Mark Masselli: This is Conversations on Healthcare, I am Mark Masselli.

Margaret Flinter: And I am Margaret Flinter.

Mark Masselli: Well Margaret a momentous event at the UN in New York, the Paris Climate Agreement was signed by over 170 world leaders. The complex agreement seeks to significantly reduce the world's carbon emission by 2025 and beyond and it's going to take significant cooperation to achieve the goals laid out in this historic document.

Margaret Flinter: And how great was it that this accord was signed on Earth Day, Mark. It's the first times that all nations at the table were able to reach the agreement including the US very exciting.

Mark Masselli: As we know Margaret, a climate change has a direct impact on global health and we are already seeing the effects which experts say will only worsen over time more frequent and devastating storms rising sea levels leading to epic floods, crushing droughts as well as record heat waves, all of which impact air quality and safe drinking water, agriculture and the spread of diseases.

Margaret Flinter: If left unabated, climate change will lead to an estimated quarter of million deaths worldwide every year by 2030 and beyond. Climate change is real, it's based in science, it presents an imminent threat to global health and now we have a framework in place to tackle the worst of the anticipated effects.

Mark Masselli: Part of what makes this possible is now that we have technologies that will assist us in weaning off our dependence on fossil fuels this agreement is a very important and bold step forward.

Margaret Flinter: Well there is a tide shifting in healthcare as well, Mark. And all of this is something that our guest today knows quite a bit about, Eric Dishman is the newly appointed Director of the Precision Medicine Initiative at the National Institutes of Health to advance precision medicine in the 21st century, something we were waiting quite a for.

Mark Masselli: And Dishman has a personal story that illuminates the need for personalized medicine.

Margaret Flinter: And Lori Robertson will be stopping by, she is always on the hunt for misstatements spoken about health policy in the public domain. But no matter what the topic, you can hear all of our shows by going to chcradio.com.

Mark Masselli: And as always if you have comments, please email us at chcradio@chc1.com or find us on Facebook or Twitter; we love hearing from you.

Margaret Flinter: We will get to our interview with Eric Dishman in just a moment.

Mark Masselli: But first here is our producer Marianne O'Hare with this week's headline news.

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Marianne O'Hare: I am Marianne O'Hare with these healthcare headlines. Health insurer UnitedHealthcare the nation's largest made waves last week announcing they are puling out of most of the markets where they have been participating in the insurance exchanges, 34 states total down to just a few. According to analysis by the Kaiser Family Foundation, the insurers exit from the exchanges leaves about 10 states mostly in the south and mid-west with only one insurance provider to choose form. Just a day before it was supposed to launch, the Obama Administration announced it was postponing the hospital star rating system on its Hospital Compare website. The ratings were based on mortality, hospital readmission rates, effectiveness and timeliness of care. The American Hospital Association's contention was the rating system based on Medicare data wouldn't necessarily be helpful to say a woman seeking a place to give birth.

A recent study shed light on the impact of wealth and health revealing the gap between and haves and haves nots is significant when it comes to life expectancy. The study showed the gap between them grew in the post recession period with the life expectancy of wealthy males growing during that time period while the poor saw a decline in life expectancy overall. Now another study out showing the life expectancy for white women has retreated just a bit; alcohol, drug abuse and suicide being pointed to as some of the reasons.

And Type II Diabetes expecting to affect some 89 million Americans by 2030, the baby boom generation aging into a tsunami of chronic illness conventional wisdom has been once diagnosed always thus afflicted. There is some mounting evidence that condition can be reversed with diet. A small study done in England recently showed some interesting results a cohort of patients diagnosed with Type II Diabetes put on a strict

liquid diet regimen actually put their condition into remission even six months after the special diet had ended. Six months later those who gone into remission immediately after the diet were still diabetes free, the key according to experts is being able to keep the weight off. I am Marianne O'Hare with these healthcare headlines.

(Music)

Mark Masselli: We are speaking today with Eric Dishman, Director of the Precision Medicine Initiative Cohort Program at the National Institutes of Health having served as vice president and fellow of Intel Corporations Health and Life Science group. He founded Intel's first Health Research and Innovation lab in 2002. Mr. Dishman served on the President's Precision Medicine Initiative advisory board. He holds a bachelor's degree in Speech Communication from the University of North Carolina. He earned his master's degree in Speech Communication from Southern Illinois University. Eric, welcome to Conversations on Healthcare.

Eric Dishman: Well thanks for having me. It's great to be here.

Mark Masselli: You know first of all I have got to say, I really enjoyed your TED Talk and I know you are going to tell us about your own personal story. You found yourself in a role of patient and subsequently a patient advocate about 20 years ago when a [Inaudible 00:05:30] diagnosis lead to incredible odyssey with a health system, and wonder if you could tell our listeners about your own journey and how it lead you to develop your own views on personal health systems and how would you describe Precision Medicine from your point of view?

Eric Dishman: Well you know it all started, I was age 19 that passing out while at work, I was working, training for marathon at the time and I eventually started doing scans and different things in my body and found out I had a kidney problem. And it didn't take long before they came and said, you have a rare form of kidney cancer and you have got about a year to live, this at a guy who felt no pain. And that basically started the 23 year odyssey of cancer and cancer treatment, more than five dozen rounds of treatment.

It all came to head about five years ago, I was in full kidney failure, I was in my last business trip, Intel's executive in charge of Health and Life Sciences. At least what I thought it was going to be my last business trip because my kidneys had both failed, I was about to have to start dialysis and the chemotherapies that I were on was at least keeping things moving slowly, I was going to have to go off of and I thought, okay this is it.

And on that last business trip I visited a genomic start up and they needed a bunch of Intel's fastest computers and storage to be able to deal with these huge files that happen when your genome is sequenced. And they said, well why don't we sequence you? And they did. And I didn't think much about it, and that was that, I mean I sort of understood what sequencing was, they explained it to me, I am not a biologist so I was like, okay that's kind of cool.

And then seven months later my team lets me know that they have been working with the company, they have never done this before, a patient before. And they came back and they said, well bad news is 92% of every drug we ever put you on was destined never to have worked. So the good news is we think that your cancer even though it's in your kidneys, it acts more like the mechanisms that cause pancreatic cancer. We want to put you on experimental drugs for pancreatic cancer. Three months later I am cancer free for the first time in 23 years, eligible for a kidney transplant and now at age 48 I am healthier than I was when I was 19.

Margaret Flinter: You know I am not sure there is follow up question.

Eric Dishman: Well the question is, how do we make that available to everybody?

Margaret Flinter: That's exactly the question I was going to ask you. Even while you were at Intel your passion for innovation as you oversaw research and development of wide ranging technologies that have helped advance personalized medicine, you have talked about how as a teenager you even crafted your own tele-monitoring solution from products you found at the local radio shack for your grandparent dealing with Alzheimers. It seems that infrastructure hasn't been there but the funding incentives haven't been in place until now either, so talk about this recent shift in the incentives part of the equation.

Eric Dishman: Well it's interesting, my first start up was for Paul Allen's think tank more than 25 years and it was a telehealth start up focused on independent living for seniors. That had been motivated by certainly caring for my grandmother when I was 16 and also had been motivated by the two of the times that I came closest to death in my own cancer journey were driven by hospital borne infections. And we have known for a long time that you could actually do care effectively safely from the home but until the paradigm of payment for healthcare shifted from fee for service we are stuck in this perverse incentive world in which, hey care at home that can be done more safely and cheaply, well so I don't get paid for it. Well and so you have great people giving the best care possible in a very reactive medicine paradigm that the financial incidents didn't match with. And my Intel role showed the moment this healthcare reform started

to pass you know the innovation engine started up. And there were so many incentives for hospitals to want to figure out, how do they distribute care beyond the hospital? How do we understand your genetics and your medical history and collect all that data on you so that we can develop a prevention plan that's going to keep you from ever having to go into the hospital.

Mark Masselli: We have been following report since the President State of the Union address where he announced the Precision Medicine Initiative and the goal is to research a cohort of about million Americans and supply that vital health information to central data bank all of course de-identified [PH] and looking to the nation's community health centers to help provide many of these volunteers, could you talk to our listeners about how you plan to get this first important step underway?

Eric Dishman: Sure. The Cohort Program is this audacious goal, and we are going to achieve it. A million or more American volunteers being willing to donate their data to science and to accelerate science and medical breakthroughs for Precision Medicine. Nowhere in the world have we ever collected data on a wide range of people with health status, with a diversity of disease states or wellness states. And we will understand for the first time with new data types the unfolding of disease where we will even be able to make discoveries around rare diseases that you can't understand until you get a million or more Americans actually volunteering for it. It will also be things like genomic data and the new areas like wearable and imaging data as we start to see more and more Smartphones and wearables around. So the combination of those data types as well as the diversity of the people in the cohort will help us make breakthroughs in people that have never been studied before.

Margaret Flinter: Well Eric I understand that resources have also been allocated to the Office of the National Coordinator for Health IT to foster interoperability between systems to facilitate the flow of all this data. How are you going to tackle what has until now been kind of daunting [Inaudible 00:11:04] for developers to run?

Eric Dishman: One of the key aspects of the program is we want any American who, to be able to volunteer themselves is call the direct volunteer program. The fundamental enabler of that is making it easy for them to tell their clinician to say, I want to be able to share my electronic health data and we will call it think for science. The works that ONC had already done to help build out the nation's infrastructure and getting people adopting meaningful use of electronic health records was a first step to now I got to attend the first staff meeting with the secretary with the head of FDA, with the head of ONC and see that it's all department efforts trying to make these PMI efforts successful, The National Cancer Institute to ONC, and then the FDA and they are all contributing for

the success of how do we accelerate Precision Medicine for all enabling all of these researchers with the right access and credentials obviously to come and use the data to accelerate their scientific questions as well as actually citizens scientist to maybe interested in using the data set so that 10,000 flowers may bloom of research studies that then moved to clinical practice.

Mark Masselli: We are speaking today with Eric Dishman Director of the Precision Medicine Initiative Cohort Program at the National Institutes of Health. Mr. Dishman has served as vice president fellow of Intel's Health and Life Science group. Eric, you have talked about the ideal personalized health system of the future that will include each patient having their genomic information as a standard part of their individual health profile, talk about these emerging disciplines and how important they are to achieve the intended goals of Precision Medicine.

Eric Dishman: There is four streams of data that needed to be brought to bear; clinical and claims data, your medical history and database of your past history, imaging data and other diagnostic data that's been collected over the years for you. The two new emerging data types that we believe will be game changing, and genomics was in my own case are omic data types and genomic is the first one, there is also metabolomics and proteomics. And then the wearable consumer generated data collecting wearable data from devices they already have or new diagnostic devices that can go in the home. It's really the synergy of those four data types into knowledge.

When I was taught how to be a patient advocate from a woman named Verna, she used the phrase with me knowledge of survival. And when I was first diagnosed she took me to Duke University library and showed me the statistics for people that have been studied with the disease that I had. I am 19 years old diagnosed with that disease at the time, I have been told that I am going to live a year but when you go look at the studies that inform that knowledge that you only have a year to live, the vast majority of the people that were ever studied were in their 70s and 80s.

Margaret Flinter: Yeah, interesting.

Eric Dishman: So they had literally had no knowledge about somebody with 19 with this disease. Today the healthcare system is doing the best it can to individualize care to you but with almost no knowledge about you. Precision Medicine is about knowledge based care for you as an individual and knowledge based care for the whole population. One of the problems that we anticipated at the population at the level but then how do we customize care to you as an individual? We don't know what we don't know. We are starting to make breakthroughs with some genetic testing for like the BRCA gene for

breast cancer an increasing pipeline of data that's coming almost weekly. It says, okay here's a mutation that correlates with this cancer, that's part of what PMI has to do. There is so much dark matter in the genome we don't understand and if we add things like wearable and diagnostic data that's coming a real time and then once that science is proven out say, okay we need clinical interventions and moving that science and clinical practice along forward that's job one for what PMI cohort needs to do.

Margaret Flinter: Well you spoke a few times and mentioned the home and you have been talking about the home as a node of care. And we have had certainly an explosion of health monitoring devices and we have connected home diagnostic systems, tell us how you think that these technologies all support the ideal personal health system, maybe you could describe your vision of that.

Eric Dishman: In our Intel work, particularly with older people that we studied and one of the first early studies that we did long before there as this phrase the Internet of Things was trying to outset some simple sensing on medication, dispensers of pill bottles in the home of frail seniors who are struggling to take their meds a day and to help their families from a distance know you know are they up around their normal time, are they getting coffee and did they take their meds, right. Think of that pattern, that rhythm of somebody in their home, your mom in her home is almost a vital sign in and of itself she has got a routine, and being able to know that there has been a real change in a routine.

There is two sets of questions around that, first is how do you alert family caregivers or neighbors that there's has been a change, can you check in and make sure something is okay. But it's possible that the collection of that data over a long period of time could significantly help you understand the emergence or the even differentiation of different kinds of dementia that are emerging. But back then we didn't have the algorithms and the machine learning to know that so we did some simple things like different medication reminder strategies for different people. And we would find you know some one individual likes the voice of opera reminding her to take her pills, somebody else liked their television show being interrupted and say go take your meds and wouldn't play football again.

The point was that was Precision Medicine that had nothing to do with genomics that was simple wearable sensors and some software customizing to your style and preference and behavior the kind of medication reminder that you wanted, right. So that's – I try to use that example to say, genomics is important but so are these other data types. And we can actually collect movement data about you because your watch

is capturing it, what it could tell us about the emergence of heart disease or arthritis and the fundamental science will be done as a result of the PMI Cohort Program.

Mark Masselli: You know other health focus initiative that the president launched in this past year is this Moonshot for Cancer which I believe the vice president is going to heading up and very focusing on multi-disciplinary teams of experts working together and you know the value of that, tell us what the intersection will look like between the work that you and your team will be doing a the Precision Medicine Initiative and how it intersects with the President's Moonshot for Cancer.

Eric Dishman: It's certainly true that the PMI Cohort Program you know people will have and will get cancer over the course of the lifetime on the study when we do it right I think it will be decades long and it will be something like the Framingham Heart Study that continues to teach America and the world breakthroughs in medical science. So we will be contributing and sharing data with both the PMI cancer effort and CI effort as well as the Cancer Moonshot.

And one of the things I just love the fact that vice president Biden is out doing is really pressing for the universities, the companies who have collected data to share it so that they can have large enough datasets to really make new breakthroughs. So the last things I am doing as I walk up the doors our Collaborative Cancer Cloud program and it's really a technology that allows people to share access to their data for analysis without moving that data. That issue of data sharing must be overcome as the million person cohort is going to be a massive dataset that we have never had on the planet to use before. At the same time there is all this existing data that these players have and finding ways to insist that they share data for the greater advancement of science and medical breakthroughs I just love the vice president's messages on that.

Margaret Flinter: Perfect. We have been speaking today Eric Dishman, Director of the Precision Medicine Initiative Cohort Program at the National Institutes of Health. You can learn more about their work and how you might get involved by going to nih.gov/precision-medicine-initiative-cohort-program or simply follow him on Twitter @ericdishman. Eric, thank you so much for joining us today on Conversations on Healthcare and best of luck in your important new position.

Eric Dishman: Thank you and hope to talk to you again sometimes.

(Music)

Mark Masselli: At Conversations on Healthcare, 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: Have Washington DC and Chicago been at the top of the list for years in terms of murder rates? That's what senator Ted Cruz in arguing against gun control laws. But Cruz is wrong about that, he went on to distort the facts in claiming that most jurisdictions with the worst murder rates have the very strictest gun control laws. Studies actually suggest the opposite, states with a higher number of firearms' restrictions have lower firearm deaths but that's only an association not a causal relationship. Cruz, who is running for the Republican presidential nomination was responding to a question about guns being shipped to New York from southern states with more lenient gun control laws. He pointed to Washington DC and Chicago saying, both of them have for years effectively banned firearms and both of them have for years been right at the top of murder rates.

Chicago has been near the top in total numbers of annual murders but its rate expresses a percentage of the population is nowhere near the top as a Pew Research Center's analysis of 28-years of FBI data found. In 2014 Chicago's murder rate was 35th highest among cities with the 100,000 or more residents. Washington has had the highest murder rate in the past but the last time was in 1999. In 2014, D.C. had the 29th highest in the country.

As for the relationship between gun laws and murder rates there is no evidence that gun control laws result in more murders and the Cruz campaign did not respond with any evidence when we asked. Several studies counter Cruz's claim and find instead that stronger gun control laws are associated with lower rates of gun homicide. For instance a 2013 study by researchers at Boston Children's Hospital and the Harvard school of Public Health measured the strength of states gun control laws and mortality rates from 2007 to 2010. The study found that a higher number of gun laws are associated with a lower rate of gun deaths overall and for suicides and homicides individually. And that's my fact check 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 www.chcradio.com. We will have FactCheck.org's Lori Robertson check it out for you here on Conversations on Healthcare.

(Music)

Mark Masselli: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. No parent wants to hear their young child's chronic health issues are a result of serious defects requiring complex and risky surgery. But that was exactly the case for 3-year old Mia Gonzales, plagued for years with severe life threatening respiratory issues and multiple hospitalizations. Her doctors discovered the cause was a severe aortic abnormality that would eventually kill her without intervention. Dr. Redmond Burke, Head of the Pediatric Cardiovascular Surgery at Nicklaus Children's Hospital in Miami would once have deemed her condition inoperable. So he chose a new tactic, created 3D printed model of her actual heart to offer surgeons a chance to map out an approach to the complex surgery that would not only minimize the high level of risk but also yield a more hopeful outcome.

Dr. Redmond Burke: This was printed out because she was thought to be inoperable, and by having this type of model we were able to conceive of an operation that hadn't been done before connecting the small veins from her lungs up to her heart.

Mark Masselli: Dr. Burke said he carried the heart around him for weeks, analyzing the problem from every conceivable angle, sharing ideas with colleagues until they agreed upon the best surgical solution. The surgery ended up being a resounding success.

Dr. Redmond Burke: Her operation was extremely successful and she is recovering very well. And now her life instead of being measured in terms of days and weeks, it's going to be measured in terms of years and decades.

Mark Masselli: Dr. Burke said that prior to 3D printing technology like this they would have deemed her case inoperable or at least too risky to chance. This offered a visual problem solving solution before subjecting his young patient to complications from risky surgery. Creating stem cell generated 3D printed organs for implementation is still years away, this method of deploying 3D technology could help surgeons everywhere, create workable solutions to complex surgical problems. A 3D printed model of a patient's organ, offering surgeons a visual tool to help tackle complex surgical dilemmas, leading to better surgical outcomes, now that's a bright idea.

(Music)

Margaret Flinter: This is Conversations on Healthcare, I am Margaret Flinter.

Mark Masselli: And I am Mark Masselli, peace and health.

Conversations on Healthcare, broadcast from the campus of WESU at Wesleyan University, streaming live at www.wesufm.org and brought to you by the Community Health Center.