Climate change's effects on human health with Colin Cave, MD

Watch the AMA's COVID-19 Update, with insights from AMA leaders and experts about the pandemic.

Featured topic and speakers

In today’s COVID-19 Update, Treating climate change as a public health crisis with Colin Cave, MD, the medical director of external affairs, government relations and community health for Northwest Permanente (NWP), the medical group for Kaiser Permanente Northwest in Portland, Oregon. AMA Chief Experience Officer Todd Unger hosts.

Learn more at the AMA COVID-19 resource center.

Speaker

- Colin Cave, MD, medical director of external affairs, government relations and community health, Northwest Permanente

Transcript

Unger: Today we’re talking about the link between health and climate change, and how physicians and health systems can be a part of the solution. I'm joined by Dr. Colin Cave, medical director of external affairs, government relations and community health for Northwest Permanente, the medical group for Kaiser Permanente Northwest in Portland Oregon. Dr. Cave is also an AMA delegate and he's asked me to call him Colin today.

I'm Todd Unger, AMA's chief experience officer in Chicago. Colin, it's a great pleasure to have you on today.

Dr. Cave: Thanks for having me, Todd. This is a great opportunity.
**Unger:** Well, we know that climate change is a global crisis. In fact, I don't think you can look at the news today and not see that in the headlines. Some people might not realize just how much the effects of climate change have intensified over the past few years. Why don't we just start by talking a little bit about the trajectory that we're on and how it's been especially evident in your home state of Oregon.

**Dr. Cave:** Yeah. You know, I think we all knew things were going to get bad. We've heard about that for a while now. But I think we were surprised at just how bad they can get and so quickly. Last year, in the Pacific Northwest, we had what we refer to as a heat dome. It turns out that when you're making pressure cookers, you use that technology that we see environmentally in heat domes, and Portland, Oregon, reached a temperature of 116 degrees. I've been up here since 1994—

**Unger:** Oh my gosh.

**Dr. Cave:** Never even got close to that. And the rest of the Pacific Northwest was also affected. In Washington and British Columbia, and we had over 1,000 heat-related deaths which was just a tragedy. Portland and Seattle, two of the three cities in the United States that have the least amount of air conditioners per household, not surprisingly. And what we found was that the majority of the deaths in the Pacific Northwest occurred in people that were living in houses without air conditioners.

And a year before that two years ago, we had the worst fire season ever. You know, these heat waves are making the forests just burn even worse than they did before. And two years ago, we had a million acres burn, over a million acres burn in Oregon. 11 people were killed, thousands of homes destroyed, four small towns essentially wiped out. Even our flagship hospital came within a quarter mile of having to be evacuated because the flames were so close. This is just not normal.

**Unger:** I think for anybody out there that's skeptical about the connection between climate change and public health as a now crisis can just hear the stories that you're telling here and think otherwise. And you've actually said that we do need to treat climate change as a public health crisis. Talk to us a little bit more about, again, that intersection between health and climate change kind of now and what we think might happen in the future.

**Dr. Cave:** Well, it can be looked at in a lot of different ways. I think it's important that we focus on how climate change disproportionately affects certain communities. And those communities typically are communities of color. And the effects are worse when you are outside working. So if you're a farm worker and you're outside in the fields in 116-degree heat, you can only imagine what that's like.

A lot of people in these communities, unfortunately, live in heat sinks, areas of cities that have no trees, a lot of concrete, a lot of tar. And the temperatures within cities can vary significantly in these areas, called heat sinks, can be even worse. And oftentimes, there's no air conditioning in these houses at all as well. And then there's a whole houseless population that are literally exposed to the
elements. And again, a higher percentage of these individuals are going to be from disadvantaged communities.

When we look then at the disease burden that is carried, the effects of climate change increased illnesses like myocardial infarction, strokes and asthma. Again, how does that happen? Well, increased heat dries out the forest. We have forest fires. The fires create what we call fine particulate matter or two and half microns, get absorbed into the lungs, into the bloodstream and cause inflammation. And this inflammation then results in the heart attacks and the strokes, the vascular issues and the pulmonary issues.

We know that there’s a 5% to 25% increase in emergency room visits and hospitalizations every time we have a fire in the Pacific Northwest. And I remember two years ago driving to my clinic in Salem, Oregon, with an air quality rating of over 600, just incredibly unhealthy. And the mental health effects in our communities, if you’re in a city and it’s burned to the ground, it’s an entire additional level of care that has to happen for thousands of people who lost their homes. So there’s so many links that we could go on for a long time but eager to talk about more.

**Unger:** And again, the theme here is this is acute, not out in some distant future.

**Dr. Cave:** Absolutely.

**Unger:** You also believe that health care providers, especially physicians, have a professional responsibility to address climate change's effects on human health. Why is it so important to have physician leadership in this space?

**Dr. Cave:** Well, the physician voice is second to none when it comes to health. And unfortunately, for the last several decades, there's been a dearth of the physician voice in physician leadership. Most of the leadership on health and the environment has come from our hospital colleagues, with a few exceptions. There have been some outstanding physician spokespeople and we are seeing more and more physicians become involved.

First, we have to educate ourselves so that we can learn what is happening, so that we can then intervene and teach others about it. And again, that's starting to happen more and more now. Here's what it boils down to—because 80% of a person's health occurs from events outside of the exam room. 20% at most of their health I have influence over in the exam room.

We started dealing with the social determinants of health. Do they have resources? Are there traumatic events like adverse childhood events of childhood? And as a physician, I have to take into account my patient's total health in order to make them better. That means I have a responsibility to understand these factors and then address them as possible.
You know, when we take the pledge, first, do no harm. It can't be any more true than with climate change. Physicians are responsible for 80% of the spend of every health care dollar that has to do with ordering tests, admitting our patients, prescribing pharmaceuticals and all the things that we do to do our job. Each of these decisions comes with an emission of carbon that happens.

Wouldn't it be great if we could do our job? Take care of our patients and make choices that reduce the emissions? Why does it matter? Health care sector is responsible for 8.5% of all emissions in the United States. That's huge. I'm proud that Kaiser Permanente, my health system, was certified as carbon neutral in 2020. And recently, just this year, we've committed to becoming net zero starting with 50% reduction in our emissions by 2030 and getting to net zero by 2050.

For us to get there, again, getting back to your question, physicians are going to have to lead because we're the ones that are in charge of the health care system and we're the ones that can actually help bring down these emissions.

**Unger:** I'm curious when you talk to your physician colleagues about that responsibility for leadership. Do you get kind of a beleaguered look back at you thinking, "Oh my gosh, it's another thing I need to add to the list of my responsibilities of which there are many?"

**Dr. Cave:** You know, I get a couple of different responses. First of all, the ones instead of giving me the beleaguered looks, like "I just can't deal with this," they're the ones that are the most grateful that there are those of us out there that are fighting for it and are trying to get the newer positions or the passionate positions involved. I get a lot of physicians now that are actually interested in how they can become involved. And this morning, I was on a call for another hour working with a physician group in Southern California on what it might look like to organize around environmental leadership.

But it is daunting. And if you're not used to this, they certainly didn't teach me this in medical school. There's a lot of learning that has to happen and that's one of the things that I really believe is that physicians that are leading in this space have to make themselves accessible to other positions that want to lead. It's that whole education domino effect—need to educate ourselves, educate our colleagues, we can then educate legislators and our patients.

**Unger:** Well, you mentioned before how your system is kind of leading by doing. And Northwest Permanente has been actively involved in this area for a while now. And in fact, is the first physician-led medical group in the world to become a certified B-corporation. What does that designation mean? Why is it so important?

**Dr. Cave:** Well, first of all, we're very proud of that. To become a B-corp, you have to be a for-profit company. Kaiser Permanente, for the listeners that don't know, is made up of both Kaiser hospitals and health plan which is a not for-profit organization centered out of California and all of the regions, plus a Permanente medical group which is a for-profit independent medical group that has an
exclusivity contract with Kaiser to take care of our patients.

We’re not—we are a for-profit independent medical group in Northwest Permanente so we can be a B-corp. What a B-corp is basically as a company that’s a for-profit but acts like a not-for-profit. We meet high standards, the highest standards, really, a verifiable social and environmental performance, public transparency and legal accountability. That’s a mouthful, so we typically just walk around saying we use business as a force for good.

We have third party verification that looks at us and says that, in fact, we have raised the importance of people and planet to all of the other things that companies worry about. And then the why is always important, should be important when you make these decisions. It’s just important that we show up right now for our patients, our workers, our community, and our planet more now than ever. And our board certification ensures that we do just that.

**Unger:** What do you think have been the biggest benefits that you’ve seen from getting a certification like that?

**Dr. Cave:** Well, first of all, there's a lot of pride. Like I said, we became a B-corp in 2016. And when we did, when we first found out about B-corp, we realized we're a B-corp, we're just not certified as a B-corp. I mean, it's inherent in our DNA. So to become a B-corp, you have to change your articles of incorporation, that's a big deal because we're physician owners and we have about 1:400, 1,500 physicians so we needed to get buy-in to do that.

But what it boils down to is if you hire for fit, our physicians are all pretty much like-minded. We care about our communities, we want to be involved in our communities, we want to make a difference not just in our clinics but in the communities that we serve. So we have a lot of pride. And then that in turn is reflected when people come and look at whether they want to join our medical group or not.

And so we tend to hire like-minded individuals that have a mission. They want to make more than just a paycheck or more than just a good retirement account. They want a good clinical practice but they also want to be involved in a group that is doing good for the community, for the environment, for our patients. So it's a win-win especially in a national environment with a physician shortage.

The other thing I would say it allows us to do is it allows us to lead in the environmental space. In 2016, we became a B-corp. Looking at our environmental answers, we realize that there's places for us to lead. And so it pushed us into staking that flag in the ground, that environmental leadership is something that we are going to take on then and moving into the future. So it's helped position us well as a medical group in this country.

**Unger:** I'm curious if you have any lessons learned from the process that you went through that you could share with other health care organizations that are looking to do something similar.
**Dr. Cave:** You know, being a B-corp is really an exciting event but it's also hard. 85% of those companies that first try to be a B-corp do not pass the first assessment. So you need to really want to do it. You want to learn, you want to grow, and you want to become a better corporation. Those are the criteria, I think, that allow you to kind of muster that energy.

You need leadership from the top. This is not something that somebody can just say make it happen. Your CEO, your executive medical director, they have to be on board because it does require some resources. It requires allocation of staff time. And then you need the support of the front line. This is a group-wide endeavor. This can't be a top-down thing. This is actually got to be in the DNA of the group.

And it takes a while. Right now, it's probably going to take two, maybe three years, to go through all the process of changing your articles of incorporation, of passing the assessment and then answering the literally hundreds of questions, many of which are gated questions depending on how you answer them you get more questions. And then you have to supply supporting material.

You know, we've all gone through the certifications for the medical organizations that we have to do in the quality organizations. This is another one. But instead of hospital days or infection rates, we're graded on five areas of governance, workers, community, environment and customers.

**Unger:** I want to return to something you said earlier in the conversation because it was not something I necessarily think of right away. This issue of reducing health care's carbon footprint. One thing that you've also done is really establish a connection between increasing telehealth and its impact on reducing carbon footprint. And you even published a large scale study that showed evidence to this effect. So tell us a little bit more about that connection and the positive impact that you've seen at Northwest Permanente with expanded use of telehealth.

**Dr. Cave:** Yes, so we have been monitoring our virtual visits since 2015 and recording them and learning what we’ve—how we’ve grown in that respect. There have been some smaller studies on this but we did report the first large-scale study on virtual visits and how it has impacted our environment. Looking back from 2015 to 2019, our in-clinic, in-person visits increased about 1.5% a year as our population and membership grew. But our virtual visits were increasing at about 39% a year. So ever since 2015, we've actually been asymmetrically increasing our virtual visits compared to our in-person visits. However, in 2020, as everybody knows, COVID happened. And what we saw at that point was our in-clinic visits dropped 46% in a single year and our virtual visits increased 108% in a single year. And we when we looked at the round trip that one of our typical patients would take to their primary clinic site and we extrapolated what that looks like, it basically eliminated 9,000 metric tons of CO2 from being put out into the air in the Pacific Northwest just because of that.
Add to that the fact that you need fewer buildings, you need fewer clinics. When people are using virtual visits more, we were also able to look and see that we were able to close about four small clinics, either leased offices or owned offices, and reduced the CO2 from closing those clinics as well.

Interestingly as we looked at this, we realized that for the most part in the past when people are looking at efficiency of emissions or how do they do overall, the denominator is always the square foot of the building that you're in. And so as emissions per square foot, a couple of our authors on the paper are back from Boston, they let us know how Boston hospitals have to report their efficiency every year. And if one hospital decides to build more buildings, even though you've got to put all that cement, and all that CO2 that's being let out from the concrete and all the electricity that's used to run those buildings, if you see fewer patients in all that square foot, your emissions per square foot is actually looking pretty good.

If you're a different hospital that has decided instead of building more hospitals, you're going to use the space you have to the max and you're going to maybe go six days a week and have extended hours, your efficiency given that denominator square foot doesn't look so good because you have more emissions per square foot. But I think most of us are understanding enough that that hospital that decides not to build more is actually more efficient. But the measurement didn't show that.

And so our paper we came up with, what we call the ambulatory visit carbon intensity measurement and that just means that for every outpatient visit, you assign a carbon intensity. And before 2020, we were running at about 8 kilograms of CO2 per visit. After 2020 or when we had that tremendous reduction in in-person and increase in virtual visits, that carbon intensity per visit dropped to 4 kilograms per visit—significant decrease. So this is providing another way to look at how much emissions are created for each visit as opposed to does somebody have to be seen in person.

**Unger:** That's a whole other way to look at the value of telehealth which, again, I don't think everybody has made that link. And speaking of links, also just another link that maybe somebody wouldn't necessarily make is the link between advancing health equity and mitigating climate change. What's the connection there?

**Dr. Cave:** Well, you're hitting the nail on the head. When we start talking about what you're talking about, we're looking at climate justice. Climate change disproportionately affects, as we talked about before, people who are socioeconomically disadvantaged. If you have more exposure to the elements, you have increased sensitivity because of health issues or poor here in the past. If you're less able to adapt and are more prone to bad health effects, you're going to see more adverse outcomes than people that have resources. And that's just a kind of a known fact.

You can basically map health effects by zip code. People who don't have a lot of resources tend to live in heat sinks as we talked about without a lot of trees or they live close to power plants or heavy emitting types of industries. And if you live in those communities, your health is absolutely going to be
worse than if you live in a good environment.

And what it boils down to is, time and time again, we just see that the same populations who are disproportionately affected by global warming are also the same victims of social justice issues and are more prone to morbidity and mortality from pandemics. There's just a tremendous amount of overlap between all of these justice-related issues.

**Unger:** Colin, you really outlined a number of very tangible steps that Northwest Permanente has taken already in the arena of climate change. Where would you like to see it headed in the future?

**Dr. Cave:** Well, it's important to us to realize and the one thing that we did realize when we came up with our climate action plan in 2019 is that as hopeful as we are and as much as we really want global warming to decrease and not get beyond that 1.5 Celsius increase, we're also realists. And we've come to the conclusion that we're going to be practicing medicine in a severely climate changed world in the future.

So we want to be able to continue our role in mitigating climate change and mitigating our effect on climate change, reducing our own emissions, offsetting our own emissions and helping our health plan policy and health plan hospital, colleagues decrease our emissions. We also understand that we need to be prepared to work and meet our mission of improving the health of our members and our communities in a climate-changed world.

So we’re putting more and more effort now in addressing those issues on how can we still fulfill our mission when our hospital burns down or we lose doctors or nurses due to a pandemic or any of another—a number of things that we're dealing with.

**Unger:** Colin, thank you so much for being here today. You know, we've had a number of discussions about climate change and health and the connection over the past couple of years but this is kind of the first time I've heard going beyond kind of what seems to be obvious in terms of acute problems with health and thinking through kind of system-level changes in medicine that can really have an impact going forward.

Again, Dr. Colin Cave, thank you so much for being here. We'll be back with another video and podcast soon. For all of our videos and podcasts, go to ama-assn.org/podcasts. Thanks so much for joining us today and please take care.

**Disclaimer:** The viewpoints expressed in this video are those of the participants and/or do not necessarily reflect the views and policies of the AMA.