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Mark Masselli: This is Conversations on Health Care. I am Mark Masselli.

Margaret Flinter: And I am Margaret Flinter.

Mark Masselli: Well Margaret, there are some indications that Health Care costs are slated to rise in 2015 after several years of slow growth.

Margaret Flinter: Well that's right, Mark, and it's expected that Health Care Costs will rise roughly 7% next year that's due to a number of factors and certainly the economic recovery is to blame a bit and the numbers of newly insured Americans who will be seeking Health Care maybe with some pent up demand and need.

Mark Masselli: I think you're right. And this comes on the heels of several years of slow growth in Health Care.

Margaret Flinter: We're going to see more cost transparency moving forward under the Affordable Care Act. So, I am going to predict maybe more stable, slower rates of growth in Health Care Cost moving forward.

Mark Masselli: Another thing the President saw fit to fund in the Health Care Arena is vital to all of us. The President launched a 100 million dollar initiative to map the human brain.

Margaret Flinter: Well the head of that program Dr. William Newsome of Stanford will be joining us to talk about just the enormous scope of that project.

Mark Masselli: They are calling the BRAIN the last great frontier in medicine. It should be a fascinating conversation.

Margaret Flinter: And we want to give a moment of honor and pause in memory of Dr. Arnold Relman, the late editor of the New England Journal of Medicine, a physician, a scientist.

Mark Masselli: Also Lori Robertson, Managing Editor of Factcheck.org's stops by to correct another misstatement about health policy in the public domain. But no matter what the topic, you can hear all of our shows by going to CHCRadio.com.

Margaret Flinter: And as always, if you have comments, please email us at www.chcradio.com or find us on Facebook or Twitter because we love to hear from you.

Mark Masselli: But first, here is our producer, Marianne O'Hare with this week's Headline News.

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Marianne O'Hare: I am Marianne O'Hare with these Health Care Headlines. Obamacare and the mid-term elections, there will be an effect according to a bankrate.com survey. Americans are going to weigh their voting behavior against the impact of the Affordable Care Act. Independents are trending higher against the Health Care Law in 2014 with 25% saying they would vote Republican versus Democratic because of the ACA. The rest of the Independents pivotal endorse races, say they are undecided. And a whole Americans are less unsatisfied with the Health Care Law. Last time bankrate pulled Americans at 45% in favor of appeal that number dropping to 30% this time around and most Americans favoring fixing rather than appealing the law. Meanwhile, predictions are pretty consistent on an expected rise in employer Health Care Costs in 2015, including insurance rates of about 6.8% next year. According to the survey by Price Waterhouse Health Research Institute, well insurance rates are expected to accelerate next year up slightly from this years costs and offset will be realized by slight increases in deductibles. The amount of money paid out-of-pocket before coverage kicks in.

America, land of the free and home of the stressed. A recent survey by NPR and partners of the Harvard School of Health, have found stress at an epidemic level in this country. According to research, one in four Americans poll reported currently living with a high degree of stress in the past months, the unchecked stress impacts of person's ability to function. It impacts relationships, family dynamics, and economic realities as well. The report suggests suicidal intervention with the stress epidemic. I am Marianne O'Hare with these Health Care Headlines.

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Mark Masselli: We are speaking today with Dr. William Newsome, Professor of Neurobiology at Stanford University School of Medicine. Dr. Newsome was just appointed as director of the newly created Interdisciplinary Neurosciences Institute at Stanford University, as well as being named co-director of President Obama's 21st Century BRAIN Initiative which seeks to develop a framework to correlate scientific efforts in the quest to map the human brain. He is a winner of numerous prestigious awards including the distinguished Scientific Contribution Award for the American Psychological Society. Dr. Newsome, welcome to Conversations on Health Care.

Dr. Newsome: I am please to be here with you, Mark.

Mark Masselli: Dr. Newsome, congratulations on your selection by President Obama to be co-director of his 100 million dollar 21st Century BRAIN Initiative, which is seeking multidisciplinary solutions to unrevealing the mystery of the BRAIN. The project has been likened in scope to the mapping of the human

genome. But currently the nation spends about five billion dollars a year on all kinds of BRAIN research. Tell us a little more about what sort of discoveries and payouts you are hoping this project will yield.

Dr. Newsome: We're at a really unique time in the history of neuroscience. Those of us who have been in the field for a few decades really sense that rate of change has been accelerating enormously in the last five years and we are -- it is only the beginning of this acceleration. And the real difference maker here is the invention of new technologies that fundamentally allow neuroscience to ask questions that we have only been able to wonder about and reflect about in the past, very new that are happening. There is change of foot is making many of us who are experimental have to rethink what it means to be an experimental neuroscientist and I think that what we are shooting for here is really nothing less than a revolutionary kind of understanding about how all of this electrical activity in our brains makes it possible, the mental lives that we all have, our thoughts, our aspirations, our goals, our memories, and our ability to learn. We really want to understand the biological mechanisms that make these things possible and these new fundamental technologies are going to be a quantum leap along the way here. And a charge from President Obama is really to try to understand the BRAIN at this very basic level. I am sure that these are going to have positive outcomes for our understanding of disease as well.

Margaret Flinter: Dr. Newsome, you have been, I think, quoted saying that complete mapping of the human brain won't take years like the Human Genome Project did and it might take decades, which is why the President referred to this as 21st Initiative and I think you've also referred to the Brain as a three pound mass of glue between the years but at the same time as the most complex known entity in the universe. So what are the challenges? Why it is so hard?

Dr. Newsome: Yeah. When you said the keyword Margaret, there was keyword there is complexity. So this three pounds of glue inside our head, and I will refer to it as glue because that literally is the consistency. If neurosurgeons know that you know, it's about the consistency of jell-o or toothpaste. But inside that three pounds that you say is the most complex entity in the universe that we know about. So, in each one of our heads, that three pounds contains 100 billion neurons okay. So, these are nerve cells that communicate with each other electrically and it's that electrical communication and that circuit activity that somehow underlies our mental lives. So, you have 100 billion nerve cells and then each of those nerve cells is making 1,000 somatic connections. Little chemical connections with other cells and these somatic connections are sort of the points of information transferring. So, you have got 100 billion neurons each with a 1,000 somatic connections that means you have a 100 trillion of these somatic connections. And just to map that kind of complexly interconnected network is incredibly bonding, and we have done calculations that say in a human brain you know, if we really map these connections carefully and thoroughly we would fill up many terabytes worth of disks with information just for

one brain and we don't know how to even handle datasets that large at, okay? This is right out at the hairy edge of what computer science is able to handle at this point. And then if you could imagine techniques that allow you to do that just the massive amount of data and how we would handle it and how we would analyze it and how we would mine it is self daunting. So, I think, you know, when you look at those three things chained together, you can start seeing why we say this is not something that's going to be done in a year or two years or even ten years but this really is a grand challenge for the 21st Century.

Mark Masselli: You know, Dr. Newsome, you say this is a spectacularly good time to embark on the quest of mapping the human brain and because of the recent technological breakthroughs is the technology on the mapping capability or is also on the neuroscience side?

Dr. Newsome: The technology is on all these fronts. I mean that's one reason I say it is the spectacularly appropriate time for this. I mean the Obama Administration they got this one right, okay? This really is the right time, it's the right topic at the right time and the technologies really do create the potential for revolution over the next couple of decades. I kind of like in this to trying to understand traffic patterns around New York City and information flow around New York City, so we could take out a road map and we could look and we could see all the connections of the roads and exactly where each road runs. We need that in the human brain. And that sort of what I call neuroanatomy. Just knowing where the cells are, where they make their somatic connections to other cells so that you have the static road map. But that road map if you look at it of New York Area, it doesn't tell you what traffic is flowing on each road at any moment of the day, right? That's a dynamic property. That is information flow within that network of roads and it is the same way in the brain. Just knowing the map doesn't tell you what sorts of information is flowing in different circuits at different time. So there no one answer to this question about activity and dynamic activity it depends on what you are doing. So we need the new technologies, but we also are developing new technologies unprecedented new technologies to get that dynamic activity to measure the traffic in the neurons. And so now we have statisticians, and physicist, and mathematicians coming in to help us develop theories about these new datasets that we are acquiring and once you developed a theory, you really want to be able to protrude the system. You know, you say aha, I have a theory on how this thing works now. I want to go in and I want to change the traffic on this one road and see if I can predict the changes that will happen on the other roads and we are developing new technologies for protruding the activity on the nervous system.

Margaret Flinter: Well, Dr. Newsome, you've got now an interdisciplinary neuroscience institute that you that you are directing at Stanford, which is going to help provide a framework for the national BRAIN Initiative and tells what the new research paradigm looks like and tell specifically about the institute.

Dr. Newsome: Well the institute here at Stanford is a new attempt to integrate brain research across the entire campus, and we have a lot of traditional neuroscience research here in the School of Medicine at Stanford and in the Department of Biology and to some extent and in the Department of Psychology. But we all realized and we are fortunate that our President and Provost here at Stanford realized that the brain is no longer just a problem in biology. Today, we realized you know that these new technologies that are transforming, our understanding are coming from all different directions.

So the latest technologies that give us the best mapping are new clarity technique that is fundamentally coming from chemists. It is coming from chemical treatments of the brain that render an animal brain for example transplant so that so that we can look all the way through it and trace these fiber pathways all the way through it. So chemistry is playing a big part in terms of the large scale activity recording optics and physics are playing a large part. We are actually now monitoring the activity of tens of thousands of neurons at a time through optical means, and new microscopes that have been invented by physicists and engineers. The ability to perturbed results from genetic manipulation of certain cells and putting in sensors in a certain cells that allows us to shine light on those cells and that technique was just invented seven or eight years ago here at Stanford, it called Ontogenetic, but that is coming from genetics and molecular biology.

The electrical engineers help us make better electrical measurements, and then the electrical engineers and the computer scientists are teaching us about algorithms. So we are trying to raise philanthropic funds that will incent our faculty to get out of these disciplinary silos as you say. We want to create a new culture of brain science whereby electrical engineers and molecular biologist and then traditional neuroscientist are working together in an iterative loops, and have these iterative loops going back and forth between the physical scientist and the engineers and the experimental neuroscientists. So no matter how interested they are if there is not some money to fuel the process it is not going to go forward. And that instantly plays right into the national Obama BRAIN Initiative right. This is the kind of thing that the BRAIN Initiative should do nationally.

Mark Masselli: We are speaking today with Dr. William Newsome, professor of Neurobiology at Stanford University School of Medicine. Dr. Newsome was just appointed as Director of the Interdisciplinary Neurosciences Institute at Stanford and also named co-directive of President Obama's BRAIN Initiative which seeks to develop a framework to correlate scientific efforts to map the human brain considered the last frontier of modern science. Dr. Newsome, I would like to talk about the President's BRAIN Initiative. You talked earlier about putting together the best and the brightest and you are co-director in this project as Dr. Cori Bargmann, noted Neuroscientist from Rockefeller University and the President referred to the two of you as a Dream Team and as you have said it daunting

even monumental tasks so tell us if you would, how your team is planning to undertake the challenges and where are you in the process at this moment?

Dr. Newsome: Well Cori and I and are chairs of the committee, a planning committee for the NIH. It's our tasks to sort of survey (inaudible 13:46) now, where the big opportunities lie. Where are the new technologies are are creating opportunities that absolutely have to be exploited and make recommendations to the US Government Agencies about how to exploit this and where to go. We have a great committee of 12 people in addition to ourselves representing all areas in neuroscience and this is what Collins referred to as the Dream Team. It is an outstanding team, so one of the main things that we have done is realized, we don't have all the answers and we are opening this up to an outside process. So we are holding a series of workshops over the summer where we are inviting a dozen or so experts in each of four individual fields and thoughts with us. So these experts give us thoughts about what they think their part of the field is and where we should go and then we have two or three hours of afternoon discussion, where we really sort of get into it and debate it, what are the merits of this approach versus the other approach.

So we are getting this input from a large community. We have also got our blog site setup where we can get information from individuals later during the coming year we will be getting input from potential foundation and company, partners, private company partners, that's one part of our charge. So we will be looking carefully at that. We will be hearing from the patient advocate groups because I think that's a very important perspective to get, you know, it really holds our feet to the fire about disease and you know, for a lot of patients and a lot of your listeners on this radio station. This is not abstract. This is not kind of game. This is real life. I was kind of skeptical about this, but I was inspired by Cori to actually be a part of this.

Cori finally said she just did look that this is what President Obama's time and he thinks it is worth his time to push this thing then we simply have an obligation to go along and produce the very best plan that we can do. I said Cori you run. We have got to do this thing together. So she is about the best co-chair I can imagine working with. We have a fantastic committee and I can assure you we are all working very hard this summer toward our preliminary report that is due in September.

Margaret Flinter: As you have spoken it sound like the charge is really more of the hundred thousand foot level if you will of understanding what's normal before one dives into what doesn't work and what's not normal. Is that safe to say?

Dr. Newsome: All right, that is our charge. And our charge is more specific than that, actually. I mean one misconception out there is that somehow, we are doing some master plan for all of neuroscience and that is not true. Our charge specifically talks about the dynamics of brain activity. All this sort of firestorm of

electrical activity that's going on in your brain right now and going in Mark's brain and going on in my brain and those of all your listeners, I mean there will be millions of neuron inspiring of these millions of action potentials and our charge is really to understand how the dynamics are merging out of that densely connected network. It gives rise to that mental life. Okay, that's what the NIH charge and that's publically available on the NIH website.

Now, of course, much psychiatric disease is related to experience, right? That's the way we feel it. That's why people come into the clinic because they have altered experiences, whether we are talking about depression, whether we are talking about schizophrenia, people altered experience and we need to understand how the nervous system gives rise to experience in the first place then how disorders the nervous system give rise to these disorders of experience.

Now my gut feeling is that the answers to some neurologic diseases that we all care about, my gut feeling is that the answers to those diseases are going to come at the molecular and cellular level. And it may be that the global brain activity is not highly relevant. Alzheimer's and Parkinson's, I don't know. But there are other diseases like the Autism Spectrum Disorders and like Schizophrenia that are probably my hunches, they are going to come down to disorders and connections between the neurons, right? So I think that the brain activity map that we are sort of (inaudible 17:41) here this dynamical activity will be highly relevant to some of the diseases and might be less relevant to others. But we are not going to know and we are not going to really be able to make that call until we start making progress on this with the new tools at our disposal. For much psychiatric and neurological disease right now we are just stumbling around in the dark. And my father died about 10 years ago of Alzheimer's and I know we are a largely stumbling around in the dark. And Cori says our job, the job of this BRAIN Initiative is to turn on some lights, okay? So when we start turning the lights some of this darkness, hopefully will be dispelled.

Mark Masselli: Well and there are a number of people who are trying to that and says similar as a site more of a key question but there is a lot happening with 3D Imaging at the brain and DAC and a time where this is going to play a role in terms of trying to print out elements of the brain that you have been able to map through imaging.

Dr. Newsome: There are these packets of really bright people out there who are taking neurons nerve cells that are grown in tissue culture and they are trying to assemble them into actual functional circuits inside of you know, Petri dishes so it's kind of like printing a printed circuit board accept we are actually using live cells and trying to get them hooked up and ways that might do elementary computations. And you know, the long-term implications of that research is to be able to recreate circuits inside natural brain so when some group of cells decide up and die, maybe it is not enough just to put stem cells into that place. Maybe

those stem cells actually have to have instructions. Molecular and chemical instructions about how to wire up together and if we can understand what those molecular and chemical instructions are in the lab than that will obviously help us create those structures and networks inside the brain. When you think about that kind of research 10 or 20 years down the roads, it is about getting cells ultimately into real brains and helping them hook up with their proper partners to actually recreate circuits. It would be like you know, your computer is broken and if the repairman came out and just took the top of your computer and he took a bunch of transistors and just sprinkle them in there randomly and closed the computer and say well let's see if that fixes the problem, you would think he was an idiot, right? So it's kind of like that. We can't just take a disease of brain and sprinkle cells in there randomly and say lets see if it fixes itself. We actually have to know how to get those cells integrated into the circuit and a way that will make the thing work. So that's the long-term goal of that kind of research.

Margaret Flinter: We have been speaking today with Dr. William Newsome, Professor of Neurobiology at the Stanford University School of Medicine and co-director of President's Obama's 21st Century BRAIN Initiative. You can learn more about Dr. Newsome's ground breaking work by going to monkeybiz.stanford.edu. Dr. Newsome, thank you so much for joining us on Conversations on Health Care today.

Margaret Flinter: You were rocking Margaret and Mark.

(Music)

Mark Masselli: Conversations on Health Care. We want our audience to be truly and to 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 non partisan, non profit 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: We often find politician engage in what we call Mediscare, distorting an opponent's position on Medicare to scare seniors. The latest example comes from a West Virginia Health **Grades** in which the incumbent uses his opponent words on Medicaid to create Mediscare. And on from Democratic Representative Nick Rahall says that his Republican opponent Evan Jenkins has "billionaire financial backers" in reference to the Koch Brothers who want to turn Medicare into a voucher plan that would raised seniors out-of-pocket cost by \$6,000. That's an outdated reference to a 2011 House Republican Budget Plan, a Representative Ryan who has significantly revised this plan since. It may or may not increase seniors cost. But then the add says Jenkins is comfortable with raising seniors out-of-pocket cost saying, "he said senior should have some financial skin in the game and think harder about going to the doctor." He was talking about the Medicaid extension under the Affordable Care Act and

West Virginia's move to charge Medicaid recipients a nominal copay to prevent the overuse of Health Care Services.

Medicaid is a joint Federal State Insurance Program for the low income. Medicare is for seniors age 65 and over. The new copays allowed by the Obama Administration in 2013 are eight dollars for the non-emergency visit to an emergency room and doctor visit co-pays ranging from zero to four dollars depending on income levels. West Virginia's rule exempt individuals in nursing homes or hospice from any Medicaid co-pays. I am Lori Robertson, Managing Editor of Factcheck.org.

Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you would like checked, email us at chcradio.com, we will have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

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Margaret Flinter: Each week, Conversations highlights a bright idea about how to make wellness a part of our communities and to everyday lives. Of the roughly 2.3 million American soldiers who have returned from multiple tours in Iraq and Afghanistan as many as 20% have returned with so called invisible wounds, post-traumatic stress disorder, traumatic brain injury, anxiety, depression, and stress. While the Federal Government has been shining a spotlight on the problem there simply aren't enough soldiers getting the treatment they need and their families and loved ones suffer alongside them. Dr. Barbara Vanderlin is a licensed clinical psychologist who saw the need growing and decided to do something about it. In 2005 she and a handful of colleagues launched an organization dedicated to creating a network of volunteer of counselors and therapists who would devote their time to treating soldiers and their family members. It is called Given Hour. She has created a network of 6,500 licensed therapist in all 50 State and they have provided thousands of hours of free therapy to all veterans who reached out to them, and they are also working with the Federal Government's initiative to train the next generation of doctors and mental health professionals to recognize the unique characteristics of PTSD and related conditions. Given Hour, creating a network of volunteer therapists who are helping soldiers and their families who suffer from the impact of their service using that network to better train future clinicians to treat these disorders, now that's a bright idea.

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Margaret Flinter: This is Conversations on Health Care, I am Margaret Flinter.

Mark Masselli: And I am Mark Masselli. Peace and health.

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