

# The Hidden Health Hazards of Climate Change

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Recorded on May 10, 2018



**Announcer:** This is Climate One, changing the conversation about energy, economy and the environment.

We know that climate change is endangering our planet. What might not be so obvious is that it's also endangering our health.

**Jonathan Patz:** Heat waves, air pollution, infectious diseases, and our health depends on adequate food and water supplies. Climate change threatens each of these areas and that's why it's a big issue.

**Announcer:** Warmer temperatures have given rise to mosquito populations, bringing diseases like Zika and dengue fever out of the tropics.

**Su Rynard:** For North Americans really don't let it sink in. How the world is changing...there are no borders or walls that can protect us from mosquito borne illness and this type of disease.

**Announcer:** The hidden health hazards of climate change. Up next on Climate One.

**Announcer:** As climate change threatens our planet, it's also endangering our health. How can we protect ourselves?

Welcome to Climate One, hosted by Greg Dalton.

Climate change isn't just an environmental problem - it's also a health hazard. Air pollution and changing weather patterns give rise to heat-related illnesses, asthma and allergic disorders.

Disasters like Superstorm Sandy and Hurricane Irma leave hospitals scrambling to save patients without power and resources. According to the Centers for Disease Control, insect-borne diseases have tripled in the United States in recent years - and warmer weather is largely to blame.

Later in the program, we'll hear how hospitals and the healthcare industry are dealing with these climate change-related challenges.

And we'll hear from a triathlete who survived a case of West Nile Virus – but isn't convinced about climate change.

But first, Jonathan Patz is director of the Global Health Institute at the University of Wisconsin-Madison. He spoke with Greg Dalton about why he believes climate change is the major health crisis of our time.

**Greg Dalton:** So when people think about climate change. They often think of polar bears, smokestacks, tailpipes. How is climate a personal and public health concern?

**Jonathan Patz:** Well, you know, there are many health issues that are sensitive to climate anything from heat waves to ground-level ozone to mosquito borne diseases. And there are so many ways that climate change can affect our health through these direct temperature or precipitation events to indirect events that it's a big problem. If I went through the full list of exposures it's one of the reasons that I've picked it as one of the most important public health challenges of our times because, you know, heat waves, air pollution, infectious diseases, especially vector-borne and water-borne diseases and our health depends on adequate food and water supplies. Climate change threatens each of these areas and that's why it's a big issue.

**Greg Dalton:** What's the biggest health impact today that Americans are feeling and I know it's often difficult to attribute a particular disease or weather event all to climate, climate is an amplifier. But what is the biggest health effect today in the United States from climate change?

**Jonathan Patz:** Well in the United States, even in our single country it depends where you live, what the main threat would be. So people that live in the Midwest certainly heat waves are a huge issue. But if you live in a coastal area like in Louisiana, the combination of sea level rise and stronger storm surges from stronger hurricanes, those would be the risk. So there is a regional texture to the risks, it's hard to pick out one risk as being the number one risk for the United States. But aspects of heat waves and also air pollution, particulate air pollution kills more than 60,000 Americans every year. So that's a big topic. And then if you live in a place that has a vulnerability to mosquito-borne diseases like dengue fever or Zika virus in the Southern United States. These are climate sensitive diseases and there is a risk of those diseases in those localities.

**Greg Dalton:** Who's doing a good job getting prepared for these things? Is it cities and states on the front lines in the southern United States, you know, who's really out front connecting climate risk and public health?

**Jonathan Patz:** Well the CDC actually has a program it's called the BRACE program, which stands for Building Resilience Against Climate Effects. So there are several states now that have funding from the CDC for climate change adaptation and building resilience. Cities on their own are doing a great job as far as climate change mitigation. And even though things are stalling out at the federal level, cities are moving forward very much so as far as both climate adaptation, but especially climate change mitigation which means burning less fossil fuel, having smart transportation and urban design and trying to get off of coal-fired power plants. That's something that's, you know, moving forward.

And I'll say that the market is automatically beginning to push dirty energy out. I think that if you

talk to investor that just wants to make money and may not really care about environmental concerns. People are not investing in dirty coal anymore. So that sort of automatically happening and that's a good thing that that's happening.

**Greg Dalton:** Another powerful constituency we often hear about in climate conversations are insurance companies. They were among the first to come forward with very sophisticated data about property losses from rising seas, from severe weather, amplified by climate change. Where are the health insurers, you mentioned healthcare, health in the United States, a lot of people immediately think about their insurance. Are they have a voice in this conversation the health insurers?

**Jonathan Patz:** That's a great question. I know that the healthcare sector is getting involved with green hospitals and healthcare without Harm. Kaiser Permanente is taking a leadership role in this. So there is a lot of attention to not continuing to fuel the problem by having inefficient buildings so there's this green hospitals movement. I don't really know about the health insurance. I think when you think about the enormous number of health effects and risks from climate change but also the incredible number of health benefits from climate change policy. I think it'll be a great idea for the health insurance companies to come on board with this.

**Greg Dalton:** Mental health doesn't get a lot of attention. But you think about the dramatic increase in severe weather events people losing their homes, whether it's wildfires in northern California, super storm Sandy some years ago. Whether it's hurricane Harvey, or Irma or Maria. There's a lot of people who are still suffering trauma long after the news has moved on. What can you say about the mental health aspect of the volatile climate and its impact it's having on the United States?

**Jonathan Patz:** Yeah the mental health issue, it's an important issue. It's one that's been overlooked a little bit too much because it's certainly large and concerning; anything from posttraumatic stress syndrome following storms and disasters to simple stress and concern from, you know, the prospects for the future. I think there are a few studies coming out on this. There are also some interesting studies on green space in cities where you can see green space is not only a good thing to reduce the urban heat island effect, you know. The intensifying of a heat wave from black asphalt roads and concrete buildings.

But green space has been shown to be extremely important as far as reducing stress and for benefiting mental health. So there are some intersections there between interventions at adapting to climate change, and reducing mental health problems. But, yeah, definitely a big topic there.

**Greg Dalton:** What can an individual do to think about healthcare as a climate issue?

**Jonathan Patz:** Well the first thing is of course to be aware that climate change truly is a public health issue. Something that affects our own health and it's not simply something that affects the polar bears and biodiversity and very important environmental effects, these are important. But I think too often people overlook the fact that indeed there are so many pathways through which climate can affect their health. As we mentioned the heat waves, air quality. There are studies that show that ragweed pollen increases with warmer temperature and CO2.

**Greg Dalton:** So you're saying people's allergies could get worse with climate change, is that what you're saying?

**Jonathan Patz:** Oh yes, there's a study from the National Academy of Sciences, proceedings of the National Academy of Sciences that shows that ragweed pollen season is increasing across the United

States, especially in the northern latitudes. And that's in relation to warmer temperatures and higher CO2 levels. So, you know, that's a high concern, especially for children with asthma. But across the globe concerns about malnutrition and there's some studies showing that by mid-century because of extreme temperatures we could see a doubling in the number of people at risk for malnutrition going from, you know, 900 million to doubling that. So that's quite significant major concern. So, that, these are, you know, a very diverse way that climate affects our health.

But at the same time when you think what is causing climate change, it's burning fossil fuels. And the measures we would take to combat climate change by getting off of fossil fuel in fact, in themselves will have immediate public health benefits. And I personally think this is the health opportunity of the century when you think about the increased trends in chronic disease, especially those related to physical inactivity, poor diet, you know, obesity, diabetes, heart disease and even cancer. If you think about how we are dependent on the automobile and many of us have sedentary lifestyles. In fact, 60% of Americans don't even meet the minimum recommended level of exercise and, you know, obesity rates hit 40% in adults and 18% in children just last year. Well, almost half of car trips are really short trips less than 2 miles. And we've actually done studies ourselves to show that if you could take those short car trips off the road and turn half of them into active transport by bicycle, you could save lives. In our region we save 1,300 lives every year and \$8 billion every year in avoided mortality and health costs.

Those are not trivial numbers. These are, you know, if we can build cities for people rather than for just automobiles, it's a golden opportunity to mitigate climate change from burning less fossil fuel and at the same time improving our health in a major way. And there are plenty of studies looking at electric power and coal-fired power plants, you know, to get to cleaner energy. Recent studies show that if we replace coal-fired power plants with solar electricity to generate power in the United States that would save over 50,000 lives a year.

**Greg Dalton:** I think a lot of people know those things. And they know that, oh yeah, I mean whether I think a bike ride in winter in Madison, Wisconsin might be a tough sell. But people know that yeah they should walk more, they should exercise more but we don't do it.

**Jonathan Patz:** Yes, well, this is where I think it's extremely important to understand that the healthy choice has to be the convenient choice. You know, it's not a matter -- people don't do what they should do. I don't ride my bike to the University because it's environmentally responsible and it helps my health. I ride my bike because it's the fastest way to get from my house to my office. And that's where urban planners need to come in and we need to be thinking very strategically to design healthy cities. It's gotta be health by design, not by shaming.

**Greg Dalton:** What's some of the biggest surprises that you've come across recently, you study this for a long time, climate and health connection. What's something that's really surprised you?

**Jonathan Patz:** Well one thing I was the co-chair for the health report of the first congressionally mandated U.S. national assessment report. This is back in 2000. And I remember at that time and it still holds today that one of the biggest surprises was the safety of our drinking water. And when you think about climate change it's not just about temperature it's extremes of the water cycle. More floods and more droughts.

And our water systems today already are contaminated by heavy rainfall events; they're called combined sewage overflow events. And already in the United States more than a trillion gallons of sewage contaminated storm water overflows into our lakes and streams every year. So that's a challenge as far as heavy rainfall. Well, the forecast for climate change is we are going to see heavier rainfall events. We're gonna see more droughts, but when it rains it's going to pour because

hot air holds more moisture. So this is I think of concern and it was a surprise when I first looked at it and it continues to be a surprise how vulnerable our water systems are when you think about extremes in climate variability.

**Greg Dalton:** And how do you talk about all this without sending people reaching for their Prozac?

**Jonathan Patz:** Well, you know, that's where I say especially in light of the trends in chronic diseases which are ramping up all over the world, that it is a golden opportunity to get to a low carbon economy that from automobiles to dirty coal-fired power plants that, you know, here's an opportunity to have clean energy and clean air and build cities that will allow for safe biking and walking and effective transit rather than promoting sedentary lifestyles through motorized vehicles. That it's a golden opportunity, fantastic opportunity and a large one, considering the size of these epidemics and chronic diseases.

So I tell people that, you know, even if you didn't believe in climate change that to get to low carbon is an amazing health opportunity. And it's something that, you know, you can talk to anybody, nobody's gonna be against safe routes to schools or physically fit children and adults, you know, no one will be against that. I think it's something that we really have a great opportunity here and we should seize that opportunity. You know what they say, you know, every crisis is an opportunity. And I think the global climate crisis is a huge opportunity for public health.

**Announcer:** That was Jonathan Patz, director of the Global Health Institute at the University of Wisconsin-Madison. You're listening to a Climate One conversation about the health hazards of climate change. Coming up, more about mosquitos - and how a victim of West Nile virus views climate change.

**Chuck Yarling:** You probably don't want to hear anything I have to say about changing climate.

**Greg Dalton:** Sure I do.

**Announcer:** That's up next, when Climate One continues.

**Announcer:** We continue now with Climate One.

["Mosquito" CLIP]

The 2017 Discovery Channel documentary "Mosquito" traces the path of these disease-bearing insects around the globe.

Su Rynard is the film's director. She joined Greg Dalton to talk about how warming weather is helping mosquitos live longer, travel farther and infect more people than ever before.

**Greg Dalton:** One of the most memorable scenes in the film in the program was when you go to Miami and talk with Lindsay who is a pregnant mom and her husband who is quite upset about how they're living in Miami for fear of getting Zika. Tell us about that scene.

**Su Rynard:** Well, we had filmed in Recife, Brazil. And we were right in the middle of the Zika epidemic. And I think one of the things that's interesting about mosquito is that we always think that these are problems that happen elsewhere. So Zika certainly was coming to us through the news and stuff, but I think for North Americans we really don't let it sink in. How the world is changing and how there is no, like there are no borders or walls that can protect us from mosquito borne illness and this type of disease. So certainly in a climate like Florida where they have enormous mosquito populations, huge mosquito populations year round, they've got water year-

round. It is a tropical climate. There's no reason why those diseases can't get to these communities.

So when we were filming, we were filming right at the time when Zika cases had been found in Miami specifically in the Wynwood neighborhood which Lindsay and Scott Fuhrman live very close to. So we were looking for different people to film with that would talk to us about their experience. And specifically the people who are most vulnerable are the pregnant mothers because of the threat of microcephaly from Zika as a result of the Zika virus.

And it was just really interesting to talk to them because I think they were very candid in their emotional response which was largely to the government which had kind of failed to provide the funding to support the CDC, to support extra initiatives, to educate the public. Again kind of squabbling, you know, over the issue and leaving the people vulnerable and leaving them exposed to the problem.

**Greg Dalton:** And Scott chokes up at one point and he says, "Look, I'm a father, it's my duty to protect my child and wife." And he feels very vulnerable that this tiny little mosquito can threaten his unborn baby. And I think that was one of the most compelling moments of the program.

**Su Rynard:** Yes, yes. Yeah, they were amazing to me. Then I, you know, one thing that's great about documentary and filming documentaries, you kind of, people let you into their lives. And even though your contact with them is for a short period of time it can be incredibly intense. And we certainly arrived on their doorstep at a very intense moment and I appreciate their openness to talk about the issue.

**Greg Dalton:** So the Congress, U.S. Congress passed a one point billion-dollar package to do research into Zika to perhaps find a vaccine. What's the status of that?

**Su Rynard:** I believe there is research for the vaccine, which is, I mean, maybe it's possible to find a vaccine for Zika, I'm not an expert on vaccines. I know that they've been searching for malaria vaccine for about 15 years. Although there is a yellow fever vaccine so some viruses they are able to find vaccines for.

But vaccines are only one solution amongst what you need and, you know, you need a multipronged approach for all of, you know, to prevent all of these. And that even goes back to the subject of your show, which is the climate. I mean climate change is one of the reasons why these mosquito borne diseases are on the rise.

**Greg Dalton:** And what's the scope, I mean, people think of as Bill Gates says in the program. People think of these diseases as sort of, he doesn't use this term but Third World problems, you know, Africa, Latin America. So how is climate bringing Zika to the U.S. and how far can it get, can it get up to Canada?

**Su Rynard:** Yeah, that really depends. I mean well we can talk about Zika but we can also broaden it to talk about some other mosquito borne viruses. So for example, to start, there's invasive species in the states now which has been there since the 80s called the Asian tiger. And that is a carrier of dengue fever which is a hugely, you know, a disease that's on the rise, chikungunya and can also transmit Zika. So that mosquito started when it first came to the states it was found in Memphis and in the warmer places and it's slowly been adapting to the climate and moving north. So part of that is the warmer winters. So prolonged warmer temperatures, you know, such as the winter we just enjoyed make it possible for the mosquito eggs to survive the winter.

So in our film, we filmed with Dr. Laura Harrington, who was really chasing the kind of northern

habitat reach of these mosquitoes, which at the time of filming was Long Island and since they've even spread into Ontario. So that doesn't mean the disease is there, but it means if you have an insect that's a vector that's capable of spreading that disease, all you need is one person to travel to that area that's infected.

All you need is one, you know, one, yeah, you just need to add the infection if the mosquito population is present. So that's a new danger and it's all, this Asian tiger is all over the United States now, including California. So that's a real problem with these invasive mosquitoes and that's just one part of it, there's more.

**Greg Dalton:** And is Canada getting ready for the march of the dangerous mosquitoes into a place where people rarely associate mosquitoes with a country so far north as Canada?

**Su Rynard:** Well I think we've definitely got the Asian tiger, you know, is into southern Ontario already. So that's, we're gonna have to monitor that. And that's the invasive species that carries, you know, the diseases I just mentioned. We also have West Nile which with weather patterns such as we've been having this spring, which is very, very wet. And again, climate change isn't just, you know, hotter, it's changing weather patterns and increased for example, increased rainfall, periods of rainfall. So that has certainly increased our mosquito populations enormously this year. So we do have West Nile circulating in where I live in the Toronto area around this year. So that's a concern. So yeah, I mean places that weren't touched before certainly are being touched.

**Greg Dalton:** When you were in Miami, Lindsay and Scott talked about not going outside without putting on an armor of bug spray. When you do that, do you use the DEET bug spray or the non-DEET bug spray something that people who go to the outdoor store often ponder whether to go with the strong toxic stuff or the other stuff.

**Su Rynard:** Well I think if you really don't want to get bitten you have to go with a strong toxic stuff. There is a website, the CDC, Center for Disease Control and Prevention. The U.S. website lists what ingredients are actually effective. And this is a kind of consumer beware situation because there's so many products marketed out there. And most of them don't work at all.

But DEET works, picaridin, another ingredient works and there's an oil of lemon eucalyptus I think that works. But I would again recommend that people check the website if they're really looking. And also the thing about insect repellent is, Scott and Lindsay are absolutely right. When there isn't a virus circulating which there was at that time in their neighborhood. They have to protect themselves. They have to put that on every single day, you know, thoroughly and properly so they don't get bitten. I don't think everywhere we have to run out and buy bug spray because if the disease isn't present in the mosquito population you don't have to, you know, a mosquito bite won't hurt you, you know, you won't get a disease so that's the other part of it.

**Greg Dalton:** There's some pretty strong statements in there in the program about wars are nothing compared to mosquitoes. Mosquitoes are the most dangerous animal in the world. I had thought that malaria was on the downslope. Thanks to Bill Gates and others. Is that not the case?

**Su Rynard:** Yeah, malaria is currently on the down. I mean there's still hundreds of thousands of people who die every year from it, and millions who are affected. But malaria is only one disease. The Zika outbreak is a kind of warning sign. I mean I think that was a wake-up call, especially to North America that these things are present. There's certainly in Europe, things are changing everywhere things are changing. So I think that just because you've had some success reducing one, I mean, major disease, I mean, this has taken years and years of work. There are others that are on the rise. You know, 300 million people a year get dengue fever and chikungunya, these are things

that are coming and they're spreading. And yes, they all sound crazy and foreign and stuff but we better get used to saying them because this is the changing landscape. And this again brings me back to climate. I mean, climate isn't an image of a polar bear on an ice floe, climate is increases in disease like a warmer world, you know, is -- yeah, I mean --

**Greg Dalton:** It's more hospitable to disease.

**Su Rynard:** Yeah, sicker world, yeah, warmer world is a sicker world. And I mean another thing that happens with mosquitoes is they respond to heat. They're very temperature sensitive. So the lifecycle, if we have prolonged heat. The lifecycle of a mosquito will actually speed up. So if you have more mosquitoes, there's more possibility of spreading disease. And the other part of that is that the virus or the parasite, the lifecycle of that also speeds up.

So you have just increased mosquitoes and increasing parasites and the diseases that they carry and spread. So that's a real danger. And if you're in a drought, you know, like California has been for the last, not last year but prior to that. You might think you're safe but I mean mosquito eggs can live for years like 10 years, you know. So if you have a rainfall that happened 10 years ago and the eggs were laid and you have a drought and then you have a big rainfall again, with these irregular weather patterns. All those eggs that are dormant are going to come to life. So we'll have this intense outbreak of mosquitoes.

So all of the things that are happening now with the planet are going to change everything with mosquitoes and mosquito borne illnesses and, you know, for the mosquito there are many mosquitoes that don't spread diseases that are part of the biomass that are really an important part of a healthy functioning ecosystem and then there's the vector diseases. So I think this is something that we all, the vector, mosquitoes that are vectors of disease. We have to start to learn the differences and learn awareness and it just has to be another thing that we're thinking about because like the world has changed and it's changed like human impacts have changed the world. And they've changed it for the betterment of the mosquito.

**Announcer:** That was Su Rynard, director of the 2017 documentary "Mosquito."

In 2012, after an unusually warm and wet season, Texas experienced a West Nile Virus epidemic. Over eighteen hundred people contracted the disease; eighty-nine of them died. One person who survived a run-in with West Nile was triathlete Chuck Yarling.

Yarling began training for triathlons in 1983 at the suggestion of his friend Richard Blakely. A few months later, at the age of 38, he entered his first competition. In 2012, while training in Austin, he suddenly fell ill.

**Greg Dalton:** Recently you contracted West Nile virus. How did that happen?

**Chuck:** Well I got bitten by a mosquito sometime. I was training to do my next race, and Richard says that I felt weak and I stop training to recover and I start training again. He seemed to think that I was already bitten. All of a sudden I didn't feel too good on Tuesday. Went to the clinic and they said, "Oh you're fine. Take some aspirin you'll be there." So on Wednesday I got up and I said, "I do not feel good at all. Gonna go back to bed." I didn't make it. Fell into a coma on Wednesday morning around 10 AM. Thursday, Richard came to look for me because I didn't show up to happy hour, which I never missed at our favorite restaurant. So he found me and I was 31 hours later he got me in a hospital.

**Greg Dalton:** So you are in a coma for how long alone?



**Chuck:** 31 hours.

**Greg Dalton:** 31 hours at your home there in Austin. Wow. What was the weather like in Austin that year?

**Chuck:** That was third week of August. So it got pretty warm and I never worried about getting out in the sun or the heat to train, run or bike. Nope, didn't matter to me.

**Greg Dalton:** And then what happened?

**Chuck:** Well about 12 days later, I woke up and my first thought was that, "Wait a minute. When am I gonna train again?" I didn't realize what was going on yet. And I looked around there was my sister, a couple of her kids. A tube down my throat. So I was in the rehab for about 30 days. Then I got to two more rehab units and then Richard took me in his house in Buda, I call it my halfway house, in a wheelchair learned how to fix myself and work around the house.

**Greg Dalton:** Okay. And did they at this point know that it was West Nile; did you get an accurate diagnosis?

**Chuck:** The doctors knew exactly what it was but they had to take a spinal tap to prove it.

**Greg Dalton:** And is that something that's common in Austin, West Nile virus or is that an unusual, how common is that?

**Chuck:** That's a good question. It started up getting really bad in Dallas prior to August. But in August 2012 it got really bad there and it hit Austin too.

**Chuck:** Yeah, five people in the hospital same week as me, three died.

**Greg Dalton:** Were you aware of West Nile virus, you know, outdoor triathlete in Austin at that time was that something that was on your radar?

**Chuck:** Nah. I don't think about things like that.

**Greg Dalton:** When did you think about contracting West Nile in Austin, Texas as a possibly connected to the changing climate?

**Chuck:** You probably don't want to hear anything I have to say about change of climate.

**Greg Dalton:** Sure I do.

**Chuck:** If there is such a thing as change of climate, mankind has nothing to do with it.

**Greg Dalton:** Okay. And you were an engineer in the army, is that right?

**Chuck:** Well I was a combat engineer but I was basically a clerk typist and a words clerk in Vietnam.

**Chuck:** When I came back from Vietnam, I finished my engineering degree.

**Greg Dalton:** So you worked in manufacturing and have a scientific background. And you're not sure the climate is changing?

**Chuck:** That's correct.

**Greg Dalton:** And so when you look around and you look at say what happened to Houston, you know, three 500-year floods in a row something like that. You say that's – what do you say to that, the people in Texas who say, “Wow these floods and rain bombs are coming pretty strong. This is something new and different.”

**Chuck:** That doesn't mean it's gonna happen at any time in the next 25 years either does it?

**Greg Dalton:** No, there's probability. So you're not convinced the climate is changing. So you're not convinced that warming temperatures is increasing the hospitality for mosquitoes carrying Zika, West Nile and other diseases?

**Chuck:** No I don't. I can draw an argument saying, okay supposedly observations have been made that the Arctic area region has melting ice caps, whatever. But that cannot explain why ice is growing in the Antarctic. Because that doesn't make sense to me.

**Greg Dalton:** Right. Well there's the extent of, there's something that's called the extent of sea ice, which is the spread of the sea ice that sort of area. And then there's how thick and how heavy that ice is. So it's possible that you could crush up a bunch of ice and put it in a tub and it would spread out. It would look over a broader surface area –

**Chuck:** But it's been getting thicker in the Antarctic.

**Greg Dalton:** Yeah. In some places it's getting colder. But overall global temperatures are rising but still gets really cold some places. And there's still low records in some places. But there's a lot more warm records than there are cold records. Yeah, it's snowing and still snowing.

**Chuck:** I'm not disregarding climate change per se. My argument specifically is mankind has nothing to do with it. It cannot have anything to do with it.

My argument is this. Mankind lives on only 31% of the planet and it is obscene for anybody to consider that mankind on 31% can affect weather on the remaining parts of the earth which are all water.

**Announcer:** Triathlete Chuck Yarling survived a battle with West Nile Virus after being bitten by a mosquito in 2012. Yarling eventually began training again. He just turned seventy-three, and is preparing for his next race.

You're listening to a conversation about climate change and health. This is Climate One. Coming up, we'll hear how the health care industry is dealing with the new normal.

**Jessica Wolff:** Clearly hospitals care and they need to care because their operations, you know, business as usual, do harm. And healthcare has a responsibility not to do harm.

**Announcer:** That's up next, when Climate One continues.

**Announcer:** You're listening to Climate One. We've been hearing about the health care dangers of climate change. What are hospitals doing to address the challenges of disease outbreaks, weather disasters – and their own carbon footprint?

To find out, Greg Dalton spoke with Jessica Wolff, director of the Climate and Health program at Healthcare Without Harm.

**Greg Dalton:** So what is a climate-smart healthcare system?

**Jessica Wolff:** Well it's interesting. People don't think about healthcare when they think about climate. But healthcare makes up 18% of our GDP and there was a study done in 2016 by Dr. Jodi Sherman and Matthew Eckelman, which showed that healthcare actually makes up about 10% of our greenhouse gas emissions in this country. So what that means is that the U.S. healthcare sector if it were a country it would rank ahead of the U.K. and would be the 13th leading country for greenhouse gas emissions.

So with that, we know that climate change has health impacts which a number of your other guests have been talking about. And because hospitals operate in such an energy intensive and use so many products and create so much waste, there actually their contributions to climate change actually end up adversely impacting health. And so this is a sector it's the only industry that has a mission to heal and has pledged to do no harm. So this is a sector that has an opportunity and a responsibility to use its ethical, economic and political influence to advance the transition to a low carbon future that supports healthy people living on a healthy planet and to do that, that's where climate-smart healthcare comes in. And that is about mitigation so healthcare reducing its own carbon footprint. Resilience. So healthcare working to build resilient healthcare facilities and help build resilient communities. And leadership, you know, using that trusted voice to influence policymakers, shift the public discussion to make climate change about health not about polar bears because that's what resonates. And then also to bring their market muscle to help move those markets and really, you know, lead to some disruptions.

**Greg Dalton:** When this awareness come about? I mean if I think back about when I first kind of connected climate change with healthcare. It was the evacuation of a hospital in New York City during Superstorm Sandy where the power is out and the streets are flooded and literally it's like, you know, patients climbing downstairs because the elevators don't work. And there was that very dramatic evacuation of the, I think it was the NYU Hospital in lower Manhattan. Was it that moment, or what was the awakening moment for the healthcare industry to say hey we got to be part of this?

**Jessica Wolff:** That's a good question. I mean that was NYU Langone. And NYU Langone did have a seawall to protect its generator. But because of climate changing our projections for flooding and sea level height are off so, you know, they did lose power they did have to evacuate. They had \$700 million in research losses alone at NYU. So in terms of building for climate resilience that really was a wake-up call. And we have health systems across the country that are investing and being prepared. I mean Texas Medical Center for Hurricane Allison in 2001 they were manually ventilating patients. They invested in resilience and being prepared and with Hurricane Harvey in 2017, all 23 of their hospitals remained operational. So we're seeing real benefits.

So hospitals that had been hit by extreme weather or hospitals like Partners HealthCare in Boston, Massachusetts. They've built the Spaulding rehab center which is a glowing example of how to build for resilience considering sea level rise. And that hospital is a rehab hospital right on Boston Harbor. It was the hospital that where the Boston Marathon bombing patients underwent rehabilitation. So I think healthcare -- extreme weather events is one piece but healthcare is on the front lines, not just for extreme weather events as disease prevalence shifts that's also something healthcare will have to manage and have to deal with. And, you know, it's not enough for hospitals to stay open during extreme weather events. Patients have to be able to get there. Their staff has to be able to get there. So hospitals not only need to think about their own climate resilience. They need to think about their communities.

**Greg Dalton:** And doctors are often leaders are respected members of communities. There's been some professional advocacy, the American Academy of Pediatrics has come out a few years ago and

said that climate is a primary concern for children and children's healthcare, American Medical Association. So how are the healthcare professionals kind of using their respect and muscle to bring attention to climate?

**Jessica Wolff:** Yes, you make a good point. Many of the medical societies have come out with statements supporting climate change. There's a newer organization called the medical society consortium on climate and health where these societies have come together and have started to do strong advocacy work through that organization. We have at Health Care Without Harm a physician network, a way for physicians to connect and network and access tools, resources, best practices so they can bring them back to their hospitals.

We don't see enough of climate change information in medical schools and residency programs. The physicians who are leaders in this work are going, you know, we work closely with Dr. Amy Collins who is an emergency medicine physician in Massachusetts and she recently spoke to medical students at Mount Sinai, in New York. We hosted an event with U.S. PIRG in Chicago that was, you know, directed at medical students and residents. And recently there was a fellowship created in climate and health science policy at CU Boulder and that's again in the Department of Emergency Medicine. So when you look at clinicians interestingly or physicians, emergency medicine physicians they get this because they're on the front lines of this. The other group of physicians that's very active are anesthesiologists because something that's unique to healthcare is that 5% of the emissions from hospitals are typically related to anesthetic gas emissions. So that's a group that is working, you know, to try to reduce those emissions. And there are some solutions and some are relatively easy to implement.

**Greg Dalton:** Reading your report about the climate-smart healthcare system was the pharmaceutical impact. What is the carbon impact of the pills that are administered or prescribed in hospitals?

**Jessica Wolff:** Yeah. In the 2016 report by Sherman and Eckelman. They estimate that pharmaceuticals are 10% of the greenhouse gas emissions from healthcare. So, you know, those pharmaceuticals are manufactured and then they are transported. And then they get to the hospital and then they have to, you know, then there's a waste coming out the other side. So from the hospital perspective you want to be pretty careful with inventory because when you have more than you need, then you have to dispose of those and those are, you know, create more impact in terms of waste and greenhouse gas emissions as well.

**Greg Dalton:** We're talking about hospitals with Jessica Wolff from Health Care Without Harm because hospitals are the big source of emissions. Running a hospital is complicated there's a lot of pressures on cost, insurance, you know, healthcare is a big, I was gonna say controversial industry in undergoing a lot of change. Is being green really a priority when you're trying to save lives and trying to take care of these people not sure if they can pay their bills, is like recycling and taking care of the waste, is that really a priority?

**Jessica Wolff:** Well it's a good question. You know we have, my sister organization, which is our implementation arm is called Practice Greenhealth. And we have 1,200 hospitals that are members of Practice Greenhealth which is really a sustainability healthcare organization. And that's about 20% of the hospitals in this country. So clearly hospitals care and they need to care because their operations, you know, business as usual operations do harm. And healthcare has a responsibility not to do harm.

Now, when you look at margins, hospitals have very low margins, you know, there's many of your guests are from corporate America hospitals if they're lucky have a 2% to 4% margin often they're

losing money. So you're right, it's hard and we're competing for dollars. So when you're trying to do an energy efficiency upgrade, you're competing for capital potentially with a new MRI or a new fancy surgical robot. So how do you make that case? Well, the reality is when you have a low margin every dollar you save from energy efficiency saves you much more in revenue. So if you have a 4% margin if you save a dollar, it's equivalent to \$25 in new revenue coming in. So that's one of the arguments or, you know, rationale we need to make, particularly when you're talking to people who are under pressure for the margins like a CFO or COO of a hospital.

**Greg Dalton:** Sure. And one we know that hospitals anyone who's ever visited or stayed in the hospital know that the food is usually pretty bad. They're trying to make you healthy, but they're not serving you the most healthy food. Probably they want to keep that food cost low. We know that food is a big contributor to greenhouse gases, food waste a really big contributor. So is healthier food and food waste part of what the hospitals are trying to do?

**Jessica Wolff:** Absolutely. And actually one of our most robust programs at Health Care Without Harm is called our healthy food and healthcare program. And that's looking at nutrition not just through the lens of what you need to be heart healthy what are the vitamins and minerals. But how was the food produced, how was it processed, how was it packed, how was it distributed as well as how it was consumed. And many of our hospitals are making big strides to purchase local food. So we have a hospital University of Vermont Medical Center and they're procuring over 45% of their food locally. And, you know, they have a rooftop garden they take their food waste to be composted off site and then they buy some of that compost back for their gardens. Boston Medical Center has a rooftop garden and that food goes right to their fresh food pharmacy so physicians write prescriptions for low-income patients to be able to get fresh produce and some of that is grown on site. So there's a lot of innovative solutions.

Hospitals are often the largest employer in the community and they procure and serve a lot of food. They're feeding their patients, their staff and their visitors so they can make a real difference there.

**Greg Dalton:** So what can a patient do, you know, shopping for a doctor or considering a hospital, you know, whether the hospital is green probably not on the top of your priority list when you're looking for someone to take care of you. But what can a patient do to be sensitive to these kinds of changes in the healthcare sector?

**Jessica Wolff:** That's a very good question. And I think all of us when you are sick, or you have a family member that's sick you're not worrying if your hospital is powered by renewable energy. You're worried that they're gonna take the best care of your mother, that the surgeon that they're seeing has done that procedure a thousand times that you understand what they're saying that they're not gonna have complications. So I don't think it's fair to ask patients to drive this transition. I will also say you don't often have a choice where you go, you know hospitals have been consolidating often there's only one hospital in a region. So for most people they don't always have a choice about a hospital that they go to. But I think when you're not ill to be aware of what hospitals are doing and push on them as a member of the community.

Because what a hospital does dramatically affects the community. If a hospital is burning fossil fuels they're affecting the local air quality. So you can think about your hospital shifting to renewable energy will have a direct positive effect on asthma on cardiovascular diseases on allergies. So I think making your voice heard if you are a climate champion and encouraging and supporting your hospital to make those changes and celebrating when your hospital does make those changes.

**Announcer:** Greg Dalton has been talking about building a climate-smart healthcare system, with

Jessica Wolff, director of the Climate and Health Program at Healthcare Without Harm.

Greg's other guests today were Jonathan Patz, director of the Global Health Institute at the University of Wisconsin-Madison, Su Rynard, director of the documentary "Mosquito," and West Nile Virus survivor Chuck Yarling.

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**Greg Dalton:** Climate One is a special project of The Commonwealth Club of California. Kelli Pennington directs our audience engagement. Carlos Manuel and Tyler Reed are the producers. The audio engineer is Mark Kirschner. Anny Celsi and Devon Strolovitch edit the show. The Commonwealth Club CEO is Dr. Gloria Duffy.

Climate One is presented in association with KQED Public Radio.