really reaches all of us, regardless of income that the proverbial healthcare is a right and not a privilege for all people. What are your thoughts as you sort of look at that path

forward?

Dr. Eric Topol: Right, well, I think that was another thing I learned spending so much time with the NHS and an egalitarian health system, which is highly revered. It's up there with the BBC and the royal family in terms of the highest level of respect. What I learned about that was that people feel so good about it because everyone is cared for. We have to feel badly that we have tens of millions of people who don't fit the bill here and that has to get changed. We're seeing trillions of dollars spent for things like this PPP and fuzzy things, we don't even know where the money's going. We could have used that money and had a national healthcare system where everybody was getting care. It's funny how that became a debate, when in fact all this -- now we're spending that kind of funds, in a seemingly reckless or if not foggy fashion.

As you will know, we are the only country of industrialized nations that don't do that for all of its citizens. I do believe it's a human right. We've seen the consequences of it not being human right. If you just look at what's happening in the COVID-19 pandemic to Blacks to Latinos to all the underrepresented groups, they've really suffered. They've taken far more hits and damage from this than the people who have health care coverage, and the other thing is the fact that we rely our health care on employers, and now we have some 30 plus million people 40 million people, whatever it is, who are unemployed. I mean, my son lost his job and he lost his health care and this is a classic situation that is widespread throughout the country. We have to do better. This is just not acceptable, the model that is being used in this country.

Margaret Flinter: We've been speaking today with Dr. Eric Topol, the Founder and Director of the Scripps Translational Institute, Executive Vice President of Scripps Research, inventor, author of multiple bestsellers, including his latest Deep Medicine: How AI can make Healthcare Human Again. Learn about his very important work by going to dr.erictiopol.com or follow him on twitter @Eric Topol. Dr. Topol we want to thank you for sharing your thoughts and your insights, for giving us both guidance and some cause for optimism as we navigate this exceedingly difficult moment in our history, and of course for joining us again on Conversations on Health Care.

Dr. Eric Topol: Well, thanks for having me. I know we'll get through this.

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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 healthcare 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: In an interview with Fox News Sunday host Chris Wallace, President Donald Trump made misleading and false claims about COVID-19. The President claimed other countries later mentioning Europe are only testing for COVID-19 if someone is “really sick”. He said the massive testing in the US “skews the numbers”. But testing data show many countries including in Europe have conducted more tests per confirmed case than the US. If other countries have tested more people than have actually had the disease compared with the United States that suggest those countries couldn't have been only testing the really sick. In the interview, Trump singled out Europe and dismissed the possibility that the European Union doesn't have as bad of an outbreak as the US does now, “it's possible that they don't test that's what's possible”, he said.

According to the University of Oxford based project Our World in Data, several European countries testing policies are open testing for anyone, including those without any symptoms. Those countries include Germany, Austria, Switzerland, Denmark, Portugal, Greece and Iceland. Many other countries in Europe including Spain, Italy, France and the United Kingdom, test anyone with symptoms. Experts have told us before that looking at the test positivity rate the percentage of conducted tests that are positive shows whether a country is doing enough testing. By that measure, nearly all European countries as well as many other countries around the globe are doing better than the United States.

Trump also claimed that states were backpedaling on reopening “on purpose”. There is no evidence that California or other states are halting or reversing the reopening for political reasons. Multiple states have concerning trends such as increases in COVID-19 cases and test positivity that public health experts including those on the White House's Coronavirus Task Force say warrant business closures and other precautions. That's my fat 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.

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Margaret Flinter: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Each year,

more than one million babies die at birth and another three million die within the first few weeks of life. When babies are born prematurely the risks escalate. Newborns and particularly preemies have a considerable amount of difficulty regulating their own body temperature, and without access to incubators, babies in the third world often succumb to hypothermia. [Inaudible 00:28:06] former Stanford MBA student Jane Chen thinking, how do we develop a low cost solution to the problem.

Jane Chen: My team and I realized what was needed was a local solution, something that could work without electricity. We needed something that was portable, something that could be sterilized and reused across multiple babies, and something ultra low cost, compared to the $20,000 that an incubator in the US costs.

Margaret Flinter: Chen said that they developed a cocoon like device called Simply Embrace a thermal body wrap that encases the baby and helps regulate body temperature for up to six hours.

Jane Chen: It looks like a small sleeping bag for a baby. It's waterproof. There's no seams inside so you can sterilize it very easily. But the magic is in this pouch of wax. This is a phase change material. It's a wax like substance with a melting point of human body temperature 37 degrees Celsius. You can melt this simply using hot water and then when it melts it's able to maintain one constant temperature for four to six hours at a time, and it creates a warm micro environment for the baby.

Margaret Flinter: Chen and her developers have managed to keep the cost of the Embrace Baby Warmer at around $25 per unit, a low cost high tech portable temperature regulator designed to regulate preemie's body temperatures to ensure that they not only survive premature birth, but ultimately thrive as well. Now that's a bright idea.

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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 podcasts. 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.

Dr. Eric Topol

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