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www.reachmd.com
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(866) 423-7849

Talking 'Big Data' at the Institute for Health Metrics and Evaluation

Mark Masselli:

This is Conversations on Health Care, I'm Mark Masselli.

Margaret Flinter:

And I'm Margaret Flinter.

Mark Masselli:

Well Margaret, some interesting numbers have come in. A study just released by Robert Wood Johnson Foundation and Athena Research, a Division of Athena Health shows that dire warnings of long delays at primary care facilities due to the millions of newly-insured Americans simply have not happened under the Affordable Care Act.

Margaret Flinter:

It's an interesting data set, Mark, and part of an ongoing partnership to chart the true impact of the Affordable Care Act. It's called the ACA View, and the aim is to provide a nonpartisan analysis of the actual effect of the health care law.

Mark Masselli:

What's interesting about the report, Margaret, is that it's aggregating real-time patient and provider experience data from Athena Health's large patient database. They provide a health IT system for 55 thousand practitioners, so a large patient population there. They're measuring some 35 metrics over time, and are able to rely on real-time data for research and analysis. It's a pretty comprehensive snapshot of health care marketplace.

Margaret Flinter:

Well, perhaps the biggest revelation in this first of what will no doubt be many reports is that it showed there's no significant wait time added to the patient experience for those seeking primary care or other ambulatory services. That was the dire prediction that came from opponents of the health care law, and certainly there was some experience of that in Massachusetts years ago. So other interesting findings in the report as well should be of interest to anybody in the care delivery or health policy field.

Mark Masselli:

And there's another interesting metric to note that is the direct results of the health care law. Insurers seem pretty happy with the outcome so far, since the nation's uninsured rate dropped from 18 percent last year to 13.4 percent this year. That means millions more customers for insurance companies, and there will be another wave of newly-insured during the next open enrollment not too far around the corner, Margaret.

Margaret Flinter:

Very interesting to see just how many opportunities the health care law is providing for gathering real metrics on the health care system, hopefully on outcomes, too. And that's bound to have an impact on the actual delivery of care.

Mark Masselli:

That's something our guest knows quite a bit about today, Margaret. Peter Speyer is the Chief Data and Technology Officer at the Institute of Health Metrics Evaluation at the University of Washington.

Margaret Flinter:

They've developed a groundbreaking report on the collective health of over 200 countries around the globe. It's called the Global Burden

of Disease. It's the most detailed report to date on the causes of poor health and death by country, just a massive undertaking that required some state of the art computing technology. And he'll be talking about some of the fascinating health trends that their report has revealed.

Mark Masselli:

We'll also have our weekly visit with Lori Robertson, Managing Editor of FactCheck.org. She's always on the hunt for misrepresented facts in the health policy world.

Margaret Flinter:

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 e-mail us at info@chcradio.com or find us on FaceBook or Twitter. We'd love hearing from you.

Margaret Flinter:

We'll get to our interview with Peter Speyer in just a moment.

Mark Masselli:

But first here's our Producer, Mary Ann O'Hare with this week's Headline News.

Mary Ann O'Hare:

I'm Mary Ann O'Hare with these health care headlines. The health care law by the numbers, 10.6 million people, that's the number of Americans who sought some kind of assistance signing up for insurance under the Affordable Care Act. Some 28 thousand assisters helped guide those 10 million-plus Americans through the insurance exchanges, those online portals set up by the ACA to provide an insurance marketplace.

Eight million folks signed up for the insurance ultimately and another five million included in coverage through expanded Medicaid. Folks living in states that created their own exchanges were generally in favor of the health care law or most likely to find assistance, as well.

But even states like Texas, which fought vociferously against the law and which didn't expand Medicaid, have seen an uptick in folks signing up for Medicaid coverage, due in part to all the publicity surrounding the rollout of the health care law. And insurers did pretty well, too. The nation's uninsured rate peaked at 18 percent last year. After the rollout of the first open enrollment that percentage dropped down to 13.4 percent, meaning millions of new customers for the insurance industry.

Hepatitis C finally has a vanquisher, but the regimen is cost-prohibitive in most cases. The State of Oregon appears to be nearing what could be a first in the nation stance limiting availability to Medicaid patients of new hepatitis C treatments that offer great promise at a very high price, 84 thousand dollars for a three-month treatment. On July 31st a state committee will consider guidelines intended to limit treatment only to patients who face serious liver damage without the drug. They expect to save about 120 million dollars by doing that.

And women in Detroit have a worse chance of surviving maternity than women in Libya, Uruguay, or Vietnam. The maternal death rate in Detroit is three times the national average, and it's going up according to recent data. It's not just a phenomenon in the Motor City. Maternal death rates are on the rise in other parts of the country, as well. Those working on the front lines of maternal health are hoping initiatives in the Affordable Care Act will get high-risk women into more prenatal care sooner.

Better news on the stroke front. According to a study looking at 20 years of data the incidence of stroke is down about 50 percent over two decades, and death by stroke reduced by 40 percent, the decline being attributed to better control of high blood pressure, reduced smoking rates, and better care protocols. The rise in diabetes, however, may negatively impact that trend over time. I'm Mary Ann O'Hare with these Health Care Headlines.

Mark Masselli:

We're speaking today with Peter Speyer, Chief Data and Technology Officer at the Institute for Health Metrics Evaluation at the University of Washington where he oversees the infrastructure for global and public health data gathering from governments around the world that led to the groundbreaking report Global Burden of Disease.

Before that Mr. Speyer was Director of Global Marketing Strategies for Corbis, a digital imaging managing company which oversees the rights to over 100 million images. In his native Germany Peter worked as a senior consultant at Bertelsmann. Peter holds a MBA from Temple University and a Master's of Business Engineering from the University of Karlsruhe, Germany. Peter, welcome to Conversations on Health Care.

Peter Speyer:

Hi, Mark, thanks. Hello Margaret, it's good to be here.

Mark Masselli:

You've been at the forefront of this new era of big data analytics which is really transforming global health. And at the Institute of Health Metrics Evaluation you're responsible for managing vast reams of data from around the globe which measures disease and causes of death in over 180 countries. And we were fortunate to have the Director, Dr. Murray on the show talking about the initial report Global Burden of Disease. Tell our listeners how you helped create the secure infrastructure that allowed the report to come into being.

Peter Speyer:

So the Global Burden of Disease study is a really, really large and complex study incorporating lots of data from very many different sources. What we're trying to do in this study is to analyze to what extent our health is impacted by different disease and injuries. And so we're trying to express in life year equivalents how many years we are losing to these diseases both from premature mortalities. About 55 million people die every given year around the world.

And so we are summing up for every death how many life years we are losing from those as well as how diseases that ail us but don't kill us impact our life, and expressing in life equivalents how much our health is impacted by those. And so we are creating a metric called disability-adjusted life year, which is our currency for measuring overall health life. So Chris and I talked about probably the initial release of the GBD 2010 study.

And we have now switched to a model where we are annually updating these numbers, and this new effort is centered at the Institute for Health Metrics and Evaluation. So the analytic work is done here at the Institute, and then we're working with about a thousand experts in a hundred countries that help us look at the data, vet the results that we're having. So we run the analysis for about 300 diseases, 69 risk factors that impact these diseases, and we're looking at 188 countries and looking at data _____ (8:25).

You can imagine that we need a lot of input data for the study. So we really try to incorporate everything, any data set that has information on health outcomes around the world. So we are working with vital registration, so information from death certificates. We're working with census data, surveys that are collected, disease registries. For example, cancer registries exist in many countries and collect information about cancer. Health record data from hospitals, claims data from insurances. So we're incorporating about 30 thousand different data sources in this most current update of the GBD.

So we're comprehensively looking through the websites of ministries of health, central statistical organizations, NGOs, UN organizations, and others. And some of this information is easily available on websites, but in many cases we have to directly contact folks at those organizations and negotiate access to data. Because as you can imagine health data, especially if it's very detailed and has information on individuals, is very sensitive, and so it's a constant balance of trying to get access to these data and make them available for research.

Margaret Flinter:

Peter, certainly gathering the data was just one of the number of very daunting tasks required to complete the project. And I understand you had to come up with some new tools and ways of using them to assist in the data analysis. And that bodes well of course for innovation in data analytics around the globe in all sorts of areas.

But maybe you could share with us, what kinds of innovations in big data analytics made it possible for you to approach all this information in useful ways that maybe couldn't have been done in the past. And did some of the new analysis reveal surprises about the state of global health and causes of mortality around the globe?

Peter Speyer:

The approach is really focusing on six major components. So what we're trying to do in GBD, and I'm telling you this because different methods apply to the different parts of the study, we're starting with measuring all causes of mortality around the world. And what that means is for every age group in every country we're trying to identify exactly how many people died in a given year from a given cause. And then we're analyzing which causes were responsible for these deaths and doing it in the sequence, make sure that every death in the world is accounted for only once.

So once we've analyzed causes of death we go on to analyze how diseases that ail but don't kill us affect us, and we're looking at the prevalence of different diseases. And then we look at risk factors, and then putting it all together. And as you can imagine with the number of data sets we have to apply very statistical methods. And given the number of data sets and the complexity of the analysis we have actually built out our own computer class.

There was about 10 thousand nodes, so 10 thousand computers _____ (10:58) together, and still it takes about four to five days to run

the analysis beginning to end. So with this current iteration of GBD we really innovated on each one of these steps and developed new methods. And I would say given that in more recent times much more data became available and the methods that we are deploying are much more sophisticated, that really has impacted a lot of change in terms of how we can do this analysis.

What did we find? We over the past 20 years, so GBD goes back to 1990, made a huge progress in terms of reducing mortality in children. There were about 10 million deaths in children in 1990, and we reduced it to about seven million in 2010, so it shows how we reduced infections and childhood diseases. So this is the first huge insight. So the second big finding is that we're living longer and getting older. But we're living those additional years not in complete health, and so in about 20 percent of each year that we're adding to life expectancy in poor health.

And then the third big insight is, we're looking at risk factors besides disease burden, and in 1990 the leading risk factor was childhood malnutrition. So most burden in the world was still caused by under-nutrition, and in 2010 that changed to diet as the leading risk factor. So we went from having too little food to eating too much and the wrong things.

In the US diet is actually responsible for about 40 percent of total burden now, followed by smoking and overweight, and especially overweight has massively increased in importance. And so we just recently released a study on obesity and overweight that shows time trends and shows that about 30 percent of the world's population is overweight or obese, and the US's number's actually 50 percent. So a lot of these insights are really interesting both on the disease side and the risk factor side.

Mark Masselli:

Peter, this brings us to an interesting intersection. Still daunting to many in the health care industry, we have these reams of data, vast bodies of knowledge and health information. But how do we access all the data? What's your plan for disseminating all those complex health data points that would make it user-friendly? We've been thinking a lot about this as sort of the implementation science of, how do you help people study the methods that will help promote this integration of what you have as sort of research and evidence-based knowledge to improve health policy and practice?

Peter Speyer:

Excellent question. So the GBD results has been an extremely complex and large data set. We have about a billion data points just in terms of results. And then we're trying to make these results available to very different audiences, right? We want other researchers to pick up our work and improve on it. We want data analysts, folks at foundations and ministries that really want to dive deep into the data to work with those. We want to address policy-makers and decision-makers, the C-suite at NGOs and companies, to use the data for decision-making.

But then we also want to reach the casual user or general audiences that can use this information to understand better how health is impacted around the world and in a given country. So what we're trying to do is tailor kind of the presentation of these results to these different audiences, and using very different mechanisms. So for one, as I said, all the methods that we're using for GBD are published in peer review papers, so reaching journalists through papers like The Lancet, JAMA, New England Journal of Health, and others.

Then we are writing detailed reports both on how we did the analysis and then some of the key insights and findings that we have from the study. We're going to conferences to present our findings. We're doing trainings and telling others more about that as well as policy workshops to help policy-makers interpret and use these results correctly. The game-changer and the biggest innovation in terms of outreach are these interactive data visualizations that are now available on our website, which is at healthdata.org.

Because those really make all the data available from a very high level of view to a very large degree of detail, and it basically allows our audiences to drill into the level of detail that they're comfortable with. And so what we're trying to do is make these intuitive enough that people can explore our data sets, look at patterns, look at trends across countries or within a given country.

And _____ (15:21) visualization GBD Compare uses very many different visuals that you can then use in combination to really dive into the data sets. And it's interesting that typically people spend minutes on websites at best, and usage for GBD Compare ranges between 30 minutes and an hour on average. So people are really getting into this, into the data and into interacting with these data and exploring them.

And then last not least, we launched a platform called the Global Health Data Exchange. And here we're cataloging all the input data as well as the result data sets that we're using to make it easy for others that want to do similar analysis to find data by country, disease, and then basically obtain and work with these data themselves.

Margaret Flinter:

Well, to do this on a global scale is remarkable, and I have a feeling that someone out there is taking your research and marrying it up to what we think of as the social determinants of health, the poverty in a country, or the educational level of attainment in a country, or the

status of women's rights in a country. And I'm curious if you have seen it used in that way to drive policy change within the ministries of health with countries around the globe and if there are any examples you might share of where the report is being used to drive policy change.

Peter Speyer:

Well, the social determinants as well as the risk factors I was mentioning earlier, it really goes both ways, right? So we're looking at social determinants as information in terms of estimating health. So we have a large database of things like access to water and sanitation, educational status, income per capita and so on that help us in the analytic process and especially for countries where we have limited data to be able to estimate more precisely how the burden plays out.

In terms of usage, we get a lot of interest from around the world, so we see on the website that we have users from 200-plus countries. And we have specific examples like the Government of UK that saw the results of our study and wanted to dive deeper, and looks up nationally how different populations within the UK are affected. And so we have launched a project with them to go into more detail there.

Or the Minister of Health in Rwanda contacted us and saying that these visualizations are so useful that they're having recurring meetings where they go through these and try to learn more about their country, and use the evidence that we've put together for them to make better decisions on health. And those are just two examples. I mean, there's many more where we directly engaged with folks at ministries or nonprofits, foundations, across the UN and so on that we know use our data, and interact with our tools, and really use them in their day-to-day work to make decisions.

Mark Masselli:

We're speaking today with Peter Speyer, Chief Data and Technology Officer of the Institute for Health Metrics Evaluation at the University of Washington where he oversees the infrastructure for global and public health data gathering for governments around the world, which lead to the groundbreaking report Global Burden of Disease. Peter, we're entered this era of quantified self where patients are increasingly seeking information whether it's on their genome, or tracking vital signs, or wearing Fitbits.

And what's your advice to practice as they think about how to manage this generated information by individuals? What practices should they be looking at in terms of data infrastructures that might help facilitate the two-way flow of information from patient to practitioner? And I assume this is not just a phenomenon here, it's happening all over the world, the new platform being obviously the mobile phone being able to bring people to new realizations about their own health.

Peter Speyer:

You're very right. This is a phenomenal trend, and it's really interesting to see how it's catching on really across the world. I myself, I'm tracking activity levels, food intake, workouts and so on. And as people are doing this more and more I think this is really useful information at many levels, right? You mentioned practices. Actually physicians should be using those. I mean, I should be able to go with this to my doctor and let him or her know about these data, and they should use it for kind of helping me manage my health.

I think the problem we're still seeing is that physicians come back to that with answers that range from, "Oh, that's very interesting, let's have a look" all the way to, "I have nowhere to put this in my system. I don't actually want to see this because I don't know actually how to handle it. I don't want to be liable in any way to _____ (19:56) this." So I think there's still this divide where now we have all these tools to collect all this data, but there's really no good streamlined way of getting that into the day-to-day health care system.

So I think for now there's a lot of the burden on the individual to kind of try and use this data. Obviously it's very useful to track your activity. I myself am motivated to move more and work out more because now I have a track record of how well I actually did this. And there's very useful tools for individuals to bring together all the health data in one place, like the Microsoft HealthVault that's been around for years that allows you to pull in your health record information and then now increasingly data from these devices.

But on the flipside I think we have only to be careful to look at, where do these data reside, and how can we really move them across the health system as well as then make them available for analysis, right? There's a big danger that different companies will be collecting these data, and they're really then living in silos, and it's hard to import the data from your health care provider and then get all this information in one place. And then maybe to take one step back, obviously these data are also very important for analysis at the population level like we do for GBD.

So physical activity is one of the risk factors we're tracking. And getting more information about individuals and how active they are, and getting this information in a somewhat streamlined way, would obviously be hugely beneficial and make our lives easier, but we're not quite there yet. We see this a lot of places where these data are collected but there's still a lot of effort to kind of get them together comprehensively.

Margaret Flinter:

Well Peter, I think it's so important that in addition to looking at mortality and causes of death that the project broaden to really look at the chronic conditions that have such a profound impact not just on years of life lost but, as you alluded to in your opening comments, on years of productivity and vitality, and the ability to be generative contributing members of society.

I understand that you've launched a prize to spur improved public health by turning evidence in the Global Burden of Disease into successful programs that impact the public health challenges which are so associated with really our global epidemic of chronic illness. Tell us about that prize and what you're hoping to accomplish.

Peter Speyer:

Oh, thanks much, Margaret, for bringing this up. As I said before, these data that we develop from the Global Burden of Disease should be used by very many different audiences for very many different purposes, right? I mean, we were talking about policy- and decision-makers, we were talking about researchers, we were talking about analysts and so on. And so we launched a prize last year, and it's called the Roux Prize on Turning Evidence into Health Impact.

So this prize was initiated and funded by Dave Roux, who is a Board Member at the Institute for Health Metrics and Evaluation, and it basically promises a prize of 100 thousand dollars for an organization or an individual that use data from the GBD to impact health for a population. And so obviously a huge opportunity for anyone from policy-makers to nonprofits and so on to kind of apply for this prize and potentially win the money. But the importance of this goes much beyond this, where we're trying to get all these entries and examples of how people are using health data, and we plan on spreading information about these to inspire others.

So we're going to collect all these examples of how people are turning evidence into impact and really making life better for people around the world, and then spreading these examples and hoping that others will use it as an example to also use more health data, use more evidence to base their decisions on. The prize is currently under review for 2014, so we're not open for entries for this year, but there will be another opportunity in 2015. So if anyone knows of great examples of usage of GBD data for impacting health we would be happy to hear about that.

Mark Masselli:

We're speaking today with Peter Speyer, Chief Data and Technology Officer for the Institute for Health Metrics Evaluation at the University of Washington. You could learn more about his work by going to healthdata.org or you can follow him on Twitter at [#peterspeyer](https://twitter.com/peterspeyer), that's s-p-e-y-e-r. Peter, thank you so much for joining us on Conversations on Health Care today.

Peter Speyer:

It was my pleasure. Thank you very much.

Mark Masselli:

At Conversations on Health Care we want our audience to be truly in the know when it comes to the facts about health care 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:

Well, politicians from both parties are continuing to make false claims about Medicare in an effort to scare seniors. In the Kentucky senate race an ad from Democratic candidate Alison Lundergan Grimes features a retired coal miner who asks how Senator Mitch McConnell could've voted to raise his Medicare costs by six thousand dollars. But McConnell did no such thing, and neither did any other Republican lawmaker. The claim is an old one about a 2011 budget plan proposed by Representative Paul Ryan.

It called for phasing out traditional Medicare and gradually replacing it with a premium support system of government-subsidized private insurance. The nonpartisan Congressional Budget Office did estimate at the time that anyone enrolled in those private plans would pay about six thousand dollars more in 2020 than they would have under the current system. But the retired coal miner in the ad wouldn't have been affected by the plan.

He and anyone else age 55 and older would have stayed on traditional Medicare. More important, Ryan has made several changes to his proposal over the years, and the model that he now supports could produce savings for seniors, according to another CBO analysis. In addition, CBO says that its 2011 estimate was based on assumptions about health care spending that turned out to be incorrect, and its modeling of seniors' and insurers' behavior has improved.

McConnell responded to Grimes's ad with a misleading one of his own, claiming that the Affordable Care Act, quote, "cuts 700 billion dollars from seniors' Medicare." The bill doesn't slash 700 billion from the current budget, it's a cut in the future growth of spending over a decade and the reduction of payments to hospitals and other non-physician providers. Also, that same 700 billion dollars in cuts is part

of the Ryan budget plan that McConnell voted to consider. And that's my fact check for this week. I'm Lori Robertson, Managing Editor of FactCheck.org.

Margaret Flinter:

FactCheck.org is committed to factual accuracy from the country's major political players, and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like checked, e-mail us at chcradio.com. We'll have FactCheck.org's Lori Robert's check it out for you on Conversations on Health Care. This is Conversations on Health Care, I'm Margaret Flinter.

Mark Masselli:

And I'm Mark Masselli. Peace and health.

Voiceover:

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

Margaret Flinter:

Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. It's a known fact that the current generation of American children is more obese than any previous generation. And at a Washington, DC community health center, Unity Health Care, a pediatrician was in a quandary over how to tackle this growing health scourge. He began with a unique solution targeted to a teen patient whose body mass index or BMI had already landed her in the obese category.

What he did was write a prescription for getting off the bus one stop earlier on her way to school, which made her walk the equivalent of one mile a day. Dr. Robert Zarr of Unity Community Health Center understood that without motivation to move more kids just might not do it. The patient complied with the prescription and has moved from the obese down to the overweight category, certainly an improvement. He then decided to expand this program by working with the DC Parks Department mapping out all the potential walks and play area kids have within the city's parks, mapping 380 of them so far.

Dr. Zarr:

How to get there, parking, is parking available if someone's going to drive, bike racks. There's a section on pets, park safety.

Margaret Flinter:

Dr. Zarr writes park prescriptions on a special prescription pad in English and Spanish with the words, "Rx for outdoor activity" and a schedule slot to ask, "When and where will you play outside this week?"

Dr. Zarr:

"I like to listen and find out what it is my patients like to do and then gauge the parks I prescribe based on their interests, based on their schedule, based on the things they're willing to do."

Margaret Flinter:

Ultimately, Dr. Zarr says, with some 40 percent of his patient population grappling with overweight or obesity, he wants to make the prescription for outdoor activity adaptable for all of his patients and adaptable for pediatricians around the country. He's planning to create an app for his parks database where providers and patients alike can use it, and one day he'd like to be able to track his patients' activities in the parks. Rx for Outdoor Activity, partnering clinicians, park administrators, patients and their families to move more, yielding fitter, healthier young people, now that's a bright idea. This is Conversations on Health Care, I'm Margaret Flinter.

Mark Masselli:

And I'm Mark Masselli. Peace and health.

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