Cyberseminar Transcript

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Hira: All right, hello everyone and welcome to Database and Methods, a Cyberseminar series hosted by VIReC, the VA Information Resource Center. A huge thank you to CIDER for providing the technical and promotional support for this series. Database and Methods is one of VIReC’s core Cyberseminar series, and it really focuses on helping VA researchers access and use VA databases. This slide shows the series schedule for the year. Sessions are held on the first Monday of every month at 1 p.m. Eastern. Most session topics for this series are updated every year, so if you can’t wait until June for the 2018 Chart Review Tools presentation, you can view the 2017 version on the HSR&D’s VIReC’s Cyberseminar archive. More information about this series and other VIReC Cyberseminars is available on VIReC’s website. Once again, a quick reminder to everyone who registered, slides are available to download. This is a screenshot of a sample email you should’ve received today before the session, and in it you’ll find the link to download the slides.

Today’s presentation is on VA Pharmacy Data. The presenters, Dr. Bonnie Paris and Dr. Walid Gellad, will present an overview of pharmacy datasets in the VA and the Medicare Part D Slim File. Bonnie is a Data Knowledge Analyst at the VA Resource Information Center. She manages VA REDcap and develops data knowledge products. Her co-presenter, Walid Gellad, is an Associate Professor at the University of Pittsburgh School of Medicine and Public Health. He is currently studying the overlap in prescription use among Veterans cared for in multiple health settings. Thank you both for joining us today. Bonnie, can I turn it over to you?

Dr. Bonnie Paris: Yes. Thank you here for the lovely introduction and thank you everybody for joining us today. After a brief introduction, we will discuss the four commonly used pharmacy data sources and then Dr. Walid Gellad will discuss examples of research that is focused on pharmacy care that has been done here at the VA. Then we will come back to me and I’ll talk about some of the resources that we have available for you on VA pharmacy data before we open it up to questions and answers. But first we would like to know a little bit more about you. We have a poll on your role as a data user. What is your role in the VA? Research investigator or PI; data manager, analyst, or programmer; project coordinator; clinical or operations staff; or other. And if you select other, please describe via the question and answer function. Thank you so much.

Heidi: And responses are coming in. I’ll give everyone just a few more moments to respond before I close the poll out and we go through the results. And if you are clicking on that “other” option, we would love to know what category you are in or how your role is defined, so please use that questions box to type that in for us. And it looks like we’ve slowed down, so I am going to close this out. And what we are seeing is 24% of the audience saying research investigator or PI; 40% data manager, analyst, or programmer; 10% project coordinator; 15% clinical or operations staff, and 11% other. And in that “other” category, we have academic researcher, a fellow in VA Quality Scholars program, a policy researcher at the Pew Charitable Trust wanting to learn more about how to use VA pharmacy data, research assistant/psych tech, staff research associate II, working with a VA PI potential external collaborator, doctoral student, and healthcare inspector with OIG. Thank you everyone for participating.

Dr. Bonnie Paris: Thank you, and thank you so much to Heidi for walking us through that. And I’m glad to hear more about everybody attending. By the end of this seminar, our goal is that you’ll understand the VA pharmacy data that we have available for research and appreciate the value of using non-VA data sources to measure pharmacy use as well. You will also know where to find more information and resources about VA pharmacy data and what you need to do to request access to the data for research. And I just want to do a quick check; are you able to see my screen again?

Heidi: Yes, we can.

Dr. Bonnie Paris: Okay, great. This graph shows just the growth of VA research publications using pharmacy data over time. Part of this growth is likely due to the increase in research publications in general, but it may also be the result of efforts to make pharmacy data easier to aggregate and analyze to support patient safety, quality improvement, and researcher’s projects. And medication therapy is a very important part of healthcare nowadays.

And the uses of VA pharmacy data in research can be thought of in different ways. One is to think about who prescribed the medication, who was the medication prescribed for, who is involved in different aspects of the process, what did it cost, when was it dispensed, where was it dispensed, and why the medication was prescribed.

Another way to conceptualize uses of VA pharmacy data in research is to look at trends in medication use, which medications are being used to treat a given condition or how use has changed over time because of policies or new treatments options that became available. Pharmacy data can also be used to identify cohorts and look at utilization and process these quality measures. So whether you are using the data, looking at if a prescription is being prescribed appropriately, or what the adherence to a therapy is for a given medication, these are some ways that you can use pharmacy data in research. So after we go through the four main sources of pharmacy data at the VA, Dr. Walid Gellad will be talking about four different studies that use VA data for a variety of use purposes. And sometimes pharmacy data is used in more than one way for a particular study.

So first we will go through some commonly used pharmacy data sources. There are a number of places to get pharmacy data in the VA, and I’m going to discuss four that are commonly used. The first three are national sources for data on medications that are provided by or paid for by the VHA, and they contain information from the Veterans Health Information System and Technology Architecture, also known as VistA, which is also sometimes called the Computerized Patient Record System, or CPRS. So if you hear VistA or CPRS, that is our electronic medical record, and data from VistA feeds into these three different sources, which are the Corporate Data Warehouse, or CDW, which the National Data System acts as steward for, and there are two primary domains within the CDW that have to do with pharmacy data. One is Barcode Medication and Administration, or BCMA, and the other one is Outpatient Pharmacy, or RxOut.

The Managerial Cost Accounting National Data Extracts have a data steward of the Managerial Cost Accounting Office, and that office used to be known as Decision Support, or DSS. And then we also have the Pharmacy Benefits Management, or PBM, which the data steward for that is the Pharmacy Benefits Management group. And we will be talking about each of these in a little bit more detail later on. The VA also provides data from external agencies such as the Centers for Medicare and Medicaid Services, or CMS, and the data steward for the CMS data is the Veterans Information Resource Center, or VIReC, where I work. And it contains data on services that were received outside of the VA and paid for by Medicare and Medicaid. We will talk about each of these four data sources in more detail.

So first looking at medications provided by or paid for by the VHA. The best data source depends on your focus, and you may note that right now this slide is showing just three different sources. So first I will talk about the Corporate Data Warehouse and then the MCA National Data Extracts, and then Dr. Gellad will talk about the Pharmacy Benefits Management and CMS datasets.

So going through and looking at pharmacy data, first it’s important to consider what is a VA pharmacy item? So the VA formulary includes prescription medications and over-the-counter medications as you might expect. It also includes a variety of supplies and equipment, and some examples are provided on this slide. And some of these you might not expect, so sanitary napkins, medical alert bracelets, things like that, toothbrushes. And in general, the drug class code for non-drug items usually starts with the letter “X”, but just to make you aware that in the VA when we talk about pharmacy items it’s any item that’s issued by pharmacy, and that can include prescription and over-the-counter medications as you might expect, as well as some supplies and equipment that may be different than another institution that you’ve worked with.

Looking at the best source for data, information on providers and patients is found in each of these threes data sources. The granularity of data can differ between the different systems, but in general, clinical information related visits and stays can be linked to pharmacy data by using the patient identifier. So there are some similarities between the different systems there.

When we start to look at what the medication is, in particular the directions for use, which is also called the SIG. That information is available both in the CDW and the PBM, but it is not available in the MCA NDE. Another difference is that, although there is some data on cost that is in the CDW, and I believe some data on cost in the PBM, the best data source when you’re looking at cost of medication is the MCA NDE. And part of that is because the purpose of the data source, by the name Managerial Cost Accounting, the purpose of this dataset is really focused at looking at cost. So the most accurate data on cost is in the MCA NDE. The CDW and PBM are more closely related to patient care data, and then that’s why they have the directions for use.

Looking at when things happen, the date and time the medication was dispensed or returned to stock is available in all three data sources, but the schedule of when doses should be taken is both in CDW and PBM. But only the CDW has the medication administration time. And that’s because the medication administration is done by nursing and the Pharmacy Benefits Management dataset is focused on pharmacy and not nursing activities, whereas CDW includes both.

And there are many, and for the most part, overlapping data elements included in all three of these datasets. So when you’re looking at where something happened, whether it was sent out by the consolidated mail-out pharmacy, or CMOP, what inpatient care setting the medication administration took place in, and so on, you can find information about that in all three of the data sources.

However, when it comes to why the medication was prescribed, none of these data sources can tell you that directly. And sometimes the reason why the mediation was prescribed can be assumed from the indication from the medication. So for example, metformin is prescribed to treat high blood sugar, or diabetes, and you could make some assumptions based off of that knowledge. And you can use a patient identifier to link to additional information about the patient to help solve the puzzle of why a particular medication was prescribed. But there are some medications, for example, Wellbutrin, that may be prescribed to treat different things. So Wellbutrin could be prescribed to treat clinical depression. It could be prescribed for smoking cessation, or it could be prescribed for both.

Now, looking at the Corporate Data Warehouse, or the CDW, it is the largest data resource that we have at the VA. And eventually most VA data will reside on CDW servers. We have more than 130 local VistA systems that cover 150 VA medical centers, and there are data feeds for each transaction. So for example, if a medication is ordered, that data is fed into a regional data warehouse and the CDW pulls data each night according to whatever the current architecture or plan is, which is constantly changing. New domains are being added all the time. But there’s a lot of information on demographic data, both on patients and staff. And it also covers a lot of different areas. The data in the CDW goes back to 1999, so we have over 15 years of data. And there are nearly 2 billion, and growing, outpatient encounter records. So there’s a massive amount of data there.

The data in the CDW is on a Microsoft SQL server that can be queried using the SQL language, or SQL. As I mentioned earlier, it is organized by domains. For pharmacy, the two main domains are barcode medication administration, or BCMA, and that is the data on medications administered to a patient within the VA system, whether it’s in an inpatient setting or in an outpatient clinic at times. And the other primary domain is outpatient pharmacy, which is data about medications that are dispensed by VA pharmacy. So the CDW includes care delivered at all VA facilities, and it also has some information about prescriptions that were filled at non-VA facilities but paid for by the VA. And it contains a very small percentage of non-Veterans who received care in a VA facility. So for example, if there is humanitarian care to somebody who is visiting a Veteran, who is being cared for at the VA, the data on that visit for the non-Veteran could also be found in the CDW as well. So that’s just something to keep in mind when you’re using CDW data for research to make sure that you are including only Veterans, even though it’s a very small number that are non-Veterans.

And on this slide, and there’s a lot of information to absorb on this slide, but it’s just to give you an example of some of the variables that you can find in the CDW. So by no means, this is not an exhaustive list, but just to show an example of a hydrochlorothiazide tablet of 25 milligrams, which is taken for hypertension, or high blood pressure, and the SIG, or patient instructions, are to take one tablet by mouth every day for blood pressure. And then you can see that there are also variables of dispense units, which is the amount to take each time, which is one tablet, and so on. So this is just to give an example of some of the data that you might see in the CDW.

Now looking at the Managerial Cost Accounting National Data Extracts, or MCA NDE, the data steward is the VHA Managerial Cost Accounting Office, and many times people refer to it as the DSS dataset. The files themselves, when you work with them, are still labeled DSS, even though we now call it the MCA NDE. So even though the name has changed and the data systems have changed over the years, the data extraction process has been updated to maintain the same representation of what the data means. And this data source was really created for operational use. It looks at different aspects of clinical care in conjunction with the cost to provide that care. And as the name might imply, Managerial Cost Accounting Office, they are looking at what do things cost. And so they use something that is called activity-based costing to get an idea of, not just what the supplies cost but the labor cost and overhead associated with providing a service. And the data in the MCA NDE is available from fiscal year 2005. It includes records for inpatient and outpatient prescriptions from VA pharmacies or consolidated mail-out pharmacy, or CMOP. The VistA systems are the data source. And it is housed within the Corporate Data Warehouse. So it’s on a CDW raw server. Although the data lives on a CDW server, the data steward that manages the creation of the data and curation of the data is the Managerial Cost Accounting Office.

So this slide shows just some example variables from the MCA NDE. In this example, an inpatient fill of 30 days hydrochlorothiazide, 25 milligrams, has a dispensing cost of approximately $24.16. So although the under-price for the drug product itself was about 52 cents, it costs a total of about $24.68 to provide the medication to the patient. So in this example, it’s an inpatient fill and that’s why that dispensing cost is so high. The same medication in a CMOP, or an outpatient setting, would be lower. So the other thing that I would want to highlight on this slide is that there is a VA product code and the National Drug Code. And there’s information that you can use to link back to other data and find additional information on the formulary.

Next, Dr. Walid Gellad will talk about the Pharmacy Benefits Management, or PBM, and Medicare pharmacy datasets and provide some examples of how pharmacy data has been used in VA research. Thank you, and welcome to Walid.

Dr. Walid Gellad: Thanks, Bonnie. So I think, how about I take care of the slides, Hira?

Hira: Okay, great.

Dr. Walid Gellad: All right, that should work. Let me know if you can’t see the slides. I thank Bonnie for that great introduction. And so I’m going to continue just talking about two of the datasets, the PBM and then the CMS data and we’ll go through some examples, and then it’ll be really great to get your questions later. So let me move this.

PBM data also comes from the same source, as Bonnie had mentioned, from this 130 local VistA systems, and it’s managed by the Pharmacy Benefits Management group, which uses it internally for all of its activities. And it’s a national database in the same way as the others and it’s available from fiscal year ‘99 to the present. And the PBM data is available in custom extract, so it does require a request to the PBM, who will review the request, which is a slightly different process than what would happen with CDW.

And the data is very [inaudible 23:21] we go, the data is very similar in structure. Here is examples of the PBM data field. So there’s a VA product name. In this case it’s important to note the VA product is a combination of a bunch of different things, including the actual drug name, the dose, and the dosage form. And so that’s the VA product. There’s a VA class that the VA uses to classify all these drugs and then there’s a separate field with the actual generic name. So you can get at just the generic name without all the other information. So there’s a SIG again, and then the dispensing unit tells you the unit that’s being dispensed and being measured. So in this case, there’s a 21-day supply. There’s 42 tabs and it gives you the price per dispensing unit in PMB. This is the acquisition cost to the VA. It doesn’t include all those labor costs. Just really the acquisition cost for the product. And then the total quantity, which is just the price times the quantity, the total price, excuse me, which is just the price per unit times the quantity. And then it will give you the date the prescription was dispensed. It will give you a NDC code in the 542 format, but there’s a lot of problems with the NDC code, which we can talk about, and really VA product is the identifier that VA uses when it’s looking at its drug utilization.

So PBM, again, very similar data and it does require a custom extract. And we can talk more about why you would choose the different datasets. As Bonnie had mentioned, there are some differences between them. A lot of times it ends up being not only what you need but what you’re familiar with in terms of what dataset you use.

So the CMS data is another amazing dataset for VA researchers, and I’ve become quite familiar with it. And what happens is VHA sends a list of known Veterans to CMS and then CMS sends back a data for the VA to use for a given calendar year. And then VIReC will distribute that CMS data to VA researchers, and there’s a whole process in place that’s very well run to receive that data. There is a slight lag in the data, but I think Part D data is available up until 2016 just recently. So there’s quite a bit of Medicare data available that is linked to Veterans.

And there is all the Medicare data that you might be familiar with from the non-drug files. The drug files come in what’s called the Slim File. And it’s called Slim File for a reason, as you might imagine, so it is not all the variables in the prescription drug event in the PDE file. It’s a select 15 variables in the PDE file and these are some of the variables, and they’re the most useful ones you’re going to need for whatever you’re going to measure in terms of drug utilization. There’s a service date, there’s the NDC code. Again here, quantity dispensed, days’ supply. You can see there’s a patient payment field and a gross drug cost field, which is calculated by Medicare, and then the brand name, the dosage form, and you can see generic name.

So all the key variables are in that Slim File to look at drug utilization, and we’ll look at some examples. But the other data that you might be familiar with for Medicare Part D, whether it’s the planned file, the formulary file, the pharmacy file, the prescriber file; those are not as easily available through VA, through the VIReC process. They are available through a separate request that you can work with through VIReC, but that does cost money, whereas the Part D files, the Slim Files are available to researchers without an additional fee.

But we’ll give some examples actually, which is where I’m going to go to next. There was a Cyberseminar a couple of years ago we did specifically focusing on a little more on using both VA and Medicare data, which we had the link to here. There’s a great amount of information on the VIReC website also about using linked VA and CMS data. But we’ll go through some examples now, and then we can get to questions later.

I think I just clicked on the video. Alright, so let me go through some examples. And in the past when we’ve given this seminar, there’s been a desire for some more examples, so we tried to add an additional one this year. But there are lots of examples of ways that VA pharmacy has been used in research. So hold on one second while I get rid of the video that popped up.

Okay, so you can look at trends in medication use. For example, which medications have been used to treat a given condition, how has use changed over time, what’s the impact of policy change, and we’ll look at one of those examples, and what are some new treatment options. There are papers and studies about utilization and quality. So how does the VA perform on process-based quality measures for medication management? Are meds being prescribed appropriately? There have been many papers looking at adherence to therapy. Pharmacy data is also used for cohort identification and we’ll talk about, I’ll give you a couple examples of studies that have used it to identify cohorts. And there are other examples of ways studies have been used. And next year we should probably add a specific bullet for pharmacoepi. I mean, there have been many really well-done and important studies just focused more broadly on medication safety, doing more traditional epidemiology with pharmacy data, observational [inaudible 29:01] studies.

So let me go through some examples. And here are the four examples and we’ll go through them in more detail later. The first example is going to be one that we’ve used before, which is just looking at trends in medication use. This is a slightly older study, but it looks at the use of erythropoiesis-stimulating agents, or ESAs, in cancer patients and it uses PBM and MCA data. The second example will be showing how the CDW pharmacy data can be used both to identify cohorts and to measure utilization and quality.

The third example is one of mine from a few years ago looking, again, at cohort identification and utilization. Here in this case it’s looking at test strips, and this will be one of the examples where we’re looking at what might not be considered a drug, using VA data and also bringing in the CMS data. And then our fourth example from last year is also using the CMS data and looking at the association between receiving medications in both VA and CMS, or through VA and Part D, and potentially unsafe medication use in patients with dementia.

So let me go through these. And this was from 2012. Elizabeth Tarlov and group wanted to examine erythropoiesis-stimulating agent therapy in lung and colon cancer patients receiving chemotherapy. So they looked at trends in anemia management and they wanted to look at a specific policy change. And this is a schematic from the paper. There was a study timeline, there was a pre-period, and in 2007, the FDA issued a black box warning for these drugs which are used to treat anemia, and they were growing in significant restrictions on their use. So that was the policy change in 2007, and they looked at a post period. And here, pharmacy data was used to examine whether ESA use differed in the pre and post period, in terms of black box warning, and then just general trends in ESA use over time.

So what was the source of the pharmacy data? Here they used PBM and MCA data, and so ECAs were identified in the PBM database using NDC codes actually. And an important note is that they were also actually identified from CPT and HCPCS codes, HealthCare Common Procedure Codes, HCPCS codes from VA inpatient and outpatient encounters. Because these medicines are administered by clinicians, and so there was an additional source to look at data. And I would say that’s a key point to remember is that sometimes you have to look in the non-drug files to identify drugs of interest. And the same this is true, whether you’re looking in VA or outside VA.

So they looked at PBM and MCA data and also, using CPT and HCPCS codes, Healthcare Common Procedure Codes, HCPCS codes, from VA inpatient and outpatient encounters because these medicines are administered by clinicians, and so there was an additional source to look at data. And I would say that’s a key point to remember is that sometimes you have to look in the non-drug files to identify drugs of interest. And the same thing is true whether you’re looking in VA or outside VA. So they looked at PBM and MCA data and also using CPT and HCPCS codes.

So just a quick summary of what they found, there’s a lot more in the paper obviously, but this is in patients with colon cancer and in patients with lung cancer. And they’re over time and they’re plotting the predicted probability of receipt of ESAs. And the general point here is that there was a declining trend in these medications even before the black box warning came in 2007.

All right, so that’s an example of a study that looks at trends in medication use, and there are other examples as well. And one of the key issues is making sure to identify drugs in the non-drug files if that’s what’s needed for your particular study.

There’s another one, this is from Jeremy Sussman. This is from a few years ago, and this was looking at rates of deintensification of blood pressure meds in older adults with diabetes. And there are a couple things about this study, which used CDW data, that I want to go over. And we don’t need to go through the whole flow chart, but the CDW data here was really used, and I listed it here, for cohort identification and for assessing use of blood pressure and diabetes meds. And so if you look up here, and this can all be done in CDW, and so one of the advantages, I would say, with CDW is the data is all there, whether you’re looking at medication use or non-medication use. Whereas when you use one of the other datasets like PBM, you’ll have to link that PBM data to other sources to get non-drug data.

So in this case they had 823,000 patients who had blood pressure measured in primary care and they wanted to limit it to those who were receiving active medical therapy. So here’s the first case where CDW medication data is used to identify the cohort because they had to be receiving active medication therapy. So they excluded those that were not receiving active medication therapy. So then this is the blood pressure cohort. They then divided the group into those whose blood pressure was very low, moderately low, or not low, and then measured deintensification of medication therapy. In the next slide, I’m going to show you how they did that, but this is really the outcome. So here CDW is used for the cohort and then it’s used for the outcome of measuring deintensification.

And so how did they do this? And this was, again, in CDW. This is from the appendix, but I think it’s a really neat figure and I’ll run you through it. So this is time zero when someone enters the cohort. And for discussion here, we’ll just say it’s the time when their blood pressure is measured. And the beauty here is that all this can be measured within CDW. So this is day zero and then they looked within the 21 days after the blood pressure was measured and then up to 180 days after. And if you look up here, in the green is the dosage of the medication they got, and in the blue are the days the patient was on the med based on when the med was filled and the days supplied. So they can tell every day you have an identifier of whether or not the patient is on the medication and the dose they’re on. And with that information, you can then measure deintensification, which is what they did.

So here is an example of no change in therapy. At day zero there is some blood pressure or some test, and the patient was on 10 milligrams of this medicine and was on 10 milligrams even after the fill. If it’s in the parenthesis here, it just means that it may or may not have been filled. But the general point is that there was no change in therapy before and after a test.

These other examples are examples of deintensification. So you can look here that someone was on 10 milligrams, here’s the test, and they go down to 5 milligrams. This is an example where they’re on 10 milligrams, and they, at some point, are changed to 5 milligrams even if they’re not changed within the first time period. Here’s when they stopped filling after a certain amount of time, and here’s when they have no fill after a blood pressure is measured. So these are all examples of identification. I just think this is a really nice way to visualize what you can do with the CDW data when you have everything there from the lab tests, to the vitals, to the meds, to the other health data.

All right, so now we’ll go on to the third study. This was ours also from a few years ago. And this, again, we used the med data for cohort identification utilization and here’s when we add in the Part D data. So we wanted to examine the pattern of test strip receipt among older Veterans with diabetes and determine whether receiving strips from multiple healthcare systems is associated with overuse. And so I have more detail here. So it’s cross-sectional, retrospective cohort study. So we linked national VA data and linked it to Medicare Parts A, B, and D claims in fiscal years 2008 and 2009, and so we had 363,000 community-dwelling Veterans over age 65 with diabetes who used the VA healthcare system. So we established our cohort by determining if they had used, actually, test strips which are a dispensed product in PBM. We’ll talk a little bit more about that. And we used VA PBM and Part D files.

So I thought it would be useful to run you through specifically, give you concrete steps for exactly how this was done. So you can see how the pharmacy data was used. So we used, and I’m going to read it, but that’s okay, we can talk more later. So we used PBM data first to search diabetes meds by VA drug class and then generic names, combined with diagnosis codes from MedSAS to define the study cohort of type II diabetes patients. MedSAS is a little bit old school now, but essentially we combined diagnosis code data with medication dispensing data to determine if someone has diabetes, which has been done for cohort identification in prior studies. And to identify diabetes drugs, we identified the class of interest and we had specific generic names, and that’s how we identified diabetes drugs in the PBM.

We then used PBM data and the Part D files to classify patients based on the type of diabetes medication they used. And one of the key points here is that the Part D files come in calendar year files, whereas oftentimes in VA we think about fiscal year. So it’s just a matter of syncing the accounting year and fiscal year data. So for Part D medications we actually used NDC codes that we obtained from a third-party database, Medi-Span, in order to identify diabetes drugs in Part D. And then we identified diabetes drugs from VA using, as I mentioned, the class and the generic name.

So then we used PBM data to search for and quantify the number of test strips that were dispensed. Again, these are PBM dispensed. These are dispensed by the PBM. And then we actually used Medicare DME files to search for and quantify test strips in Medicare, because in Medicare the test strips are not in Part D data. Instead, they are actually durable medical equipment. So it’s just a lesson about when you’re going to include CNS data you have to harmonize the data sources to know you’re measuring the same thing.

And just briefly, what did we find? Among this cohort, about 71% had received test strips from VA only, 22.8% from Medicare only, and there were about 20,000 who received test strips from both VA and Medicare. And that we were able to just quantify the number of test strips they received in a given year, which is what’s plotted here. So this is the median number of test strips dispensed in a year. And we categorized people based on both VA and CMS data on whether they were on no diabetes meds, oral meds only, long-acting insulin, or short-acting insulin. And then the different blue bars are where they get their test strips. So here you can see among those who were getting their test strips from VA only, who were on no diabetes medicines, they got about 100 test strips a year, and there were four times as many, 400 test strips a year among those on no diabetes medicines, who were given their test strips from Medicare or both VA and Medicare. And it’s the same pattern that continues regardless of the type of medication they’re on. So just a lesson of how to incorporate VA and non-VA data and how to make sure to harmonize and make sure you’re measuring the same thing in both these data sources.

So here’s the last study that I added this year. This is from last year, the study from last year from Josh Thorpe, who is also from Pittsburgh. And he aimed to investigate the association between dual healthcare system use and potentially unsafe medication prescribing, so looking at those who get their medications from both VA and Medicare and looking at measures of safety of prescribing. So here, again, PBM data is used, plus CMS data.

And so we linked national patient-level data from VA and CMS for these years. And the independent variable here is prescription drug benefit user group. This is simply where do they get their medicine. And it was coded as dual VA or Part D, defined based on getting a prescription, at least one prescription from both systems, versus those who get their prescriptions from VA only.

So here the source of medication, the medication data from PBM and CMS is used to identify the independent variable and also the outcome variable, and there were three here. It’s the exposure to various unsafe medications, exposure to drugs with high anticholinergic burden, exposure to antipsychotics, and exposure to high-risk drugs. And then he looked at these indicators based on having any exposure and looking at the actual number of days of exposure in 2010, again, using VA and CMS data.

Here are the results from, the unadjusted results, and we don’t have to go through all these. If you look at this top line right here, this is the overall measure of any potentially unsafe medication. Among those who are dual VA and Part D users, 59% were exposed to a potentially unsafe medication compared to 39% in VA only use, almost a 20-percentage point difference. And it was the same pattern when you looked at any of these specific medication-use measures, so a higher rate of potentially unsafe medication use among those who received medications from both VA and Medicare.

And here’s the last slide, which I had to show you because I just think it’s really cool, and this is from the appendix. And what this is plotting is across the Y-axis is the predicted probability of this outcome, of having any potentially unsafe medication use. And this is from the model that adjusts for differences between the groups. And here is the proportion of all prescriptions from VA. This group gets none of their prescriptions from VA, so they get all their prescriptions from Part D. And this group gets all their prescriptions from VA and none from Part D. So it’s trying to quantify the percentage of prescriptions that you get from Part D among these people that get their prescriptions from both. And it’s very interesting that across each of these measures it shows that the predicted probability of the unsafe outcome is highest in this area where you’re getting 50/50, close to 50/50, which supports the concern about the role of care fragmentation of quality of care and that there is some problem associated with mixing where you get your prescriptions from. I just thought it’s a really neat figure and an example of how you combine CMS and VA data from a recent paper.

So there are lots of others. I listed just some of these, but there are many others, and I think I’m happy to take questions later. I’m going to fly through these examples and then I’ll turn it back over to Bonnie to talk about some resources.

Dr. Bonnie Paris: Hey, great. Thank you so much, Walid. And let me know when you’re able to see my screen again. Okay. All right, so hopefully you’re seeing the screen that says Corporate Data Warehouse, CDW, up at the top. One source of additional information on CDW, on the VIReC website we have a number of resources that describe CDW structure and content. For example, Excel tables that list the domains tables, columns, record counts, [unintelligible 44:31] counts, and some example values. We also have researcher’s notebooks that provide a more detailed look at different aspects of working with the data. And these are generally written by and in conjunction with members of the VA research community, and the researcher’s notebooks are a vehicle for sharing vetted methodologies for using the data. So those can be very useful.

And another source that I would like to draw your attention to for CDW is the Business Intelligence Service Line, or BISL, CDW SharePoint site. There are a lot of resources at SharePoint site that are specific to CDW, working with CDW data, including meta-data such as the entity relationship diagrams for the CDW. And for the Managerial Cost Accounting, MCA NDEs, at VIReC we also have a number of resources, documentation related to all of the National Data Extracts the MCA produces. And in this past year, November 2017, we published an updated research user guide to pharmacy Managerial Cost Accounting National Data Extract data. So if you’re interested in using the pharmacy data that’s in the MCA NDE, we have a fairly robust guide that describes that.

The MCAO National Data Extracts and Reporting Information, so the group that produces this dataset has an intranet site as well. And the Health Economics Resource Center, or HERC, also has information on working with this data.

For PBM, Pharmacy Benefits Management Services has information on working with the PBM dataset. The link on this page goes to the national formulary page. And VIReC provides information on the CMS data that’s available, including the Part D Slim File.

And there’s also, this is something that VIReC collaborates on as well, there’s a VHA data portal that contains information about different data sources, including the ones that we just discussed, data access, tools and applications, resources, training, policy and administration, and support. So these highlight the different tabs that they have going across, so when you visit the data portal, the link is provided, a page.

But I just wanted to draw your attention to requesting data access. So there are differences based off of the purpose for which you’re requesting access to the data, whether it’s for operations, research, or preparatory to research. So the VHA data portal is really designed as a one-stop shop to all of this information, and there are also links out to all of those other sources that I just highlighted as well.

And if you have any specific questions, there is an HSRData Listserv, the Health Services Research Data Listserv, is a large, over a thousand members and growing, group of VA data users that includes researchers, operations, data stewards, and managers. And there’s a link here where you can subscribe to that list. So if you have a specific question working with the data, you can ask there.

You can also always contact us at VIReC at our help desk via email or give us a call. And Dr. Gellad and I are also happy to be a resource for you. And again, the VA Information Resource Center, if we don’t have the answer, we can help find the person who does.

The next session of the Database and Methods Cyberseminar series is Pharmacoepidemiological Designs using CDW Lab Data for Drug Effectiveness Research by Dr. Adriana Hung. And so this gets to what Walid was talking about earlier about when you’re working with the CDW that there is a lot of different data there. So lab data is also an important piece to look at when you’re looking at pharmacy research. So now we will open it up to questions and I’ll hand it back to Heidi and Hira.

Hira: All right, thanks Bonnie. We do have several questions here from the audience, so I’ll just start to run through them in order. Are VA pharmacy data linked to other datasets within the CDW? For instance, can you measure medication usage among purchased care recipients?

Dr. Walid Gellad: Bonnie, do you want to take that?

Dr. Bonnie Paris: Yeah, so the data is, there is a purchased care portion that’s within in the CDW. I’m not as familiar with it, but you could, once you’ve identified your cohort, then you could look at the additional data that’s associated with the people in your cohort. And so then you’d have to bring it that way and link it together. Likewise the information about the medication order is also in the CDW, but it’s in a different place then the ones I discussed earlier.

Hira: All right, thank you. Next question: DSS and CDW, do they contain overlapped pharmacy data?

Dr. Bonnie Paris: Yes, they do. So a lot of the source data for both CDW DSS, which is now known as MCA, and PBM, they get a lot of data out of VistA, also known as CPRS. And because they’re all getting data from the same data stream, you will find overlapping data when you combine them.

Hira: Another question about data overlap: Is there any between meds listed in PBM and the Medicare file?

Dr. Walid Gellad: Can you repeat that?

Hira: Overlap between meds listed in PBM and the Medicare file?

Dr. Walid Gellad: So I think the answer is no. The PBM data would be only those that are dispensed and paid for by the VA, and the CMS data would be only those paid for by Medicare. So there are overlapping prescriptions that are the same, but they’re not the same prescriptions. They just happen to be prescribed by folks outside the VA and then folks within the VA.

Hira: All right, thank you. We still have lots of questions coming in. I’m trying to go through them as fast as I can. Okay, a question about the four examples: I’m not sure why these four studies use data from different sources. Is it because of data access permissions?

Dr. Walid Gellad: This is Walid. I think the answer is what I mentioned before is, one, it depends on what you need from the data. Many times you just need the usual dispensing data, which is present in all the databases, so it just matters probably what you’re used to, what the people you work with are used to. That’s often what it boils down to. And CDW, there hadn’t been a lot of CDW use in the past, really it was PBM and MCA, and CDW is now growing. So a lot of it is just idiosyncratic as long as the needs are just basic dispensing information.

Hira: Okay, another question for you, Dr. Gellad. How do you define the diabetes medication intensification and deintensification?

Dr. Walid Gellad: How do I define it? Was that the question?

Hira: Yes, that was the question. Yes.

Dr. Walid Gellad: Yeah, so I wish I had done that paper. I did not do that paper. But it was defined based on, they had specific criteria on whether, when I had gone through that example in the appendix and you can go back and look at that example in the recording, but they were able to look at whether a medication dose was changed after a documented low pressure or low blood sugar. And that’s how they determined that there was deintensification. And they were able to do that in the CDW because they had vital signs, they had lab data, and they had med data.

Hira: Alright, thank you. Are non-VA meds entered into CPRS captured in any of the databases listed? Which ones?

Dr. Bonnie Paris: Yes, they are captured in the CDW. There’s actually a non-VA meds table.

Dr. Walid Gellad: Yeah, and I was just going to say that I think that is going to be dependent on what clinicians at each of the VAs enters, which is its major limitation.

Dr. Bonnie Paris: Absolutely.

Hira: All right. How can you request PBM data? I can access CDW and DSS pharmacy data, but I don’t know where to request PBM data via DART.

Dr. Bonnie Paris: So the PBM data request process, I believe it is not on DART and that the process to request that goes directly to PBM. And the exact information on that is actually in the VHA data portal. If you go to the VHA data portal and go to data access, you’ll find information about that, or if you want to look at a specific data source first, you can do that as well. But for the PBM dataset, I believe that is still a direct request to PBM.

Hira: All right, thanks Bonnie. Would data on claims invoices or EFTS related to pharmacy data be found within the PBM data source or would this be more likely found in a financial data source such as Integrated Billing?

Dr. Walid Gellad: Bonnie, I’m going to defer to you if you’re able to answer that.

Dr. Bonnie Paris: So I’m really not sure if, for the, I think you could find some of that information in the purchased care services data that’s in the CDW. I’m not as familiar with PBM and I really don’t know if it would be in PBM or not. But if you could email us at the VIReC help desk, we can dig into that a little bit more and find a better answer.

Hira: All right, thanks Bonnie. Okay, which one contains the most or close to complete pharmacy data, CDW, DSS, or the other one?

Dr. Bonnie Paris: If you’re focused on pharmacy activity, I would say PBM. If you’re looking at more holistically the medication therapy for the patient, I would say CDW.

Dr. Walid Gellad: And I would just add as well, I would just add that we’ve looked, and often these agree, there’s a very high percentage of agreement. It’s not perfect and I don’t know what, if there is a gold standard, but PBM is what uses these analyses for its internal purposes and has been doing so for years, specifically on medications.

Dr. Bonnie Paris: Yeah, it’s just if you start getting into the medication administration component or if you’re looking at medication orders and how the order may have changed before the order was finalized, those kinds of things you won’t find in the PBM system.

Dr. Walid Gellad: Right.

Hira: All right, thank you. Some of the data fields in recent PBM data are not listed in or are different from the most recent research user guide for pharmacy data. Is there a more up-to-date user guide for understanding the current set of variables?

Dr. Bonnie Paris: So the most recent research user guide that we have at VIReC that looks at pharmacy data and the PBM dataset is actually from 2008. So that is out of date. So the best source for current information about the PBM is to contact PBM directly. We do have an updated guide for MCA, formerly known as DSS, and that was updated in fall of this previous year. So the information that we have in the new researcher user’s guide for the MCA DSS dataset is accurate and up to date, but it does not cover the PBM data.

Hira: All right, thank you, Bonnie and Walid. I think that looks like all the time we have today. There are still several questions and I will send them to you guys afterwards. To the audience, if your questions were not answered, you can contact the presenters directly. You may also contact the VIReC help desk at [VIReC@va.gov](mailto:VIReC@va.gov). Bonnie and Walid, thank you so much for taking the time to present today’s session.

To the audience, you can tune in for the next session in VIReC’s Data Base and Methods Cyberseminar series on Monday, May 7th, at 1 p.m. Eastern. As Bonnie mentioned, this will be presented by Dr. Adriana Hung and she will present a session titled Pharmacoepidemiological Designs Using CDW Lab Data for Drug Effectiveness Research. We hope to see you there. Heidi, can I turn it over to you?

Heidi: Sure, thanks Hira. I also want to thank Bonnie and Walid for presenting today. We really do appreciate the time that you put into preparing and presenting today. For the audience, I’m going to close the meeting out in just a moment. When I do, you will be prompted with a feedback form. Please take a few moments to fill that out. We really do appreciate all of your feedback. Thank you everyone for joining us for today’s HSR&D’s Cyberseminar, and we look forward to seeing you at a future session. Thank you.

[ END OF AUDIO ]