

***Vital Signs* Town Hall Teleconference**  
**Medication Adherence: Helping People Take Their Medicine**  
**September 20, 2016**  
**2:00 pm ET**

Coordinator: Welcome and thank you for standing by. All participants will be in a listen-only mode until the question and answer session of today's conference. At that time you may press star, one to ask a question.

Today's conference is being recorded. If you have any objections, you may disconnect at this time. I would now like to turn the meeting over to Steven Reynolds. Sir, you may begin.

Steven Reynolds: Good afternoon everyone. I'm Steve Reynolds, Deputy Director for CDC's Office for State, Tribal, Local, and Territorial Support. I'm glad you could join us today.

We'll be discussing the latest Vital Signs report, which focuses on helping people adhere to blood pressure medication. Before we get started, let's go over some housekeeping details.

You can go online and download today's presentation so you can all follow along with the presenters. The Web address is [www.cdc.gov/stltpublichealth](http://www.cdc.gov/stltpublichealth). That's S-T-L-T public health. Look on the far right side of the page for the

Vital Signs Town Hall teleconferences link or you can Google CDC Vital Signs Town Hall and click on the top link. That should get you there as well.

You can access bios for today's prisoners on the same Web page, as well as the audio recording and transcript which will be available next week.

There will be time for questions after today's presentation, but you can get in the queue at any time to ask a question. Just press star one and say your name when prompted.

Now, back to our topic for today, Medication Adherence: Helping People Take Their Medicine. We are going to hear from three colleagues. First, we will hear from Dr. Matthew Ritchey, Senior Scientist of the Epidemiology and Surveillance Branch, Division for Heart Disease and Stroke Prevention of CDC's National Center for Chronic Disease Prevention and Health Promotion. He will talk about the findings in this month's Vital Signs report.

Then Dr. Larry Garber will present. He is Medical Director for Informatics with Reliant Medical Group. He will discuss promoting hypertensive medication adherence.

He will then hand the call over to Ms. Jessica Moore, Associate Clinical Director of Peta Luma Health Center in California. She'll discuss user solutions for promoting medication adherence.

Now, I'll turn the call over to Dr. Ritchey.

Coordinator: And at this time Dr. Ritchey has dropped off the conference. He's disconnected. He'll be redialing in. Dr. Ritchey, your line is open in conference at this time. You may resume.

Dr. Matthew Ritchey: I'm here. Thank you very much. I'm sorry about that.

Thank you for the opportunity to speak with you today. I am going to start now on slide five to discuss our Vital Signs project.

So according to the World Health Organization, adherence is the extent to which a person's behavior -- taking their medicine, following their diet, and/or executing lifestyle changes -- corresponds with agreed recommendations from a healthcare provider. Medication nonadherence or patients not taking their medication as directed has been identified as an issue limiting the management of chronic disease conditions.

Approximately twenty to thirty percent of medication prescriptions for chronic diseases are never filled and patients do not continue treatment as prescribed in about fifty percent of cases.

I'm on slide six now.

Medication nonadherence is of public health importance because annually in the United States it accounts for approximately 125,000 deaths, eleven percent of hospitalizations, and anywhere from 100 to 300 billion dollars in additional healthcare spending.

Slide seven.

Nonadherence to blood pressure medicine is also of public health importance. One of every three US adults, or about seventy-five million people, have high blood pressure in the United States, including about seventy percent of adults age sixty-five years and older. Almost half of all of these adults with high

blood pressure don't have their condition under control, placing them at increased risk for developing heart disease, stroke, and/or kidney disease.

Adherence to blood pressure medicine is associated with about a forty-five percent greater odds of blood pressure control compared with being non-adherent. Moreover, nonadherence to blood pressure medicine is associated with increased risk for adverse cardiovascular disease outcomes like heart attacks or strokes and excessive healthcare costs.

Slide eight.

So the purpose of this study was to describe blood pressure medication and nonadherence among Medicare Part D beneficiaries by multiple factors that I'll walk through throughout the rest of my presentation. And overall, the study is meant to help identify and inform targeted interventions among the groups and regions most at risk.

Slide nine.

So in 2006 -- a little background information -- the Centers for Medicare and Medicaid Services, or CMS, implemented the Medicare Part D Prescription Drug Benefit program, a United States federal government program to subsidize the cost for prescription drugs and prescription drug insurance premiums for Medicare beneficiaries, which has increased the affordability and the accessibility of prescription medications among US adults age sixty-five years and older and the disabled.

In this study we used administrative data and prescription drug data for the 18.5 million Medicare Part D beneficiaries who are taking blood pressure medicine during 2014. Of these beneficiaries enrolled in Medicare Part D,

fifty-five percent were enrolled in standalone prescription drug plans, or PDPs, that supplement original Medicare coverage and forty-five percent were enrolled in Medicare Advantage prescription drug plans.

Slide ten.

To measure nonadherence we used a proportion of days covered, or the PDC, methodology. The PDC represents the percentage of days the beneficiary had access to the prescribed medication from the date of his or her first blood pressure medication fill through the end of 2014 or the beneficiary death in 2014.

We calculated a PDC for each blood pressure medication class the beneficiary was using, and for those beneficiaries using multiple blood pressure medication classes we averaged all of their PDCs together. If a beneficiary had an overall PDC less than eighty percent, he or she was considered non-adherent.

So the PDC methodology is endorsed by the National Quality Forum and the Pharmacy Quality Alliance to measure nonadherence. In addition, CMS uses the PDC in the Medicare Star Ratings program. And this system helps people with Medicare compare the quality of health and drug plans being offered. Assessing how well beneficiaries within a plan are taking their blood pressure medicine is one of the criteria used in the rating.

Slide eleven.

So in 2014 Medicare Part D beneficiaries had almost 216 million fills for blood pressure medications, which accounted for about \$5.9 billion in total

spending, of which about thirty-six percent or \$2.1 billion was borne by the beneficiaries.

Overall, 26.3%, or over a quarter, of the Medicare Part D beneficiaries using blood pressure medication were non-adherent to their regimen, which equaled almost five million people. There was minimal to no difference in nonadherence between genders or between beneficiaries with Medicare Advantage versus original Medicare health insurance coverage. And there was a slight increase in nonadherence with increases in age. However, nonadherence differed considerably by multiple factors that I'll now review.

Slide twelve.

First, nonadherence varied by medication class, ranging from a low or best of 16.9% for angiotensin II receptor blockers -- or ARBs -- to a high or worst of 28.9% for diuretics. For beneficiaries using renin angiotensin system antagonist medications, or RASA -- which include ARBs and angiotensin-converting enzyme inhibitors, or ACEs -- 20.4% were non-adherent.

Nonadherence to these RASA medications are what is assessed in the Medicare Star Ratings program and that is why we specifically call them out in our report.

Slide thirteen.

Nonadherence also varied by race ethnicity, ranging from a low of 24.3% for non-Hispanic whites to highs of 33.8% for Hispanics, 35.7% for blacks, and 38.8% for American Indians, Alaskan Natives -- so all over a third.

Likewise, blacks and American Indians and Alaskan Natives are at high risk for poor blood pressure control and cardiovascular disease, morbidity and mortality compared with other racial and ethnic groups.

Slide fourteen.

Nonadherence also varied by beneficiaries' socioeconomic and health status. For example, shown in green, those who initially qualified for Medicare coverage because they were disabled and/or had high end-stage renal disease - - or ESRD -- rates had a higher nonadherence compared to those who first received coverage at age sixty-five.

Shown in orange, beneficiaries with ESRD during 2014 had considerably worse nonadherence compared to those without ESRD. And then finally, shown in gray, beneficiaries receiving a low-income subsidy or who had additional health insurance coverage through Medicaid had higher nonadherence compared to those with no subsidy or Medicaid coverage.

Slide fifteen.

Considerable county-level variation in nonadherence was found. The highest nonadherence tended to occur in Puerto Rico, the US Virgin Islands, and the Southern United States. About 29% of beneficiaries in the south were nonadherent compared to the Midwest where it was the lowest - the best nonadherence, which was a little under 23%.

This geographic distribution of nonadherence that is shown very well in the map is very similar to the distribution of cardiovascular disease in the United States, in particular mortality. For example, some of the highest rates of

nonadherence in the regions designated as the stroke belt in the Southeastern United States.

Next slide, slide sixteen.

And here is a map showing state-level nonadherence. Although still suboptimal, if the average nonadherence rate of 18.9% amongst Medicare Part D beneficiaries in the three states with the lowest nonadherence rates or the best nonadherence rates, which were North Dakota, Wisconsin, and Minnesota and it was achieved in all states, the national nonadherence rate would decrease by about a third. And about 1.4 million more beneficiaries would be taking their blood pressure medicine as directed.

Slide seventeen.

And then finally, nonadherence differed by beneficiaries' treatment characteristics. Shown in green, those used any fixed dose combination medicine or medicine that contained more than one blood pressure medication per pill had lower nonadherence. Shown in orange, nonadherence increased when the second class of blood pressure medicine was added, going from 27.2% compared to when there was only a single class, 23.2%.

And then shown in gray is the relationship between beneficiaries' health status in relationship to their blood pressure nonadherence. As their health status gets worse, moving from quartile one on the left to quartile four on the right, their nonadherence increases.

And then finally, shown in light blue, as the number of unique blood pressure medicine prescribers goes up, nonadherence also goes up. And we use this as a proxy to measure the continuity of care for blood pressure management.

Slide eighteen.

So in our study we identified that over one in four Medicare Part D beneficiaries age sixty-five years and older were non-adherent to their blood pressure medication regimen. Also, we found differences in nonadherence that could be playing a role in persistent disparities in blood pressure control, in cardiovascular disease outcomes in certain groups like among blacks and regions like in the Southern United States.

But what should be done about this? The reasons for nonadherence of chronic disease medications including blood pressure medicines are numerous and complex. Therefore, there really is no one solution, but a collection of patient-specific interventions to be used to improve adherence.

Healthcare systems, including providers, medical practices, pharmacies, hospitals, community health workers, and insurers can work with patients to make taking their medications easier.

Slide nineteen.

Here is the list of evidence-based actions each member of that healthcare system team I just previously mentioned can take. Many of these items will be discussed in more detail by our other presenters -- interventions focusing on trying to simplify the medication regimens, removing barriers to taking medication like cost, and having patients actively involved in decision making about their care.

Slide twenty.

Likewise, there are multiple steps public health professionals and agencies can take to improve adherence, some of which are listed here. And please see at the bottom of this slide an additional Web link to our [Million Hearts](#) resources that can provide additional specific examples of how public health can take a lead in helping improve adherence to blood pressure medication.

That wraps up my part of the presentation, and now I believe Dr. Garber will be presenting. Thank you very much.

Dr. Larry Garber: Thank you Dr. Ritchey. This is Larry Garber from Reliant Medical Group. We're going to start on slide twenty-three.

We're a large multispecialty group practice out in Massachusetts. We care for over 300,000 patients. We're not affiliated with any hospitals, but we do have a high percentage of pay-for-performance contracts. And like Jessica from Petaluma Health, we are one of the 2015 Million Hearts control champions.

So on slide twenty-four I wanted to review some of the general strategies that we used to improve medication adherence with our patients. So there are a few strategies. First is - and I'll go into these in more detail through the presentation. First is to make sure that patients understand the benefits of being adherent to their medications.

And then the second is to make sure that - make it easy for the patients to be adherent. So you want to choose lower cost medications and medications with fewer side effects.

And then you want to show them that the medication adherence actually works, that it's really improving their blood pressure and their health. And

then you also want to keep an eye on their medication adherence through other technological means.

So on slide twenty-five, making sure the patients understand the benefits, we have several strategies. First is to make sure they understand the harms of uncontrolled high blood pressure as well as the benefits of blood pressure control. So we have education materials built into our electronic health records that we can pull up during a face-to-face visit. And we've also set up our computer monitors in such a way that it's very easy to show the patients the screen and show them the information on the screen.

We also automatically add educational material to the after-visit summary that patients receive if they have a diagnosis of hypertension. It just happens automatically so that they're always reminded about some of the issues with high blood pressure control.

We also - if they go to our public Web site, we have an educational encyclopedia about hypertension where they can research this further as well.

And then the other thing we do is we want to make sure they realize that what they've been doing hasn't been working. In other words, if they're not taking medications, if they're just working on diet and weight reduction, and they need to take a medication, we can show them graphs of their blood pressure trends during the office visit. Those graphs are very effective.

Now, on slide twenty-six, using lower cost medications - we have guidelines that we've developed as an organization with step therapy protocols saying this is the medication you start with. This is the next one. This is where you go after that and how you titrate the doses. And by doing this we're picking

lower cost generic medications right off the bat. We standardized this across the organization.

We also have a policy where pharmaceutical representatives are really not allowed to come - cold call and talk to the physicians. In fact, rarely do we actually see pharmaceutical reps. We have a pharmacist who's in charge of reviewing any materials that they do send to us or, if we do meet with them, what they're going to be talking about. So we really make sure that we're not receiving information that might push us towards more expensive medications.

We also - when we're ordering medications, we can see what's on the patients' formulary so that we can pick things that are less expensive for the patients. In Massachusetts, the pharmacists are required to do generic substitutions so that even if I were to write for a brand name, if there is a generic equivalent that's what the patient would actually be getting, which is less expensive.

Pill splitting is controversial. In general, a ten milligram pill does not cost as much as two five milligram pills. So we will sometimes have patients prescribed a ten milligram pill and have them cut the pill in half for when they want to get five milligrams, as an example. And that they can use pill splitters. And that saves patients some money, particularly if they're high deductibles and they're paying for this out of pocket.

There are sometimes - I know physicians will sometimes even prescribe a pill. Say you can take one or two - half or a whole pill. But the patients are only going to take a half because they absolutely are not going to take any of it if they can't afford it. And so this saves them some money, but it does confound

Dr. Ritchey's research that he just presented for when the patients are expected to take less than what's actually written on the prescription.

There is a convenience to pill splitting so that sometimes interferes with medication compliance. So a lot of things to weight when you're thinking about pill splitting.

We also have directly in our electronic health record - we have a Web site link that helps us find assistance for patients who can't afford their medications. We also have social workers that I'll consult if I really want if the patient has a lot of financial issues that they want to address both for the medications and other care.

On slide twenty-seven - how to choose meds with fewer side effects. Again, these therapy protocols shoot for ones that are likely to be taken with fewer side effects. We also are sometimes creative. If we've got patients who have problems with swelling in their feet, we'll maybe make sure we start a diuretic for them which will lower their blood pressure and help with the swelling.

Also, diuretics will lower potassium. But if you add an ACE inhibitor to that, then that makes their potassium normal and that makes it more convenient for the patients as well with fewer side effects.

We also monitor for side effects. So during visits we'll do that, but also when they're renewals. We - if they're on diuretics or ACE inhibitors, the computer actually tells us this patient is on an ACE inhibitor. You should be checking their creatinine and potassium. Here are the last values. Here's when you should be getting the next one. And it facilitates ordering to make sure that we run into fewer adverse events.

And then also we have a system when patients are discharged from a hospital that we're interfaced to that it automatically looks at new medications that were prescribed for the patient and identifies if there are any new interactions or monitoring that needs to take place that hasn't taken place. And then I, as a primary care physician, get an alert in my electronic health record saying this patient is on a new medication coming home from the hospital. This is what you really need to watch out for.

We also have pharmacists that are working, looking at patients after hospital discharge. We've had them calling to the patients, looking for adverse events. We actually are doing a study now. The pharmacists are actually going into the home after hospital discharge. I can always consult a pharmacist if they're on complex medication regimens to review them and see if there's some way we can make it easier for the patients.

On slide twenty-seven - I'm sorry. On slide twenty-eight we also want to show the patients that it's actually working to take your blood pressure medication. So we encourage patients to record their blood pressure at home. We give out - a lot of times we've given out free blood pressure monitors. We have free blood pressure clinics.

We've also had a couple hundred patients using blood pressure cuffs at home that they upload their readings electronically through a Web site called Microsoft Health which loads directly into our electronic health record. And it goes to my nurse who can monitor the graphs, the actual trends of the blood pressure readings from home. And we can show these trends to the patients both in my office as a graph or they can view it online from home to see how they're doing.

On slide twenty-eight we can actually view the medication adherence through the SureScripts medication history that's available in our electronic health record. We also for a few of our patients - we actually load the claims data directly back into the electronic health record because it does show the days' supply that the patient picks up and the actual dates that they do it. So we can get a pretty good idea of whether they're being compliant. And patients are shocked when I tell them your blood pressure is not under good control and I know why, because you're not picking up your medications at the pharmacy. You're not taking them compliantly.

And the interesting thing is that by doing that it may not - it's probably most important to do that because the patients know that Big Brother is watching and they're more compliant because they're conscious of the fact that they know they're not getting away with it.

If you look on slide thirty, all this does make a difference along with the other interventions that we put in place over the last several years. We've dramatically improved our hypertension control from almost 69% up to over 80% compliance now.

So in summary on page thirty-one, you absolutely control - can improve medication adherence and blood pressure control if you make sure the patients understand why they're taking medications and need the medications. Make it easy for them to be compliant by having lower cost meds and meds with fewer side effects. Show them that it's working. And then also make them know that Big Brother is watching.

So thank you and now I'll pass this over to Jessica.

Jessica Moore: Thank you, Larry. So I'm from Petaluma Health Center, which is a federally-qualified health center in Northern California. We have two sites and see about 30,000 active patients. It's a family practice health center.

And my presentation today is really focused on talking directly to the users -- that includes patients, staff, and providers -- to come up with new solutions for this problem of medication nonadherence and poor blood pressure control.

So on the first slide, thirty-three, I just state the problem here that we've all been talking about. Many patients with hypertension and uncontrolled blood pressure are not actually taking their medication as directed. Dr. Ritchey outlined that very clearly in his presentation.

So in order to look for solutions we really wanted to hear from patients and staff and providers. We have two patient advisory councils. One is of our Spanish-speaking patients and one English-speaking. They meet monthly. And we took this problem to them and asked them for their input.

We also did some informal interviews with patients in the clinic who had hypertension as we were seeing them. We also spoke with staff and providers in our team meetings and in some focused work groups around this issue.

Through that work we identified several barriers, many of which have already been discussed. We divided them into two categories. So there were the systems barriers and the people barriers. So systems barriers - things like inconsistent refill policies, confusion about how to pick up their medication at the pharmacy. There wasn't any standard protocol for treatment across the health center as well as no standard protocol for medication intensification.

We also realized that, as big of a problem as adherence was, we didn't have a way that we were systematically and consistently collecting information or even assessing adherence so that we could address it.

On the other side with people we realized that there was a lot of misunderstanding of the diagnosis of hypertension. We learned that when we started talking to our patient advisors and our patients with high blood pressure. And along with that came a misunderstanding of the treatment plan, especially among our monolingual Spanish-speaking patients. There was a feeling that - I take my medication and my blood pressure goes down, and then I stop taking my medication because it got better. The idea of hypertension as a chronic problem was very poorly understood.

So when we started trying to look for solutions on a system level, one of the first things that we put into place was a standard workflow with a template asking about adherence.

A template was good but a template isn't enough by itself. You can ask that question. Depending on how you ask it you may get different answers.

So we really wanted staff to embrace this idea of open-ended questions and really joining with the patients, understanding the potential for barriers to get an honest answer. So this is the text that we recommended to our staff based on the feedback from patients and providers and staff. So this is the idea that this is a common problem. Many people with high blood pressure sometimes forget to take their medication. How often do you forget or skip your medication? Or just a simple - tell me how you take your medication.

The next thing that we implemented, similar to Dr. Garber, was a standardized protocol for treating hypertension across all of our providers. The providers

and nurses - we have a nurse protocol that they can also assist in medication anticipation and also standardizing the patient education that they get at every visit.

Slide thirty-eight - in terms of refills we really wanted this to be as hassle-free as possible. So we moved to a standard ninety-day supply for all chronic medications with three refills. And we also added some text to the sig on the prescription. We found that when we talked to patients that they had all these medications but they really didn't know what they were for. They couldn't remember what they were for and it didn't tell them clearly on the bottle. So we added to the sig one tablet daily for blood pressure.

Another big change that we made was to really stop using refills as a gatekeeper. So previously our nurses who we're managing their refills - if patients hadn't been in within the past six months, they had an uncontrolled blood pressure at their last visit and were due to come in, they would sometimes withhold a refill waiting for them to come in.

So then what happened, predictably, was then the patient would come in. Their blood pressure would be out of control, or maybe they wouldn't come in for several months. They'd be out of their medication during that time. They'd come in. their blood pressure would be out of control and they'd have to start all over again.

So our answer, really, for refills is - yes. We want all of our patients to continue taking their medications. We want to refill them and we want to recall them on a consistent basis. So we have quarterly recall for all of our patients with high blood pressure, but we've separated that from their refills.

We also were able to set up an in-house pharmacy for more seamless communication with the pharmacy.

On slide thirty-nine you can see our results over time. So this goes from September 2013 to August 2016. We went from about 64% to up to 74%. And this kind of change also, as Dr. Garber showed, it's not immediate and dramatic. It takes a lot of time and a lot of different interventions, but we are continuing to see the results of this work over time. And that's all I have.

Steven Reynolds: Thank you for these excellent presentations.