

Factors Influencing Prescription Drug Trend within Medicare

Sharon Frazee, Ph.D., MPH

Michael Looney

Good morning. I'll go through some real brief introductions here first. I'm Mike Looney. Here with me is Dr. Sharon Frazee. Sharon brings forward a career focused on research and analysis in the health field. Sharon has responsibility at Express Scripts for our research team, and she also produces our annual Drug Trend Report. As for me, I work with our 30-plus MAPD and PDP health plan clients, and as a subcontractor of these plan sponsors, I'm going to provide a brief and a little bit of context to some of the conversation that Sharon is about to have.

Our research will show insights that we have gained by comparing our Medicare data with our overall non-Medicare or what we call "commercial data." And this presentation will also show potential impacts to generic fill rates based on prescriber characteristics. With that said, I'd like to mention how grateful we are to have this opportunity to speak today. We have a long history of researching drug trends, and we thank CMS for this opportunity. Next month we will release our 16th edition of our Drug Trend Report, and if you notice how tired Sharon may look, that's because she's been up all night working on it today. We also note that Express Scripts researchers have published over 70 articles and distinguished journals such as the "Journal of American Medical Association."

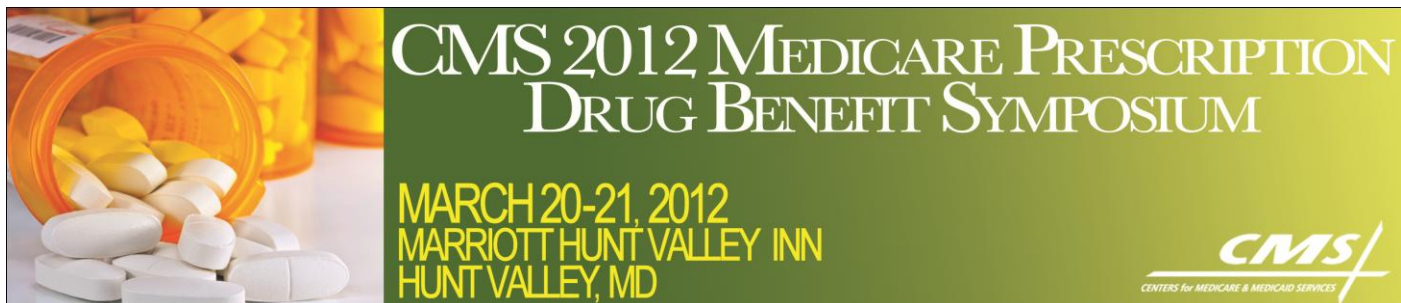
Our 20-plus years of research has been dedicated to applying scientific discipline to improve patient outcomes while reducing drug costs. Express Scripts was the first to introduce a three-tier formulary. We also stood in front of our industry peers when our research proved that had the cost compared with the effectiveness of the Cox-2 inhibitors just didn't make sense.

For today's discussion we applied our research experience to our combined data of Medicare and non-Medicare data. We looked at prescriber characteristics and their impact on generic fill rates. To tie back to Jonathan's open remarks and Vicky's comments this morning, we recognize the importance of the physician's role in managing patients' drug regimens and their roll in influencing drug expenditures.

Cynthia mentioned yesterday that Medicare beneficiaries have about 37 fills per year. This is more than six times our average for non-Medicare members, and if you consider the baby boomers adding a million members to Medicare rolls each year, that's another 37 million scripts per year in the Medicare program. Clearly, prescribers who service the Medicare beneficiaries have some of the greatest opportunity to influence the overall drug spend.

Medicare is a significant part of what Sharon and her team research, and before we get into the prescriber characteristics that this presentation is built around, Sharon might want to give you just a brief insight into the Drug Trend Report that's due out next month.

I'm a little more vertically challenged that Michael is, so good morning. So this morning you're going to get the first peek at our Medicare trend. So the book literally goes to the printer at 8:00 o'clock tomorrow



morning, so I've been looking at printer proofs all night. So this morning you get a bit of a sneak peek. So what I'm showing you here are the top three therapy classes for our 2011 Drug Trend Report for Medicare. A quick note just to kind of reference this for those who may not be familiar with our Trend Report, this is trend year over year, so this is comparing utilization and trend compared to 2010. So as you see here, for these three classes, trend is generally up for utilization and costs are more mixed. So cost is up for diabetes for a total trend of 10.7%, it's down for high blood pressure, and et cetera. So I know you guys are all smart educated people so I'm not going to read it to you.

The reason that we're focusing on these three classes is because diabetes, high blood pressure, and high cholesterol make up 35.2% of total Medicare pharmacy spend and are critically important for star ratings. So you might wonder, well, how does Medicare compare with commercially-insured members or the non-Medicare group. Across these three classes Medicare utilization is generally up compared to commercial, which was down in the last year compared to the year before.

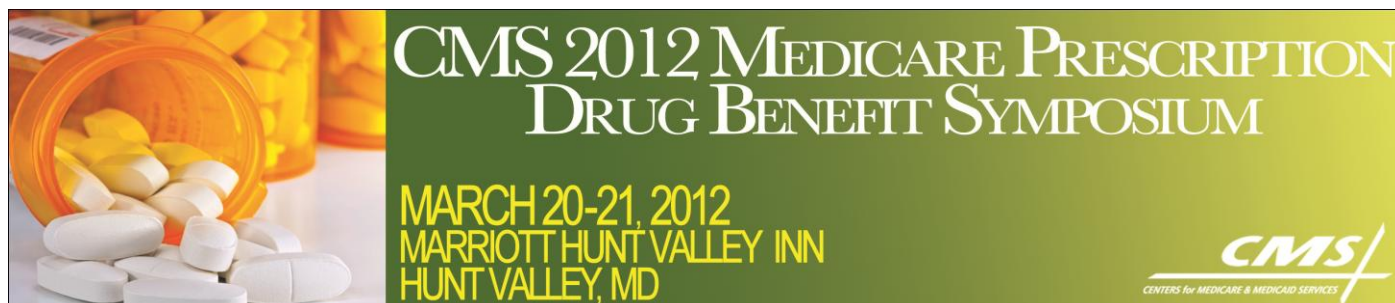
Costs for Medicare followed generally the same trajectory except in high cholesterol where cost is down, where it's up on the commercial side. Cost is pretty important. So I was actually really glad to see that Medicare utilization trend is up for Medicare. I think it shows that some of the star ratings are working. People are prescribing appropriately.

On the commercial side we have seen some impact from the down economy on utilization. On the cost side though, that's where companies like Express Scripts come into play, because our ability to negotiate for better rates from both pharmaceutical manufacturers and from retail pharmacy chains to reduce costs are an important part of what we do to preserve the benefit.

One of the main things -- go back one -- one of the big things that helped with medication trend -- and we'll talk more about this later -- is the use of generics. So I think Medicare has put in some really good programs to influence prescribers to prescribe generics as much as possible. It's not perfect across the board but, you know, it has made some significant impact.

So this slide I'm not going to spend a lot of time on, because quite frankly is an old study. This was from 2005, where we were looking ahead to the generic pipeline and trying to build this dream of what would it mean as drugs went generic in terms of cost savings, because I think one of the challenges that not only Medicare faces but so do our commercially-insured payers is there desire to provide, one, great clinical care, and I think that's what all of us want, but at the same time to provide that in a financially-sustainable way. And so as drugs become generic there's an opportunity for cost savings.

So if you notice though, remember we did this in 2005, and we found that there was more than \$65 billion projected in savings, but not everything turns out the way that you think it will in research. So notice under 2010 with Lipitor it did not actually go generic until November of 2011, so best played plans of mice and men so to speak, you know, don't always turn out the way they do. That's kind of what keeps research exciting though.



A key way to manage trend, as I mentioned, is the use of generic medications and low-cost brands. Here you see that 79% of the drugs prescribed for Medicare beneficiaries are generic in the traditional class. That varies considerably, though, by therapy class. Diabetes only has a 47% generic fill rate. The middle column on this slide shows the difference, the net difference between average brand cost and average generic cost in that class, so you can see that its dollar amounts are considerable, and that's per prescription, this is per 30-day adjusted prescription.

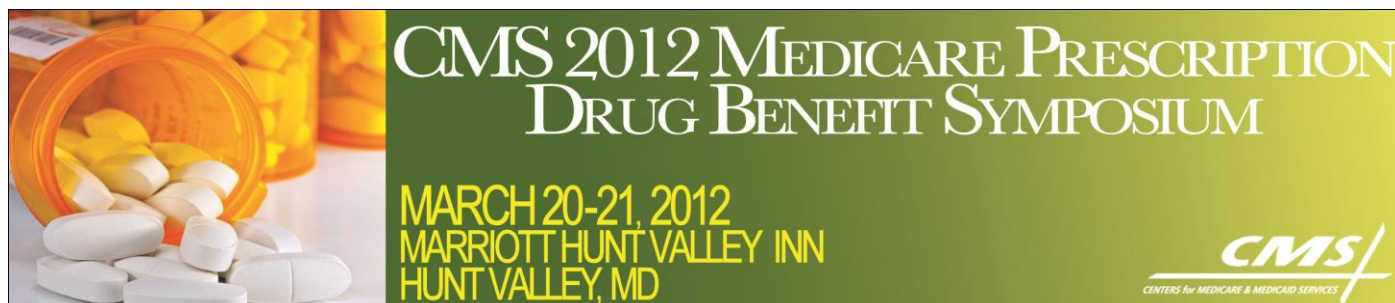
So you might be curious about which medications that are driving costs under the Medicare benefit. So for these three conditions the top drugs by cost are listed here for our book of business. So Plavix is number one, and the Simvastatin is the last of the top ten, Simvastatin being the only generic on the list. Another way to look at it is to look at the most highly-utilized medications.

So this is by disease condition. You notice for diabetes that there are some brands in here. That's what's driving that only 47% generic fill rate, because some of the test strips and things are not available as generics. Because you need a prescription for many of those, they are considered -- you know, they are paid for under the pharmacy benefit so they show up. For high blood pressure on the other hand, 91% of all medications are generics in the high blood pressure category, and that's what you see for things that are prescribed most often as well.

So this is where I get to set up the rest of the presentation, so just real brief, I'd like to provide a little bit of background. I was visiting a client about a year ago, and they asked me during a conference with them what would happen to their drugs as they expanded their narcotic. And they were currently in the New England area, and they were looking to expand into the Mid-Atlantic region. I'm trying to use the right words because you will see these come up later in the study. I was a little more specific when I talked to Sharon. And then they were going to do this in two stages.

They were going to move, first, into a rural area in the Mid-Atlantic region and then into a very large megatropolis. And they asked me what they could expect to experience in terms of drug costs. And I knew from some studies, some in the health sector like Dartmouth study she represented on this slide here with the map, and from other conversations with folks here at this conference a couple years ago -- and I know Dr. Holy [PH], he's presenting in another room -- that there was clearly some counties, in New Jersey especially, when we talked to some folks around that had higher brand prescribing rates and overall higher cost of health care, and as the Dartmouth study shows there are other parts of the country, so I'm not picking on New Jersey.

So knowing all this, I came back to St. Louis and had a meeting with Sharon, and I asked her basically three questions. Question one; can we expect higher brands prescribed in more affluent areas? So would there be more brand usage, more brands prescribed in the more affluent areas? And, of course, intuitively you would think, yes, but we want today make sure we understood that. Secondly, if a prescriber has a majority of other patients other than Medicare patients, so what we would call mostly "commercial patients," do they have a tendency to prescribe more brands than generics? And then thirdly, does it matter where that prescriber is? So is that prescriber rural versus urban, or is that



prescriber in a very large megatropolis or something smaller than that? And Sharon's answer was simple. She said, "Well let's find out."

Now I can see the slide. All right. So like all good researchers, you know, I could come up with all kinds of theories and I've read papers just like all of you, and I could probably come up with answer, but you never know, so you want to add some data to it. So one of the things that I didn't mention earlier is that research at our company is maybe a little different than some places that you will see, so we're not an academic institution. And I came from academia, and it's a great place to do research, but we're an applied research facility, and so everything we do has to have kind of practical implications. So I think it's satisfying for me because I know people can use it, but also we're answering real questions, you know, that our clients come to us with.

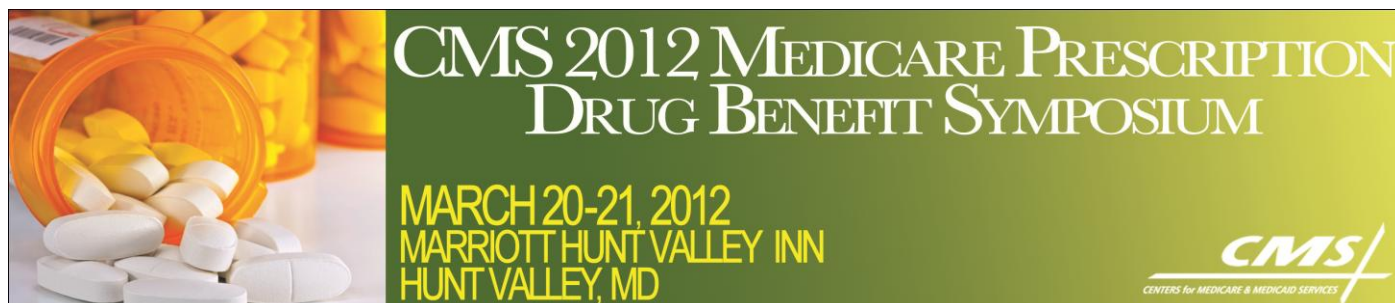
So, again, we had to key this up, you know, in a scientific way on the question of what observable characteristic impact the prescriber generic fill rate? So to address this question we drew a sample from our book of business. So it was all Express Scripts claims. So as a PVM we see all prescriptions that come through for people who contract with us to provide their pharmacy services. So we used all the claims from 2010.

We looked at prescribers who had patients with at least one claim for a prescription for diabetes, hypertension, and dislipidemia or, you know, hypertension -- or, sorry, high cholesterol. The prescribers themselves had some characteristics to stay in the sample. So first of all, they had to be between the ages of 23 and 80. So I don't know about you, but sometimes data is a little odd, and so you find a prescriber who is 147, and that might exist in the Bible but not in the world that I have seen. So we do throw out a little bit of data here. You also get some 12-year olds, and Doogie Howser was a really old TV show that I think was fiction. So we did do that.

We also limited the analysis to prescribers that had at least 30 pharmacy claims in the United States in the Express Scripts book of business, because remember, we don't see all claims across the country, so we wanted to make sure you that weren't get outliers, and also, they had to be prescribers legally authorized to prescribe in the United States. So we match up the file with prescriber information.

So to assess the actual impact, for each therapy class we built a multi-variant least squares regression model, and specifically, it was looking at -- it was ordinary -- sorry -- assessing the statistical association between a variety of independent variables on the dependent variable of generic fill rate. And I'll talk a little bit about some of the key factors on this slide because it makes a little more sense. So the final sample ended up being 139,093 prescriber for hypertension, 94,057 for lipids, and 50,605 for diabetes. All in all it was just over 200,000 unique prescribers because, you know, many had multiple of these.

Some of the factors that we looked at are prescriber age. So remember we're looking at prescriber characteristics, not at patient characteristics at this point, so what is the age of the prescriber? What is their gender? Are they male or female? Really simple. To answer Michael's question, does it make a difference if they see more Medicare patients? We looked at the Medicare penetration rate, so what percent of their patients are Medicare beneficiaries? What census region do they practice in? What is their specialty? And what Zip Code do they practice in?



And so just to key up some of the analysis you will see in a minute, the Zip Code information -- and I think this kind of confuses people at times -- is not patient-level Zip Code, it's prescriber. But most prescribers pull patients from a Zip Code that they're in. So we're kind of extrapolating to the income levels of patients. So we looked at average income, household income for the Zip Code in which the prescriber practices.

So I'm going to walk through the hypertension model in some detail, and then I'll go through the other two fairly quickly because they follow the same methodology. And if you have questions afterwards we can answer those. So first let's look at the impact of prescriber age, gender, and whether they are in a rural or an urban areas. For this we used MSAs whether they were in an MSA or not. So generally what we found is that if you want high generic fill rates you look for younger prescribers, you look for females, and you look for people in rural areas. It probably does not surprise most of you. However, the impact of increasing age on generic use was pretty telling, I think, as far as it has to a lot to do with medical education and just to have it.

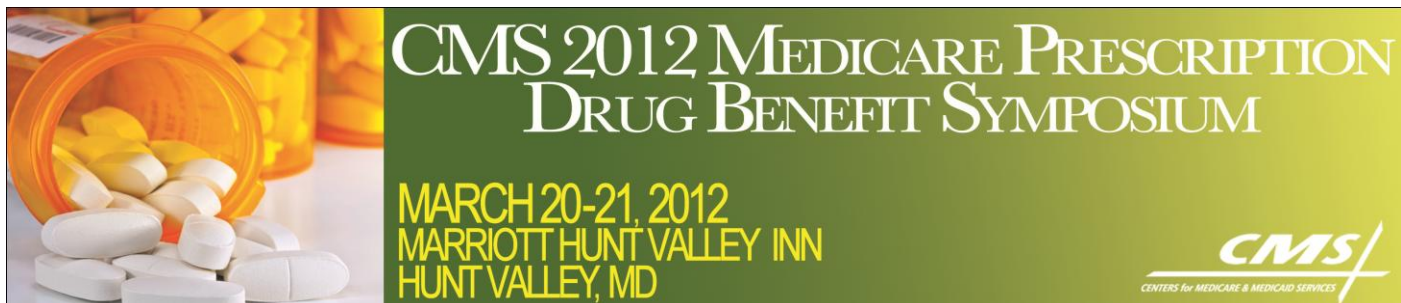
Then to talk a little bit about the penetration rate, and this is, quite frankly, the most interesting thing to me, was do the program that is Medicare has put in place across the years to try to influence prescribers to prescribe more generic medications, have they made a difference and do you have to reach critical mass top kind of get people to start behaving consistently in one way. And here we found that that seems to be true. So the higher the penetration rate of Medicare patients the higher the generic fill rate.

Next, we looked at income. So this is average household income for the Zip Code in which the prescriber practices, and here we found that higher household incomes increased the number of brand drugs that are prescribed. Again, not necessarily surprising to anyone, so poorer areas less generics, they have less out of pocket.

So then to look at census region, here if you want to influence generic fill rate or if you want to find the highest generic fill rate we saw that in New England and west north central. So the reference category here is east north central, the states of Indiana, Illinois, Michigan, Ohio, and Wisconsin. So New England and west north center have better generic fill rates than do the other states.

And then lastly we were looking at what specialty is the physician or the prescriber? And so here you will see compared to internal medicine, which is the reference category, all other categories of prescriber specialty had a lower generic fill rate. Geriatricians had the best use of generics across all specialties. And somewhat surprising, specialists, people who specialize in endocrinology and all of those things, had a better fill rate than did internal medicine physicians. That was surprising, and we're going to look a little deeper into that as we move on.

So to go through the other models, and, again, like I said, they're pretty similar, so I'm not going to belabor these too badly. For hyperlipidemia or dislipidemia, people kind of delve back and forth, again, younger, female, and rural is the way to go to improve generic fill rate, the same pattern that was seen before for Medicare penetration, higher penetration improves generic fill rate, again, the same pattern for household income.



When it comes to census region we found higher generic fill rate in New England west north central, again, similar to the first one, but also Mountain and Pacific. And then when it comes to the specialty the pattern changes. Here we find that north's practitioners, PAs, and specialists are less likely to prescribe brands, so more likely to prescribe generics, than are internal medicine. We suspect that the nurse practitioners and -- I'm sorry, the generic fill rate, yeah, goes down. We suspect that the PAs and the nurse practitioners belong to the practices with the specialists in this particular case, but we have to dig a little deeper into that.

So with diabetes we go back to the same patterns we found with the first model, younger -- oh, sorry -- younger, female, and rural higher Medicare penetration. As household income goes up generic fill rate goes down. And for the census regions you have a better generic fill rate from New England west north central, east south central, Mountain and Pacific. And then for prescriber type, the only prescriber type with a higher GFR than internal medicine is geriatrics.

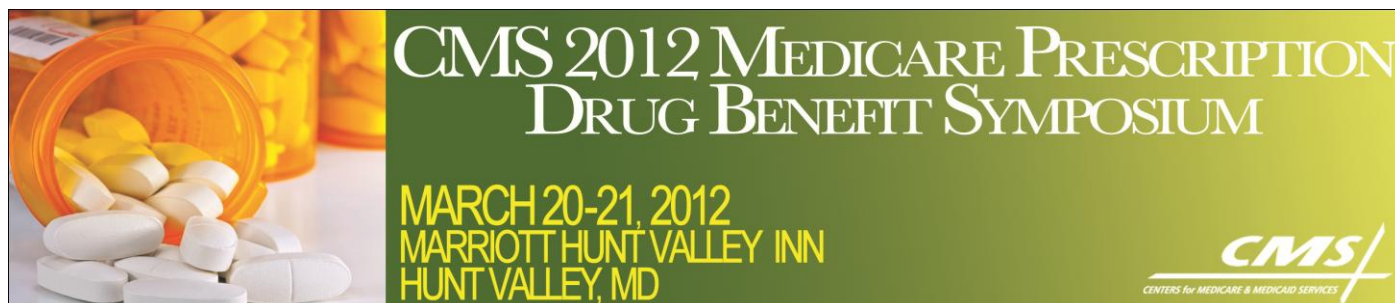
So I'm going to summarize these to go across, so when you look at Medicare penetration, so some of the things that Michael came to me with questions on, generic fill rate is the highest when Medicare penetration is 80% or better, at least in our book of business, again, a great testament to the work that Medicare has done over the years.

When you look at income, not surprising, generic fill rate is the lowest when income levels are over \$100,000, on average, for household income. When you come to the area of geography, and quite frankly I'm not sure what to make of this yet, so if you have thoughts when we have questions it would be helpful on how this really influences it, generic fill rate is highest in New England and it is lowest in the Mid-Atlantic regions. They're two regions that sit right next to each other, so really interesting to see how that played out. And then when you're looking at urban versus rural, generic fill rate is consistently higher in rural areas.

When you look at the specialty of the physician -- and I don't have this on the slide, but the pattern is slightly more mixed. For hypertension, internal practices have the lowest generic fill rate, where geriatrics has the highest generic fill rate. For lipids, specialists have the lowest generic fill rate, geriatrics have the highest. And diabetes, internal medicine has the lowest, geriatrics has the highest. Unfortunately there aren't that many geriatricians out there, but if there were, perhaps generic use would be a bit higher for this population.

So I'm going to turn it over to Michael to kind of sum it up and then we'll take questions.

So I have the easy part. Sharon did all the hard work. And summary is going to be pretty obvious based on what Sharon just said. So based on my three questions, I'm going to go back to my client and, you know, I probably should say first of all Sharon talked about how our research model is not like an academic model, we actually keep Sharon and her team isolated across six lines of interstate, and I'm not even allowed to talk to them while they're doing all the research. So I have seen these results for about two weeks, and I'll sum them up, bring them back to our client and help them to understand that higher



generic fill rates for prescribers who have high concentration of Medicare patients, so, yeah, it does matter if they have a high concentration of commercial patients, and going to the same prescribers, they typically have higher brand usage than those that have a high concentration of Medicare patients.

And bad news, as they extend from New England into the Mid-Atlantic States their overall costs will probably go up. There is a higher use of brand drugs in the New York, New Jersey, and Pennsylvania area, just as Sharon described. And, yeah, actual Zip Codes of the prescribers where those patients also probably reside makes a difference also, so the higher income levels typically result in more brand usage. Probably see the same thing in brand usage of retail clothing or cars or tie or other types of things, I'm sure, in those same Zip Codes. And Sharon already talked about the specialists and the differences on the specialists. By and large it's better that the prescribers are younger and female. So with that, we do the assessment questions; right? All right. Assessment questions are next, and I have a bunch of things to read here.

So it is time to conduct the assessment. Please get out your ARS response cards. We would encourage all of you to participate. As a reminder, if you are seeking CPE credit you must respond to all assessment and evaluation questions. After the questions and responses are read you will have ten seconds respond. You will see the timer on the screen. Okay. Please vote now. You have ten seconds.

Which of the following have been most useful in managing Medicare prescription drug trends; A, cost sharing; B, formulary management; C, generic medications; or D, physician prescribing? And the answer is C. Our research has shown over many years, and as Sharon's study has shown for those three questions that I asked her, generic medications do make a difference in the overall cost trend.

Assessment question number two; which of the following are physician characteristics not associated with better generic fill rates, again, not associated with better fill rates; one, A, physician gender; B, physician region; C, concentration of Medicare patients; and D, all are associated? You have ten seconds as soon as that -- you have ten seconds.

All right. I just want to thank everybody for their attention. We're going to take questions now; right?