

# Division of Diabetes Treatment and Prevention

## Medication Adherence and Diabetes Outcomes

**CAPT Christopher Lamer, PharmD, MPH, BCPS, CDE**

Christopher Lamer:

Hello and thank you for the opportunity to be able to present on this topic. It's something that I feel is very important. I'm essentially not an expert on medication adherence. I'm learning a lot as I move forward. I mainly want to share the information that I have from some of the other National Measures Reports that you may not have seen.

Adherence has been a topic of discussion since the time of Hippocrates. We don't have any silver bullets or any real concrete clinical practice guidelines on improving medication adherence. It's not one of those things where you can just say, "I'll do this and there won't be a problem." It's really patient individualized, and I hope I can get that point across through the slides today.

We're used to seeing this kind of a model in our clinical trials and quality measures. Typically, we do some type of initiative and/or some form of intervention, and we witness an outcome. This type of information is what we include in our standards of care and our treatment algorithms. It's the way that we put this, based on the knowledge we get. You do this and this happens. But it's really important that we step back and acknowledge that in the real world there is another critical step in moving forward and learning from our information. And that is, that the patient is actually participating in the treatment plan.

How often do we see a patient who may be on a medication for a few months and they're still not at their A1C goal or their blood pressure goal? We just make the assumption, well that that the medication alone didn't work. It's shown in the literature that people have to be on two or three. Let's go ahead and start a new one. We'll never really know, but how many times do you think that patient just wasn't taking the medication as prescribed?

Starting off with definitions, words like adherence and compliance tend to have negative connotation because they come across as either paternalistic or as if somebody is placing blame on somebody else. "Oh, your outcomes aren't good because you're not adhering to your medication." It's typically viewed in a negative light. Adherence does have a lot to do with the patient following the clinician recommendations. However, it's really a collaborative process where the clinician and the patient must establish a reasonable and achievable care plan, or an achievable goal that the patient is going to agree to follow.

It's more of a process. It's a process of adherence versus placing blame on somebody. The literature defines medication adherence numerically when the percentage of pills absent over a period of time over the pills dispensed over a period of time is greater than 80%. Meaning, when patients take their medications at least 80% of the time, they're considered to be adherent to their medication. Eighty percent sounds like a pretty high number, but it's not a really high expectation if we put in another term. It's like saying, if you come to work four out of five days a week, you have good attendance. So, working four days a week is considered to be good, just like 80% adherence is considered to be good. I mention this only to give a framework of what we are looking at when we talk about good medication adherence.

How many people actually take their medications as prescribed? There are numerous articles out there that basically show very similar results. Let's say we have 100 prescriptions that are prescribed in the clinic. Of those prescriptions, about 88% are filled in the pharmacy; 12% of prescriptions are never even filled. They're not taken by the patient to the pharmacy. This is called primary non-adherence, where they're never filled or taken, and it could be intentional or unintentional. Intentional, where the patient chooses not to get it filled, for whatever reason. Or unintentional when the patient may forget that they had to get a medication filled, or they're not even aware that a prescription was given to them.

In the Indian Health System, medications that are not picked up by the patient are called, "Return to Stock" or "Put Back on the Shelf". Looking at data from the last L&M reports, about 4.4% of medications were put back on the shelf in 2014. This is not a very accurate number, as not every pharmacy and every pharmacist follows the same process for returning medications to stock. If we take out a lot of sites that we know are not going to be return to stock, that average starts to creep up more along the levels of 8%. At one site within our system, returns were as high 18%.

Now, we dropped down to 76 patients who are actually starting to take their medication. So 12% do not get it filled, 24% or 12 more percent, they have gotten it filled but they don't take it. So right away, for all the prescriptions that are written, about a quarter never even gets started.

When we go and look at the continuation of therapy, such as patients getting refills on their chronic meds, that number of prescriptions drops below 50%. This is called "secondary non-adherence". It's been estimated that up to 80% of secondary non-adherence cases are intentional. They are decisions made by the patient, not to bother getting a refill on the medication for whatever reason.

Even after a devastating health outcome such as a stroke or myocardial infarction, medication adherence is difficult. Here's a study that looked at adherence to medications in patients who had a stroke, and you can see these are some very common medications; antihypertensive medications, statins, antiplatelets, warfarin, things that we would typically see after somebody has a stroke. As time went on, secondary non-adherence increased. As we get down to looking at warfarin, after about about two years out, less than half of the patients were still taking it, even though it was still being prescribed. Another study has shown that non-adherence to medication therapy, in this case clopidogrel, after placement of a drug-eluting stent was the strongest predictor of six-month stent thrombosis. Another showed that patients who stop their therapy had a ten-fold increase in mortality at one year.

So to summarize what we have gone over so far, about 75% of patients start to take a new medication, and about 50% are persistent with taking chronic medications. This number is going to drop even further when the medication regimen become more complex.

Poor medication adherence can lead to increased morbidity and death. In fact, it's estimated that healthcare costs are spent from about \$300 billion per year directly related to medication non-adherence, and it's the reason for one-third to two-thirds of all medication-related hospitalizations.

There's a report in the Clinical Reporting System called Other National Measures. These are collected nationally, typically right after the GPRA reports are sent in, and they're used for internal purposes only. We cannot share this information outside of the Indian Health system. There are a group of measures that are part of a quality alliance report. They evaluate the proportion of days covered, and gaps in therapy of specific medications.

Proportion of days covered, also called PDC, looks at patients who are taking specific medications and had enough of that medication at home to cover at least 80% of the days during the reporting period. That roughly translates to about having enough medication for 292 days out of a 365-day year. This is also sometimes referred to as a medication possession ratio.

Gaps in therapy looks at patients who had 30 or more days between the time they ran out of medication based upon their days supply and got a new refill or prescription. Basically, they didn't have their medication for more than 30 days.

These measures are only looking at patients who have their medications or have their prescription bottle. It doesn't even look at the actual adherence rate to see if patients are taking them. We don't have that information. We're obviously not monitoring what people are doing in their homes. But at least knowing that they have their medications is a good indicator as to whether they are able to be adherent to their medications. So as we go over this information about patients having access to their medications, keep in mind that this is only a small part of what we are really looking at. We are looking at patients who have their medication, but those who actually take it, that number is going to be lower

The next couple of slides are going to be a little confusing to look at. So I'll try to break it down and walk through it step by step. This is the first proportion of days covered and gaps in therapy measure. This one is going to look at Metformin, sulfonylureas, TZD and DPP4 inhibitors.

The proportion of days covered is in blue; the higher the number the better. The more people that have the proportion of days covered means more people who have their medications at home. We've been collecting this data for about four years now, starting in 2011, 2012, 2013, and this year 2014. As you can see, all four years for each one of these medications is below 50% for each drug class. There is only one bar in the DPP4 inhibitor because that measure just got started getting monitored just this past year.

Next, let's look at the gaps in therapy. How many people have gone more than 30 days without their medication? As we look at 2011, 2012, 2013, and 2014 again. Here, we want a lower number, but the numbers are slightly above 50%. We don't want people to have gaps in their therapy. We want them to always have access to their medications.

In red, I highlighted the 50% mark that roughly shows where these measures stand for both the proportion of days covered and gaps in therapy. The Centers for Medicare and Medicaid Services have a program called Star Ratings that is used if you're participating in Medicare Part D. To get four stars for this program, and to be eligible for incentives, you have to have levels greater than 70%. So right now, we're roughly around 50%. Our goal should be consistent with what CMS is pushing of greater than 70%.

This next slide shows the proportion of days covered and the gaps in therapy for hypertension medications. The numbers are a little bit better than diabetes, but still not as high as I would have originally expected them to be. Because I thought these numbers were fairly low, we asked for assistance in evaluating the measures from the field to ensure that they were accurate. And the feedback that we got back was that the measures were looking accurate and did look correct. And this is not surprising. If we look at the literature, the average range of participation in treatment plans or medication adherence for chronic medications, in the literature is about 50%. So we are fairly consistent with what's going in the rest of the world, rest of the country.

Here, we have similar results for statins as well. The last measure we'll look are the antiretrovirals, the HIV medications. I believe, but I don't have any proof that this may be somewhat misleading, and I say that because I don't think we always have access to the patient's HIV medications in the RPMS system. And RPMS is not always updated with what they're taking, because there may be multiple venues that the patient utilizes to get these medications, such as patient assistance programs, external doctors or going to other pharmacies. Patients may not feel comfortable picking up their medications at their local hospital pharmacy and they may choose to go somewhere else to get it. Also, I think this gives us lower than expected rates for this class. The antiretroviral class is a little bit different than the other proportion of days covered. First of all proportion of days covered is reported. There are no reviews to look at gaps in therapy. And the proportion of days covered is actually greater than 90%. As you

recall the other measures were greater than 80% and that has to do with the importance of being adherent to these medication in order to have improved outcomes.

The World Health Organization has stated that increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments.

Barriers to medication adherence are diverse. Assessing adherence and helping patients to address the barriers needs to be individualized, but being in healthcare, we like to categorize things. So one article points out five dimensions of adherence and had identified each one of those.

The first are social and economic-related barriers, such as low health literacy, lack of insurance, lack of support, and cultural issues. The second are barriers related to the healthcare system; inadequate health education, lack of positive reinforcement, or difficulty in access to care. The third is condition-related; lack of symptoms such as having hypertension, having depression, not really caring about your problem.

There are therapy related barriers, such as complex medication regimens, long duration of therapy, changes that are made to the treatment regimen that could confuse the patient, lack of immediate benefit, social stigma for some disease states, and side effects or feared side effects.

And there are of course patient-related barriers. There are physical barriers such as impairment, psychological barriers such as knowledge gaps, perceived risk of a condition versus the medications, expectations of what's going to happen when they take their treatment, attitude towards medication adherence, the confidence to follow treatment, fear of the effects of the medication or possible addiction to the medication. Patients may also have other issues that are going on such as frustration, substance abuse, and mental health.

And as the number of barriers for the patient and provider increases, so does the risk of medication non-adherence. Here, we talked primarily on barriers that prevent the patient from taking their medications appropriately. We hinted at the healthcare system, but there are also provider-related issues; lack of time to sit down and go through everything that's needed to discuss during the patient encounter and not having the tools and resources available. There are a lot of things that go into play with medication adherence and good understanding.

So medication adherence, as I mentioned before, is a shared responsibility. Members of the healthcare team, family members, and other support systems can provide positive impact on self-management for the patient. One good thing about medication adherence is that of all the different types of treatments out there that have been studied in the literature, people have had the best results in making interventions towards medication adherence. So on the bad side, there are a number of obstacles to good medication adherence, but on the plus side, there are obstacles that can be overcome.

SIMPLE is a way to remember some of the key activities that can be done to improve medication adherence, and we'll go through each one briefly. The first one is Simplify the regimen. Simplify the patient's medication regimen to make it easier to remember and easier to take their medications. Reduce polypharmacy as much as possible. Polypharmacy is defined as greater than four pills a day. That's not a lot in our patient population. Not only that, polypharmacy also needs to take into account any vitamins, herbal supplements, non-traditional therapies, all of these go into polypharmacy. So it's very easy for anybody to be facing polypharmacy with only four things to take a day. There are ways to try to prevent that, and our goal here is to minimize the number of medications that the patient is taking, so that they are getting the best effect with the least amount of medications taken. That's a lot easier said than done, but the things you can look at are if the patient is not taking something or if there's not really of a lot of benefit.

Let's say the patient is prescribed Ranitidine. They don't have any GI bleeding or upset stomach and they're not taking nsais, but one day in the past, they had an upset stomach and so they started Ranitidine. They no longer take it. There's not a real health consequence against not taking it. They don't want to take it. There's no sense in pushing the issue. The best thing is to remove it from the medication list and document why.

It's better to focus on those medications that are going to have the greatest impact on the patient's health. There's also the possibility, sometimes, of using once daily medications or to consider combination medications. There are pros and cons to this. The pros being they have fewer pills to remember to take. The cons are that these medications are often more expensive than the individual medications, and combination pills don't offer you the flexibility of dosing, so that if you want to go up on one medication but not the other. Sometimes the combination pills don't accommodate that approach.

Next is to consider the patient's lifestyle; asking and finding out about when they work, what activities they have going on, and what do they do. We typically say, "Take your pills in the morning." But what's going on in the morning? Are they waking up at five o'clock to get their kids to school or heading off to work? Is it the most hectic time of the day? Is there another time that may be a little bit more convenient for them to try to remember to take their medications? Each person is going to be a little different, and to find out when medication therapy may best fit into a patient's regimen, we typically give some guidance, "Take it once a day" but we don't help them to determine what time of day is best for them.

Another thing when you look at the lifestyle of polypharmacy is to limit the number of medications and other treatment modifications that are being made at the same time. We often end up giving patients too much to focus on and it overwhelms them. The patient comes in with diabetes, right away it's a diet, it's exercise, or nutrition, physical activity, medication, starting two to three medications at one time. It's overwhelming to, first, comprehend and rationalize that you have diabetes. Secondly, all these changes to your life are happening all at once. It's best to pick between one and three interventions at most, and work with those, and then schedule more frequent follow-ups if possible to add in the other details and medications as time goes on.

The third circle here talks about ensuring that everyone is working off the same medication list. To do this, you want to do things like perform medication reconciliation when the patient is transitioning care. Provide comprehensive medication reviews or ask your pharmacist if they're able to provide comprehensive medication reviews to evaluate with the patient what they have on their list, what they're taking, and if there's anything that's missing.

Promote giving medication list to the patients. There's the Patient Wellness Handout and the Clinical Summary that I'm sure everybody is very familiar with right now. Use of the PHR and use of transition of care documents when sending people out to other clinicians. Here are a couple of examples of medication lists. I'm sure everybody here is familiar with the Patient Wellness Handout. Once your 2014 certified EHR is implemented at your site, the Patient Wellness Handout is no longer required for meaningful use measure of clinical summary. You can choose to no longer use it or you can go ahead and modify it as a tool to provide health maintenance reminders and/or a medication list. The Patient Wellness Handout no longer has to be structured in the way it was for meaningful use. You can do whatever you want with it. Right now, it's the only tool that will give patients access to their health maintenance reminders.

The Patient Wellness Handout is being replaced with the Clinical Summary, which is there in the middle. It also has a medication list and it is required for meaningful use, just like with stage one in the Patient Wellness Handout. Fifty percent or more patients need to be provided a clinical summary at the end of their visits.

One of the things that's different with the new Clinical Summary and the Patient Wellness Handout. Well, there's a couple. There's less explanation about the information on the Clinical Summary than with the Patient Wellness Handout. But there is also the ability to customize the Clinical Summary. And what that means is that you don't get to add stuff to it, but you can choose to remove items. So you can remove specific sections, like you might want to remove the entire medication section, or you can remove a specific medication or problem from the Clinical Summary when you provide it to the patient. And that customization lasts only at the time the Clinical Summary is printed.

The final document on the lower right, looks just like the Clinical Summary because it's very similar, and it's called the transition of care document. It's like the Clinical Summary but contains more information. It's intended to provide other healthcare providers information about the patient whenever there is a transition from one healthcare provider to another. And this is especially important when looking at the medication list because your transition of care document will have the patient's current active medication list so the next provider seeing the patient knows exactly what's going on and doesn't duplicate therapy or get things out of whack.

Also at the 2014 EHR clinician's review, you'd be able to incorporate and evaluate med lists from a transition of care that's coming from an external provider into your facility. And there's a tool called the CIR, Clinical Information Reconciliation tool that will allow you to sort of combine both of the medication lists into one complete medication list in the EHR. .

Here are some screenshots of the personal health record. The personal health record provides the patients with access to their health information within 24 hours of it being entered into RPMS. Patients are able to see a listing of their active medications, as well as their medication history. So they can see what's been prescribed over time. Active meds is mainly to look at and say, "Oh, here's everything that you're taking. Here's what should be in your pill box."

The med history is used for things like when you go and -- let's say you have a problem with migraines and you've been on 40 different Triptans and you can't pronounce one of them let alone remember what they are. You'd be able to at least look at this list and provide that to somebody so that they know what you've been taking in the past and what worked or didn't work.

The PHR also enables the patient to send a secured email to their healthcare team. I will talk about that a little bit more in a couple of slides.

So we're still on the issues of simplifying the patient's medication regimen, and medication refills are a key opportunity. In this example there are four different medications being prescribed over time. The purple lines are the duration of therapy that they have. So the top line might be 60 days. The bottom line might be 30 days. The next one got put a little later for 90 days. But the thing I wanted to get at here is that here, the patient has been prescribed four medications that are going to run out at four different times. And if they're chronic medications and the patient is supposed to get refills on them, they're going to have to come back to the pharmacy and go through the medication refill process four times to get all four of their medications.

So it's a big inconvenience for the patient to have to do that, and it's a large intrusion into their life. But even if we take away that inconvenience of coming to the pharmacy, the rates don't seem to improve. We compared the proportion of days covered and the gaps in therapy between patients using the Centralized Mail-Order Pharmacy Program or CMOP, and found that there are no differences with those who did not. It really comes down to the act of the patient making the refill request as the barrier to being persistent. Not that that request is difficult. It may be that that request is just an inconvenience, or it's hard to make time to make that call to the pharmacy to request your refills. Or again, it's not always a passive process. Patients may choose to not refill their medications.

So they have looked at other ways to streamline the process and make it easier. Automated medication refills can help by automatically refilling the medication when it runs out. This still results in medications running out at different times, and when the refills are gone, you still got to come in and make refill requests to make clinic appointments to get them all renewed again, and studies have looked at how well automated medication refills work in improving adherence. And to date, it hasn't been all that good, and it mainly cited that the automated refills are not really as automated as we think they are. Just like so many things in healthcare, something that seems very simple and straightforward, actually is not.

Something that has shown promise though in encouraging medication adherence is called medication synchronization. Medication synchronization is the process of lining up all of the patient's medications to be filled on the same day. The National Community Pharmacists Association observed that synchronization led to a 32% increase in adherence among 1,012 patients. There are many ways that synchronization could take place. One example is that the pharmacist can identify the medication that will run out last and provide enough other medications to cover until that time.

Medication synchronization has been in the news recently, and in fact, a number of insurance programs are now paying for the additional days of synchronized product medications to make it more mainstream, especially for patients on multiple medications. Not only does this make it easier for the patient. They can the refills at one time, so at one time, they can make a plan to call them all in and pick them all up. But it also cleans up the medication list, and it makes medication management a lot easier for the provider.

Next, we have Impart Knowledge. The World Health Organization has commented that a key component of any adherence improvement plan is patient education. Patients need to have an understanding of why they are taking their medications, what to expect, and what to do in the event of side effects. It's recommended that all clinicians to provide clear instructions on all medications and to use Teach-Back Method. The Teach-Back Method has been an integral part of the IHS Pharmacy Program. As you can see, it dates back pretty far, back from the days of VHS. And there are still pharmacy schools today that are using this VHS videotape that was made in part by the Indian Health Service to demonstrate the Teach-Back Method for patient counseling.

Basically, the Teach-Back Method is using open-ended questions, writing information to the patient, and then asking the patient to tell you how they understand what you told them, to make sure that they have an understanding of what's going on. It's really important. Patients may not know the benefit of a medication, such as an anti-hypertensive. They take it and nothing happens. When we do our counseling and we do our Teach-Back, we also want to focus on things that will make a difference to the patient. So the blood pressure lowering effects of hydrochlorothiazide aren't really noticed.

Some medications are easier -- pain meds. You get the benefit right away and it's something you observe and you know what to expect. It's easy to understand why somebody is more willing to take their pain medicine versus their blood pressure medicine. And so, we typically tell people with medications that don't affect them right away about these long-term benefits. Well, in 30 years, there is a 20% chance that you might not have a heart attack or stroke. Those kinds of things, I mean, I don't think anybody is going to say, "Oh, I want to have one" or "It's not unimportant to me, but it's not as important as what's going on right now."

So if there are ways of possibly using motivational interviewing or other methods to try to focus on immediate benefits for the patients whenever possible, you might see more engagement than when using distant ones. Also involving patient family members and caregivers, as well as tools that will reinforce knowledge -- such as videos, handouts, or websites can help with the Teach-Back process and also help to improve participation. And of course, I can't talk about education without a word on documenting patient education. I just wanted to comment that the patient education is still available in the EHR. There is also the new integrated problem list with the 2014 Certified EHR. If you look in the

top right corner of the sections that are circled in blue there, you're able to pick your top six education subtopics, and it makes it very easy to document education when adding a purpose of visit. In the future, the patient education protocols and codes committee wants to make documenting even easier and faster and more flexible. We have some plans, but like all things, we need money and time to help put them into place.

Modifying Beliefs and Behaviors. In one article, they talked about patients who were interviewed about diabetes medication adherence. A predictor of poor adherence was the belief of how a medication worked and when it was needed. Some patients believed they only had to take it when their blood sugar was high, and if their glucose is also normal, there is no need to take it.

That's a common thing we hear about that in blood pressure medications, as well. "I checked my blood pressure and it was fine, so I didn't take my blood pressure med." So, patients have a belief that if something isn't out of bounds, they don't need to take their medications versus understanding that some of these medications are preventive and they work over a long period of time. There are a lot of other beliefs and behaviors that affect medication adherence. Patients may be worried about side effects. They lack self-confidence in either taking their medications or using the medications to control their diabetes. For example, patients who are on insulin felt that they didn't have the skills necessary to adjust their insulin or give their insulin appropriately, and therefore, were afraid to give it.

Some patients felt that medications were hard to take, not just injections but even oral medications trying to remember and incorporating it into their lives. So it was difficult for them. It didn't fit in. To overcome these kinds of barriers, we need to ask patients what we can do to help them to take a prescribed treatment, or ask them what they can do to remember to take their medications. And also, to enforce what may happen if they don't take them as prescribed and that some medications may not have an effect but need to be taken all the time so that there is a clear understanding about why a medication is being used.

Once the patient has identified something that they can do to help with taking their medications, you can document this as a patient's goal and track it over time to see how well that improves with their medication adherence.

The next part of SIMPLE -- is Provide Communication. Communication is not the same as imparting education. Communication is using health literacy and empathy to actively listen and talk to the patient. Ask the patient questions. Listen to concerns and utilize a variety of communication tools, such as face-to-face, phone and secured email to communicate with the patient.

The IHS Health Communication's website, if you go to [ihs.gov](http://ihs.gov) and search for health communications or go to the A to Z index and click on H for health communication, you can pull up the website. There are a number of tools that can be used to improve health communications. There are resources on the Ask Me 3 programs, documents about planning and writing, and a quick reference guide in plain language. Both of these documents are very good. They provide a good resource on how to communicate with patients. Again, it's not something that we don't know how to do, but sometimes if we talk in a technical nature all the time. It's good to make sure that we refocus on who our audience is, put ourselves in their shoes to think about what it is they want to know or need to know, and to think about ways that we can clearly say these things to patients.

Right now, we do have the [ihs.gov](mailto:ihs.gov) email, and we know that we cannot send patient information through that email. It is not encrypted once it leaves the IHS network. For that reason, we need something different and the direct was developed. Each clinician will have their own RPMS direct address. Each patient will have their own RPMS direct address. The patient's direct address will be the same as their PHR log-in.

Once they have that address, and the patient goes into their PHR, they're able to send a secured email to one person at your healthcare facility, and that person is identified in the designated provider package and it's called the "message agent". The message agent is someone who will receive and triage the patient's email. It's very similar to the person who is assigned in the clinic to answer the phone or go to the fax machine. Some emails can be handled by the message agent, while others may need to be reviewed by a patient provider.

So as an example, if the patient messaging says, "Well, I need to cancel my appointment tomorrow", the message agent can let the scheduling clerk know, or that might be the same person as a scheduling clerk, and they cancel that appointment. It might be the patient is messaging and saying, "You know I've been having these side effects of the medication. It's really bothering me. Do I need to come in and be seen, or should I just keep taking them?" And the message agent may forward that onto the patient's primary care provider who can review it and respond back. For meaningful use, there is a requirement that 5% of patients will send a secured email message to their healthcare team.

Next is Leaving the Bias. We are not judges over what decisions people make, and it's really up to the patient to choose what's important for them. So we need to put aside our opinions to remain open to patients-centered care. Take the time to understand the barriers and concerns and tailor education to the patient's needs. If we can reduce those barriers, we may see increases in medication adherence without alienating the people that we hoped to help.

The final step in the SIMPLE recommendation is Evaluating the Adherence. We won't know what's going on with the patient unless we assess them. There are number of ways to evaluate adherence. The first is subjective method, obtained by asking patients, family members, and caregivers about the patient's medication use. Do you have the medication? Do you take it? Does it work? Then engage patients about adherence at every encounter.

An objective of assessment can be made by pill counting. This is a little bit more intrusive, and patients may view this as being paternalistic. We typically do this kind of thing with narcotic medications or things that we have agreements with, and it's not the typical one. But objective assessments are often used in clinical trials. Another objective method that is much more subtle and is very helpful is examining the patient's medication filled history in the RPMS EHR to see if they're getting their refills regularly. Objective measures aren't perfect. Again, pills could be lost, thrown away, or who knows what bizarre things may happen. I had heard lots of stories while working in the pharmacy. One patient went so far as to say that a pack of wolves stole his Vicodin. So, objective measures are sometimes we felt to be a little more accurate, but there are plenty of things that can go wrong with those measures as well.

And then finally, there are biometric tests, which can be performed to look for drug levels. These drug levels can be an indication that the medication is being taken, or it can be looking for certain lab values as a surrogate marker that may be affected by the drug.

The most important thing to keep in mind when you're assessing the patient is that you should use universal precautions and promote medication adherence at every encounter. Don't look for non-adherence. As stated on the second slide, adherence is not often viewed as a good term. So don't look for it, but do look for the barriers that may prevent clinicians from having good medication adherence. Then try to promote it and provide recommendations that will give patients the knowledge so they can make the best choices of making good healthcare decisions.

The Office of the National Coordinator has indicated that more than 73 physicians are now utilizing e-prescribing through EHR systems. The hope is that this may reduce one more barrier and lead to improved adherence. However, we often prescribe medications out to a pharmacy, and we don't know what happens. There's no objective information sent back to us to know if the patient ever got it. A

bigger benefit may come in the near future with the ability to send what's called pill status notifications to the prescriber. This will let them know that the prescription was filled and picked up by the patient. Now, this isn't as big a deal with many of our patients who are getting the medications filled locally within our own healthcare system. But certainly, those sites that are doing a lot of e-prescribing or sending medications out, or when you have patients who are getting their medications filled somewhere else. This is a great way to know if they're getting their medications and have access to them.

So in conclusion, I hope that I have provided with you some of the following take home points. Medication adherence is important to the patient, clinician, and the healthcare system. We are not immune from poor adherence issues in the Indian Health system. In fact, our data looks very comparable to what's going on with the rest of the country. And there are many reasons why adherence may be more of a problem for our patients. When you consider increased medication burden with chronic diseases such as diabetes, patients who have to travel long distance in rural areas, and many other factors. The more barriers that exist, the greater likelihood for poor adherence.

There are interventions that can help people overcome poor medication adherence. However, they must be individualized to the patient. SIMPLE is one way to think about approaching opportunities for improving poor medication adherence. Again, the good news is that poor medication adherence can be overcome, and this is something that may make it easier to do than other interventions that we have. We just have to look at it and face it and try to find the time and methodology for our patients and our facilities that will work best. Again, thank you very much for the opportunity to present.

On the last slide, I used to write a list of references that I used throughout my presentation in case you wanted to get more information or look at it more closely.

Jan Frederick:

We want to thank you CAPT Lamer for sharing your expertise and data from our system on this important issue. This information will help us all in our own roles whether we are prescribers, or nurses, pharmacists or dietitians work together to assess and address barrier patients encounter with taking their medications.