

Bill Davenhall at TEDMED 2009: Your Health Depends on Where You Live

Where you live: It impacts your health as much as diet and genes do, but it's not part of your medical records. In this video from TEDMED 2009, Bill Davenhall shows how overlooked government geo-data (from local heart-attack rates to toxic dumpsite info) can mesh with mobile GPS apps to keep doctors in the loop. Call it "Geomedicine."

<http://video.esri.com/watch/107/bill-davenhall-at-tedmed-2009-your-health-depends-on-where-you-live>

Video Transcription

00:16 Can geographic information make you healthy?

00:22 In 2001, I got hit by a train. My train was a heart attack.

00:29 I found myself in a hospital, in an intensive-care ward, recuperating from emergency surgery...

00:36 ...and I suddenly realized something. That I was completely in the dark.

00:41 I started asking my questions. Well, why me? Why now? Why here?

00:45 Could my doctor have warned me?

00:48 So what I want to do here in the few minutes I have with you, is really talk about what is the formula for life and good health.

00:56 Genetics, lifestyle, and environment.

00:59 That's going to sort of contain our risks and if we manage those risks we're going to live a good life and a good healthy life.

01:07 Well, I understand the genetics and lifestyle part.

01:10 And you know why I understand that?

01:12 Because my physicians constantly ask me questions about this.

01:17 Have you ever had to fill out those long legal-sized forms in your doctor's office?

01:22 I mean, if you're lucky enough you get it to do it more than once, right?

01:26 Do it over and over again and they ask you questions about your lifestyle and your family history...

01:31 ...your medication history, your surgical history, your allergy history.

01:36 Did I forget any history?

01:39 But this part of the equation I didn't really get and I don't think my physicians really get this part of the equation.

01:48 What does that mean, my environment?

01:51 Well, it can mean a lot of things.

01:53 This is my life. These are my life places. We all have these.

01:58 While I'm talking, I'd like you to also be thinking about how many places have you lived?

02:04 Just think about that you know, wander through your life thinking about this.

02:08 And you realize that you spend it in a variety of different places.

02:12 You spend it at rest and you spend it at work...

02:14 ...and if you're like me you're in an airplane a good portion of your time traveling someplace.

02:19 So it's not really simple when somebody asks you where do you live, where do you work, and where do you spend all your time...

02:25 ...and where do you expose yourselves to risks that maybe perhaps you don't even see?

02:32 Well, when I have done this on myself, I always come to the conclusion...

02:36 ...that I spend about 75 percent of my time relatively in a small number of places.

02:43 And I don't wander far from that place for a majority of my time, even though I'm an extensive global trekker.

02:52 Now, I'm going to take you on a little journey here.

02:54 I started off in Scranton, Pennsylvania.

02:56 I don't know if anybody might hail from northeastern Pennsylvania.

02:59 But this is where I spent my first 19 years with my little young lungs.

03:04 You know, breathing high concentrations here of sulfur dioxide, carbon dioxide, and methane gas, in unequal quantities.

03:12 Nineteen years of this, and if you've been in that part of the country, this is what those piles of burning, smoldering coal waste look like.

03:21 So then I decided to leave that part of the world and I was going to go to the Midwest.

03:26 Okay, so I ended up in Louisville, Kentucky.

03:29 Well, I decided to be neighbors to a place called Rubber Town.

03:33 They manufacture plastics. They use large quantity of chloroprene and benzene.

03:38 Okay, I spend 25 years in my middle-age lungs now, breathing various concentrations of that...

03:46 ...and on a clear day it always looked like this so you never saw it.

03:50 It was insidious and it was really happening.

03:53 And then I decided I could get really smart.

03:55 I would take this job in the West Coast and I moved to Redlands, California.

04:01 Very nice, and there my older, senior lungs, as I like to call them...

04:07 ...I filled with particulate matter, carbon dioxide, and very high doses of ozone, okay?

04:13 Almost like the highest in the nation, right? This is what it looks like on a good day.

04:17 If you've been there, you know what I'm talking about.

04:20 So what's wrong with this picture?

04:23 Well, the picture is there's a huge gap here.

04:25 The one thing that never happens in my doctor's office, they never ask me about my place history.

04:32 No doctor can I remember ever asking me where have you lived?

04:37 They haven't asked me what kind of the quality of the drinking water that I put in my mouth...

04:42 ...or the food that I ingest into my stomach. They really don't do that. It's missing.

04:48 Look at the kind of data that's available.

04:51 This data is from all over the world.

04:53 Countries spend billions of dollars investing in this kind of research.

04:57 Now I circled the places where I've been.

05:00 Well, by design, if I wanted to have a heart attack, I've been in the right places. Right?

05:08 So how many people are in the white?

05:10 How many people in the room have spent the majority of their life in the white space? Anybody? Boy you're lucky.

05:17 How many have spent it in the red places? Oh, not so lucky.

05:22 There are thousands of these kinds of maps that are displayed in atlases all over the world...

05:29 ...to give us some sense of what's going to be our train wreck.

05:34 But none of that's in my medical record and it's not in yours either.

05:38 So here's my friend Paul. He's a colleague.

05:41 He allowed his cell phone to be tracked every two hours...

05:46 ...24/7, 365 days out of the year for the last two years, everywhere he went.

05:52 And you can see he's been in a few places around the United States, and this is where he has spent most of his time.

06:00 If you really studied that, you might have some clues as to what Paul likes to do.

06:06 Anybody got any clues? Ski. Right.

06:10 And we can zoom in here and we suddenly see that now we see where Paul has really spent a majority of his time.

06:16 And all those black dots are all of the toxic-release inventories that are monitored by the EPA.

06:24 Did you know that data existed?

06:27 For every community in the United States, you could have your own personalized map of that.

06:33 So our cell phones can now build a place history.

06:36 This is how Paul did it. He did it with his iPhone. This might be what we end up with.

06:41 This is what the physician would have in front of him and her when we enter that exam room...

06:48 ...instead of just a pink slip that said that I paid at the counter. Right?

06:51 This could be my little assessment and he looks at that and he says, Whoa, Bill.

06:57 I suggest that maybe you not decide just because you're out here in beautiful California...

07:02 ...and it's warm every day, that you get out and run at 6:00 at night.

07:07 I'd suggest that that a bad idea Bill, because of this report.

07:14 What I'd like to leave you for are two prescriptions.

07:17 Okay, number one is, we must teach physicians about the value of geographical information.

07:23 It's called geomedicine. There's about a half a dozen programs in the world right now that are focused on this...

07:29 ...and they're in the early stages of development.

07:32 These programs need to be supported and we need to teach our future doctors of the world...

07:39 ...the importance of some of the information I've shared here with you today.

07:43 The second thing we need to do is...

07:45 ...while we're spending billions and billions of dollars all over the world building an electronic

health record...

07:53 ...we make sure we put a place history inside that medical record.

07:57 It not only will value the...be important for the physician...

08:00 ...it'll be important for the researchers that now will have huge samples to draw upon, but it'll also be useful for us.

08:09 I could have made the decision if I had this information, not to move to the ozone capital of the United States, couldn't I?

08:17 I could make that decision.

08:18 Or I could negotiate with my employer to make that decision, in the best interest of myself and my company.

08:28 With that, I would like to just say that Jack Lord said this almost 10 years ago.

08:34 Just look at that for a minute.

08:36 That was what the conclusion of the Dartmouth Atlas of Health Care was about...

08:41 ...was saying that we can explain the geographic variations that occur in disease and illness and wellness...

08:48 ...and how our health care system actually operates.

08:51 That was what he was talking about on that...on that...quote.

08:55 And I would say he got it right almost a decade ago...

08:59 ...so I'd very much like to see us begin to really seize this as an opportunity to get this into our medical records.

09:06 So with that, I'll leave you the, in my particular view of health, geography always matters.

09:13 And I believe that geographic information can make both you and me very healthy.

09:17 Thank you.