Cyber Seminar Transcript

Date: 10/19/2016

Series: PACT

Session: Accounting for Care Provided by NPs/PAs in Estimates of Trends in VA Reliance on Primary and Specialty Care among Medicare Eligible Veterans

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Moderator: We are just about at the top of the hour. So, at this time I would like to introduce our speakers today. Joining us and presenting first, we have Dr. Fen Liu. She is a core investigator at the Seattle HSR&D COIN and that is located at the VA Puget Sound Healthcare System. Joining her today is Dr. Paul Hebert. He is a health services researcher also located at the Seattle HSR&D COIN in VA Puget Sound.

So, at this time, I would like to turn it over to Dr. Liu.

Fen Liu: Our talks about how we accounting for care provided by NPs/PAs and estimate the trend of VA reliance among Medicare eligible veterans. I would provide the background and Paul would presents the results, the methods and results.

The VA reliance is an important measure of patient experience so for Medicare eligible veterans. Veterans can make the decision to choose where to get their care based on various factors like QOC or quality of care, or convenience like distance or easiness to obtain an appointment or environment, whether it is a clean environment or the friendliness of the staff. So, understanding where veterans getting their care for different type of services has important policy implications. For instance, we can asses where our patients get their care and whether they access their needed care. And this information is also important for the policy-makers for the decisions and what type of services the VA should provide. In addition, what type of services we can provide in-house or what type of services we can actually purchase at the community.

We focus on reliance on VA outpatient care because patients are cared and managed at the outpatient settings and we place our emphasis on evaluation and management visits over total visits measured at to the degree which veterans rely on the VA to orchestrate his or her care. In addition, we can identify E&M visits based on the CPT codes available on Medicare claims and VA administrative data. Our ultimate goal is to estimate VA reliance for E&M visits and that is defined as a proportion of total E&M visits occurred in the VA so it is just a simple math; VA E&M visits divided by VA plus Medicare E&M visits.

In order to compare visits, outpatient care and VA Medicare, we developed a classification algorithm using CPT codes and provider specialties which are commonly available in both VA and Medicare so we can construct comparable measures. This table summarizes some of the categories that we will be focusing today and so, for instance, primary care we separated out the visits with E&M codes and without E&M codes, that is primary care procedures. And then we have mental health specialty care, surgical care. And again, for medical specialty subspecialist, we have E&Ms and without E&Ms. Then for NP visits we classify them into the same categories, NP visits with E&M codes and NP visits with procedure codes only. And we have other categories that we are not talking about today.

So, the NP and PA visits is the focus today because classifying this visit really complicates our measurement of VA reliance for the following reasons: First, NP and PAs practice in both primary care and specialty care clinics, so we cannot assume that all the NPs would go into one category or the other. Second, unlike providers specialty for physicians, there is no provider specialty code associated with NP or PA in Medicare or VA admin data. However, we can identify what type of VA clinics NP and PA practice in by stop codes, but there is no stop code equivalent in Medicare so we cannot identify where they practice in Medicare.

This slide shows the NPs and PAs provide a significant proportion of E&M visits in both VA and Medicare, but it is more in VA than Medicare. This other number is coming from the Medicare eligible veterans from 5% PCMM samples in 2014. This study sample incurred 168,000 E&M visits in VA and about half in primary care. NP and PA accounted for almost a quarter of E&M visits in VA. The study sample incurred almost 300,000 visits, E&M visits in Medicare and half of them are in Medicare subspecialty and the NP and PA visits accounted for nine percent of the total E&M codes.

Traditionally, VA employed, used NPs and PAs in the VA system a lot more than community systems, community clinics. So, this slide shows the number of NP and PA E&M visits per patient, per quarter from 2003 to 2014. So, overall, the VA patients, the Medicare eligible patients we see about 1.5 NP and PA E&M visits per quarter in the VA and it has kind of decreased slightly over time, but the CMS, the community clinics are catching up in using NPs and PAs in their clinics. So, the number of NP and PA visits for patients has increased dramatically over this time period.

We do not know where those NP and PA are practiced in Medicare, but we can identify where NP and PA are practiced in VA. So, these are the top ten clinic stops for NP and PA E&M visits. We color-coded our different type of visits by stop codes so blue primary care and green is surgical care and then peach is medical subspecialty and mental health is red. So, here the top one is primary care and then we can see that NP and PA, stat6a practice across various clinics, primary care, surgical and medical subspecialty and mental health.

If we group them by the listed type, so 62% of NP/PA E&M visits occurred in primary care and 18% in surgical care, 16% in medical subspecialty, it is about 4% in mental health. So, we cannot just assume that all the NP/PA visits are primary care if we assigned them to primary care, we would overestimate the vary line for primary care, but underestimate the reliance for other type of care.

So, the potential approach is to attribute NP and PA visits according to the physician in their medical groups. We assume that NP and PA typically provide the same type of care as the physician in their medical group. For instance, in the primary care group the NP/PA will provide primary care and in the cardiology medical group, NP and PA will provide cardiology care. The approach is to use Tax Identification number to identify what type of medical groups that will be \_\_\_\_\_ [00:10:04].

So, what is Tax Identification Number? We call it TAXID, so our presentation as some consistency. So, TAXID represents individual organizations or units providing medical services. A TAXID can be defined as just a medical group that consists of one or multiple providers. Each provider is associated with on or more TAXID. The TAXID is included on all Medicare Part B carrier claims. However, there is no TAXID in VA data, so our approach, we create a pseudo TAXID for specific clinic stops. And Paul will talk about in our ‘Methods’ section.

TAXID has been used to attribute performance measure for NP and PAs in Medicare, so the GEM Project in Medicare that developed the methodology to attribute specialty care provided by NPs and PAs using the plurality of physician providers in a medical group.

So, the objectives of our work is that… Our overall objective is to describe the trends of VA reliance among Medicare eligible veterans. For this specific task we aim to develop and test a method to attribute E&M visits provided by NPs and PAs into four categories: primary care, specialty care, surgical care and mental health care. We use the concept of TAXID to identify provider specialties within a medical group and then we develop some weights to attribute NP and PA visits to different specialties within a medical group and we apply the methods in VA data and we validate this data using VA stop codes and finally we apply the method to Medicare data.

I am going to turn over to Paul, to talk about our methods.

Paul Herbert: Okay, thanks. The data for this analysis comes from a 5% sample of duly-eligible for Medicare. I should say this 5% sample comes from PCMM patients from 2003 to 2014. So, these are patients who are already enrolled and active in PCMM in a quarter. So, this is a little bit of a limitation because we are sort of asking about how veterans are voting with their feet for using VA care versus CMS care and we are taking people who are actually in line at the VA. So, we are going to test these methods on this sample, but obviously we can apply these methods to other sample veterans who have not just used the VA. We are going to limit it to veterans who are 65 years and older, so just the age eligible veterans and they have to be enrolled in both Part A and Part B and not enrolled in a Medicare HMO because Medicare HMOs do not submit claims so we cannot see how much utilization they are using in our different categories.

Here are the steps that we took to do our analysis. The first step is as Fen says, to code every clinic visit by a visit type based only on the providers specialty code and BETOs code or as CPT code. So, this is important because in the VA we have stop codes, but there are no stop codes in CMS. So, in the VA we can say, “This is a primary care clinic because the stop code says ‘primary care’.” We do not have that in CMS, so if you want to compare VA utilization and CMS utilization we cannot use stop codes, but in both sectors we have CPT codes and provider specialty codes. The CPT codes in Medicare are also grouped into BETOs codes. BETOs codes are Berenson-Eggers Type of Service codes. Berenson-Eggers used to work for CMS and they just wanted to know what CMS is spending all of its money on, so it took all the CPT codes and just grouped them into a bunch of groups. So, maybe there are fifteen thousand CPT codes and they ended up with about a hundred BETOs codes. They are grouped into large categories like evaluation and management, so most of the time when you see a clinician and they sort of like poke and prod you and took your temperature, that is an evaluation method. And then there is imaging and procedures and diagnostic tests; so, large groups like that.

We took those CPT codes, BETOs codes and specialty codes and then assigned every visit to one of these four categories. Actually, we assigned them to a larger number of categories, but for our purposes, since the purpose of this is to assign NP/PA E&M visits to some other code it did not make any sense to assign NP/PA E&M visits to imaging, since NPs do not do any imaging and imaging does not involve any evaluation of management. But, each of these four categories do involve E&M, evaluation and management, so it is plausible that NPs could be working in one of these types of clinics. The types are primary care, specialty care (this is medical specialty care), surgical care and mental health. Next, we calculate the percent of visits to each visit type at each TAXID and then we apportioned the nurse practitioner E&M visits at each TAXID to those other categories, those four other categories, based on those percentages.

I am going to walk through an example of this using some fake data. Here is some fake data of a bunch of visits to a clinic. This is a particular clinic. The patient ID is on the left, the date of the visit is the second column, the CPT code of the visit is the third column. The clinician identifier, the National Physician ID, is the fourth column and then the specialty of that physician is the last column. So, each of these items is available both on CMS data and VA data so we can apply this algorithm equally to either sector. So, as you can see, at this clinic there are three types of providers. There is an internal medicine provider, a dermatologist and a general surgeon. So, kind of a strange clinic, but… We could, if we wanted to, say all the NP visits at that clinic, let us just divide them up a third, a third, a third to each of those sectors, but instead we decided to divide them up based on the number of visits. The idea is that if a lot of patients are going to specialty care or primary care, then maybe a lot of the NPs duties are assigned to those two sectors and less to surgical care. So, in this example, there are three visits to specialty care, two to primary care and one to surgery and so this clinic would have a weight of 0.33, that is 2 over 6 for primary care and 0.157 for surgical care and 0.5 specialty care. These all numbers add up to a hundred percent, so when we attribute all the NP visits, we do not lose or accumulate more visits than there actually were.

This is what the data would look like for a couple of different clinics. Clinic A would have the weights as shown. The weights all sum to one and Clinic B would have a different set of weights. We considered looking at TAXID AAAA, well the plurality, in fact the majority of visits there to primary care, so we could have assigned all of the NP visits to primary care, but we thought that that would not be the best. The great majority of the clinics had all or almost all of the visits in one of these sectors. So, it would be adding a lot to primary care and not very much to these other sectors. So, we thought it would probably be a better idea to just apportion them equally. So, that means that if you have one visit at this Clinic AAAA, that actually counts as 0.6 visits to primary care, 0.2 visits to specialty care and 0.2 visits to surgical care. So, not one visit to primary care because that is the biggest, we just add fractions of cares to each of these sectors.

So, that is easy enough to do, but how do we know that it works? Well, it is difficult to see if it works in CMS. We had their TAXID, so we know what clinicians are practicing together, but we do not know what kind of a clinic it is. We would have to go and call them up and say, “Are you a dermatology clinic or a multi-specialty clinic?” But, we could do it in the VA because, as we said before, the VA we have the stop codes so each clinic in the VA, we know what it is. It says that it is a primary car, specialty care clinic. So, we created a pseudo VA TAXID, which is a combination of the stat6a and the stop code at the clinic. We grouped the stop codes into a smaller number of stop codes. So, for example, we took all the stop codes that referred to primary care and lumped them all into one category of primary care. So, women’s health we added to the primary care, outpatient primary care stop codes. We grouped all of the specialty care stop codes into one group of medical specialty care and then surgical and mental health. So, we have four groups of stop codes. I am sorry, four groups of stop code types based on the stop codes.

We then… So that is step number two. Step number three then is to calculate the portion within each VA TAXID of the primary care, specialty care, surgical and mental health based on the primary visit type of that visit. So, that is based on only CPT codes and specialty codes. So, the step two is based codes, step three is based only on specialty codes and CPT codes. And then we will look at the correlation between the actual stop code group that the VA says the patient visited and the one that we predicted based on the characteristics of the providers at that clinic and what was donee to them.

So, here are the results. This is, again, color-coded for your convenience with primary care being blue at the top. Across the columns, we have the visit type that is based only on the CPTs and the provider characteristics; so that is across the top. Down the rows over here, are the clinics as defined by stop codes. These cells are the number of visits by duly-eligible veterans that were coded by primary care, according to just the specialty and CPT codes, and primary care as coded by the stop codes. As you can see, for primary care, of the roughly 25,000 visits about 85% were correctly classified as primary care by our TAXID algorithm. So, that is where we say the… take all of these categories and assign the NP visits to each of these categories according to this procedure code and specialty code only.

For surgical care, about… I should say, for primary care about 85% were correctly classified, but about 13% were called mental health by our algorithm even though they were in primary care. This is, in part, due to the fact that we included in primary care, as a primary care stop code, primary care mental health integration. So, anytime that a veteran is having a visit with a primary care mental health integration, we are calling it primary care and our algorithm is calling it mental health. So, surgical care, also, about 7,000 visits with surgical care stop codes, about 75% of them were correctly classified into the surgical by our algorithm and about 20% were incorrectly classified to medical specialty. Medical sub-specialty, about 88& was classified correctly and among the mental health, almost a hundred percent were classified correctly. So, the overall concordance is 85%, which sound pretty good; 85% is not bad.

This is the effect of this algorithm on the total number of E&M visits by category of visits for the VA in 2014. So, in 2014, there were about 40,000 NP E&M visits and we are going to take those 40,000 visits and spread them across these four categories. As you can see, this causes the number of primary care visits to go up by about 3,000, specialty care visits go up by about 6,000 and surgery goes up a little bit and medical specialty goes up a little bit. So, if we had just ignored the nurse practitioner E&M visits, we would say there is this much care in these sectors. By using our algorithm we say there is this much. And because our algorithm is based only on CPT codes and provider specialty codes, we can apply the same algorithm to Medicare. So, in Medicare there were about 27,000 NP E&M visits and when we spread this our to Medicare, we get this result. So, very little increase in mental health; just a lot of mental health being provided to veterans through Medicare. And pretty small increases in primary care and surgery, but comparatively larger increases in medical specialty.

So, now we have this algorithm. It seems to work okay, and we are going to apply it to all of the claims from 2003 to 2014 and this is the result. So, this is time on the x-axis, this is the number of visits in the VA on the y-axis here. The number of visits in CMS over here and by using our algorithm… The blue line is just the observed primary care E&M visits and the red line is those observed plus the NP visits that were imputed to primary care using our algorithm. So, as you can see, it increases the number of PCM visits, although it does sort of decreasing rates, our NP visits are falling a little bit. In CMS, it increases it by a smaller amount, although a little bit larger in the end because there are more NP visits in the end and that is leaving us curious. But, it really does not change the slopes of the lines overall. So, CMS visits are actually declining among veterans over this time period who are in CPMM and sort of flatish for the VA. When you combine those two numbers and calculate the reliance on the VA, so just take the VA visits of primary care E&M and divide by the sum of the VA and CMS visits… If you just use the observed primary care visits, you would have this line of an increasing rate. When you add the NP visits, it is a little bit higher, but also increasing. So, adding the NP visits did not change the trajectory of reliance on the VA, although it did change the magnitude a little bit.

Is that the best we can do? So, 85% is pretty good, but could we do better? And the answer is, “Yeah, we probably can do better.” Let us say that you… Just a hypothetical situation where you have a nurse practitioner who practices in a clinic that has surgeons and mental health providers. On any one visit, a nurse practitioner is not providing both the surgery and the mental health. They are probably not doing that, which is kind of scary. Can we tell whether that visit should better be attributed to mental health or to surgery? Yeah, we can if we look at what happened on that visit. So, on this figure on the right is a pretty cool sheet map which Adam Batten put together. This, on the x-axis has major categories of care so mental health, specialty care, primary care and surgery and, as crudely shown on the right axis here are all the BETOs codes. So these are about a hundred BETOs codes and the BETOs codes are ordered so that all of the evaluation and management codes are all groups right here. all of the… What is the green? Imaging are all down here. And here are a bunch of procedures. So, as you can see, if somebody is getting mental health at this clinic, pretty much all they are getting is evaluation and management. They are not getting any imaging or procedures. Conversely, if you are going into a visit and you are getting a kind of procedures, sutures taken out or things clipped out of you, you are probably having a surgical visit. So, there ought to be some way to take this information on these BETOs codes and more accurately put people into these four categories.

So, this is what we tried and this is very much a work in progress, but it seems to work pretty well. We coded each based on the BETOs codes on that visit. So, you can have multiple BETOs codes on a visit, then using the VA data we estimated multinomial model of the stop code group as a function of the TAXID weights for each visit and those BETOs codes. So, you can think of the probability of being in any particular stop code as a function of the percentage of specialty visits at that TAXID, that VA TAXID in terms of surgery, mental health and we have to leave of one category because these add up to one, so we left off the primary care visit, and then indicators for each of these BETOs codes from one to ninety-nine. Then, using this multinomial model, we get a predicted probability for being in each stop code group, attribute the E&M visits based on those predicted probabilities and apply those same model parameters to VA visits in other years and CMS visits overall. So, we cannot estimate this model in CMS, but we can estimate it in the VA and then apply it to other years and other sectors.

Here is our new table. So, the same number of primary care visits, but when we use this algorithm we are terrific in our concordance, so about 99% of the time when the VA stop code is primary care, when we apply this TAXID plus BETOs algorithm, we also say that is in primary care and you can see this mental health number drops down to a very small number. So, just by knowing that the person only got an E&M on that visit and not anything else, tells you a lot about whether that visit was a mental health visit or a primary care visit. Again, surgical… This cell used to have about 20% of patients were misclassified into this cell, now they have all moved over to surgical and the overall concordance is now 99%. So, again, that sounds like it is a little bit fishing in the barrel. I should say that this… I guess it is fishing in a barrel, come to think of it. But, that is okay.

This table right here is in-sample correlations, but we have also done it on outer-sample correlations so that is on half the sample and predicted it on the sample that was not in the estimation and came up with the same numbers. And it should not be too surprising just because of this. You can really clearly see that this is going to distinguish what type of care people are getting.

Now let us apply this TAXID plus BETOs algorithm and this is the comparison of where these 40,000 NP visits went. In the TAXID only algorithm, we get a lot more mental health when we apply this TAXID plus BETOs algorithm, we get a lot less. Most of those visits came… These mental health visits were attributed back to specialty care and as we saw a bunch of visits that used to be called… I am sorry, that used to be called primary care are now correctly classified as surgical care. The same algorithm applied to CMS does not change either primary care or mental health very much, but it has a lot more surgery visits and a lot less specialty care visits.

Okay, that is great, but what we really wanted to know was how this affects VA reliance over time. so, here is the VA reliance on specialty care for a 5% sample. Again, time on the x-axis and this is the proportion of visits in the VA, so of the total specialty care visits in CMS and VA what proportions in the VA is just a raw number of E&M visits in specialty care. The red line is the specialty care visits done only by the TAXID and the green line uses both the TAXID and the BETOs codes. Without the BETOs codes, the same sort of upward trend. Here is the same information for surgical care, in this case the green line is above the red line because we put more people into surgical care. So, again, an upward trend in reliance. And then, here is the result for all four sectors. This top line is mental health, the blue line is primary care, the dotted line is specialty care and the green line is surgery. So, less dramatic when we change the scale over here to accommodate each of these sectors, but overall it looks like veterans are voting with their feet to use the VA more for these four sectors as time goes on.

So conclusions. Basically, we concluded that the algorithm for recoding NP E&M visits to other visit types seems to work when applied to the VA data. We do not know that it works as well to CMS and VA, but the effect on the VA reliance is pretty modest. Regardless of how we did the coding, and if we just left the NPs out all together, from 2003 to 2014 Medicare eligible veterans voted with their feet to rely more on VA in primary care, specialty care and surgical care. A big caveat there is, again, this is 5% sample of VA users. So, we have got to go back and apply this to veterans who were ever enrolled in PCMS because if you were enrolled in PCMS and then decided that you did not like the VA and walked away, that is relevant information. All of those zeros in the VA should be accounted for in how many feet are voting to support the VA.

We also used a 5% sample. We have got to get a larger sample in order to get the TAXIDs more accurately estimated. And then, once we get that larger sample, we are going to try to apply this algorithm to more detailed specialty clinics so we can say whether veterans are voting with their feet to support or reject dermatology versus cardiology rather than just the larger category specialty care and extend it to VAs to find out which facilities veterans are voting with their feet to accept or reject.

That is our presentation. At this time, I think that we are open to questions.

Moderator: Excellent. Well, thank you both so very much for this. For our attendees, to submit your questions or comments please use the control panel on the right-hand side of your screen. Just click the plus sign next to the word ‘questions’, that will expand the dialog box and then you can submit your question or comment there.

The first one that came in: This was an excellent presentation, thank you. Do you plan on doing a followup to it with additional questions and analyses?

Paul Herbert: Yes. This is… Yes, we are, very, very much so and we hope to be able to make, if not the data, then at least the algorithms for creating the data available to other researchers. We are doing this as part of the PACT evaluation and our primary goal is just to put together a database that can be used for a wide variety of analyses. So, the answer is very much, yes. First off, we are going to evaluate how the PACT implementation has effected VA reliance, but after that we are really hoping that other researchers will take either these data or the code that we will make available to create their own data and do analyses. So, yes, very much so.

Moderator: Thank you. The next question: Could you clarify your statement about the stop code? Did you say that NPs are not given this tracker number compared to physicians?

Fen Liu: We use stop codes to see where NPs and PAs practice. They practice in specific clinics. The NP and PAs in records are coded as NP and PAs without any specialist coded. Physicians, we have provider specialty like a cardiologist or dermatologist or general internist, but all the NPs and PAs in both Medicare and VA, the administrative data set, are coded with just NP and PA. So, that is why we identify where they practice using stop codes in the VA.

Moderator: Thank you. Now, this is a followup… Is that for CMS or VA specific? I thought you said that Medicare did not track that for NPs.

Fen Liu: That is why we use the VA, we validated using the VA data, but yes we can identify where… Medicare does not have clinic stops so that is why we use the TAXID to identify the medical group in terms of the physician specialties in the medical groups.

Moderator: Thank you. We do have several people writing in saying thank you for these, I do intend to print out a copy and share them with my colleagues. We appreciate that.

As far as questions go, that is the last pending one at this time. do either of you have any concluding comments you would like to make?

Fen Liu: No, we would appreciate any input on how we now can do any other thoughts about the methods. This has been a really interesting question to work on so we would appreciate all the input.

Moderator: Thank you. We do have one last question that came in. There is research showing when NPs practice on their own license there is increased access to care for Medicare population. Do you think the change in APRN status in the VA would impact this issue?

Fen Liu: We have not examined this issue, but we have other research project examine the question that for this analysis we have not focused on whether the change in NP practice authority would change the access to care, but this is PACT evaluation so we focus on the impact of PACT and access to care.

Moderator: Thank you. We do have a few more questions that came in. Where can we find BETOs codes? B-E-T-O-s.

Paul Herbert: You can just contact me through my email there and I can send you a rough crosswalk.

Moderator: Thank you. Are you planning to connect quality with NP/AP role?

Fen Liu: We have another study working on the NP and the NPs role and whether the effect of NP, the primary care NPs on quality of care and class of care, but this is not a specific question for the PACT evaluation that we have our project working on that.

Moderator: Thank you. Okay, I think that is the last pending question. Again, we did have several people write in thanking you for the interesting work and the presentation.

So, for our attendees, we do have a PACT Cyber Seminar every third Wednesday of the month and we do have next months already in our registration catalog so you can go ahead and get on there and register for next month.

I know I gave Fen the opportunity. Adam or Peter, did you have any conclu… I am sorry, Paul. Did you have any concluding comments you wanted to make?

Paul Herbert: Nope, just thanks for joining us.

Moderator: Awesome, well thank you to you three for lending your expertise to the field and of course thank you to our attendees for joining us. I will close out the session now and please wait just a moment while the feedback survey populates on your screen and take just a moment to fill out those few questions. We do look closely at your responses and it helps us to improve our program as well as gives us new ideas for sessions to support.

Thank you, once again, to our presenters and have a great rest of the day.