Cyberseminar Transcript

Date: June 4, 2018

Series: VIReC Database and Methods Seminar

Session: Working with EHR Data Using VistAWeb, VINCI ChartReview Tool, and Joint Legacy Viewer

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Moderator: 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 technical and promotional support. 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 typically held on the first Monday of every month at 1 p.m. Eastern. Most session topics for this series are updated every year. More information about this series and other VIReC Cyberseminars is available on VIReC’s website, and you can view past sessions on HSR&D’s VIReC Cyberseminar archives. A quick reminder to those of you just joining us, slides are available to download. This is a screenshot of a sample e-mail you should have received earlier today, and in it you will find the link to download the slides.

Today’s presentation is titled Working with EHR Data Using VistAWeb, VINCI ChartReview Tool, and Joint Legacy Viewer. Dr. Susan Nicole, Nicki Hastings, Elizabeth Mahanna, and Daniel Denhalter are joining us today to present the session. Nicki and Liz are both from the Center for Health Services Research and Primary Care at the Durham VA Medical Center. Nicki is a center director, and she serves as project director for a new clinical demonstration program that aims to promote mobility among hospitalized older Veterans. Her colleague, Liz Mahanna, is the project coordinator. Daniel, our third presenter, is the clinical research annotation manager at VINCI, the VA Informatics and Computing Infrastructure. Thank you all for joining us today.

Dr. Susan Nicki Hastings: Thank you very much. This is Nicki Hastings, and I will add my thanks to everyone for joining the session today on Working with EHR Data. The objectives for today’s Cyberseminar are listed for you here, and this is a roadmap of the topics that we intend to cover in the next hour. We will get started by learning a little bit from you, so we have two poll questions at the top of the presentation. And the first one I will read to you now, including the responses. I am interested in chart review of VA electronic health record data primarily due to my role as: (a) Research investigator, (b) research staff, (c) clinical staff, (d) operations, or (e) other.

Heidi: And responses are coming in. We’ll give everyone a few more moments to respond before we close the poll out and go through the results. And it looks like we’re slowing down here, so I'm going to close this out, and what we’re seeing is 18% of the audience research investigator, 42% of the audience research staff, 18% of the audience clinical staff, 9% operations staff, and 14% other role. Thank you everyone.

Dr. Susan Nicki Hastings: Thanks everyone. That’s a terrific distribution within that first question. The second one is what is your previous experience using chart review for VA research? (a) Have never done chart review; (b) used paper charts; (c) used local electronic health record only, CPRS; (d) used central chart review such as one of the tools listed; and (e) used some other platform for central chart review. If you select this one, please describe the tool in the Q&A function.

Heidi: And responses are coming in. I just realized I probably set this poll question up incorrectly. I apologize to everyone. I set this up to please select one and then realized you may be able to answer multiple of those. I apologize. If you do have multiple, you can also put that into the Q&A, and I can read through some of those responses. We’ll give everyone just a couple more moments to respond, and then I’ll go through the results here. It looks like we’ve actually slowed down, so I'm going to close this out, and what we’re seeing is 28% saying they have never done chart review, 2% have used paper charts, 42% used local electronic health record only, 26% use central chart review, and 2% use some other platform, and the response is they use CDW. Thank you everyone.

Dr. Susan Nicki Hastings: Great. Thank you very much. So we will get started with today’s session by introducing a study that Liz and I work on, as you heard here at the top of the session, called Function QUERI, from which we’ll be drawing a number of our examples for the seminar today.

So Function QUERI is a program project grant that is funded by QUERI. I'm sure many of you are familiar with this mechanism, but for any who may not be, the project consists of three distinct but related projects around the central theme of optimizing Veteran function and independence. The first project is STRIDE. This is an inpatient mobility program for hospitalized older Veterans. A second is iHI-FIVES. This is a caregiver support training program. And the third, Group PT, is a group physical therapy program for those with knee osteoarthritis. Group PT is ongoing at our local site in Durham. STRIDE and iHI-FIVES share a common design, which is an eight-site, stepped-wedge, cluster-randomized trial. And it’s the design of these two in particular that have led us to exploration with many of the chart review tools that you will hear about in today’s session. The overarching goal of Function QUERI is to evaluate the implementation of the clinical programs that I just described for you, Group PT, STRIDE, and iHI-FIVES. Also, we are collecting data on the impact of these clinical programs on measures of Veteran independence and function. As you can see some of the examples listed there, many of these are patient-reported outcomes that we’re collecting via survey. However, others are data that we need to collect from the electronic health record in order to be able to define these measures.

So we’ll walk through a little bit of our thinking and what we think are some generalizable lessons from the Function QUERI study in terms of the strategies and considerations and methods for conducting chart review with EHR data. With Function QUERI, we started by determining the types of data that we would need for the study, of course, as is a common starting point for all studies, and we really ended up with three big buckets or types of needs that we had in terms of EHR data. So we were using EHR data to determine patient eligibility, number two to define study outcomes related to independence, and also some service and utilization outcomes. That leads to the next question of how are we going to access this EHR data, because as you indicated on the poll question, there are many ways to get to all of the rich EHR data that VA possesses. A central data warehouse like Corporate Data Warehouse being one that’s commonly utilized versus individually reviewing chart records. Local instances of CPRS are often the source for individual chart reviews, but also when the need is beyond a local VA, the central chart review tools that we’re going to be talking about today are really what you’re considering when making that determination of CDW versus chart review from multisite studies.

So Corporate Data Warehouse is a national repository of EHR data, both administrative and clinical. The relational database organized into data domains works very well for structured data. There are some limitations for unstructured or semi-structured data. Individualized chart review certainly allows a very granular look at whatever type of data are needed but comes at a cost. Certainly it’s a time intensive endeavor to look at individual charts, be it within CPRS or with one of these tools to look at centralized individual EHRs.

So our experience with Function QUERI has led us to think that these are four of the reasons that you might really want to give consideration to chart review. So we’ll walk through these in turn. Number one, when data is not readily captured within CDW, very reasonable to think about how chart review might either substitute, supplement, or complement the data that is available. Number two, to validate strategies or algorithms that we have constructed to define our measures based on CDW data. Number three, to assess whether we’re using the right data domains and tables within CDW, and finally when real-time data are needed.

So by way of the first one, data not readily available in CDW. For us in Function QUERI, this broke down into two big categories. When the data that we needed to define something such as reasons for class nonattendance or whether or not a participant had been discharged to a nursing home, when many of the data that we were interested in were found in text fields, this was the reason that we began to explore use of chart review. Secondly, scanned records and images when the content of the scanned record was needed, not just the fact that it existed or not. This was not one that was easily available within CDW and one for which we turned to chart review as well.

So this just gives you a little bit of a big picture overview of how we approached this. So taking that first bucket of type of data that I showed you on a couple slides back, we looked at all of the eligibility criteria for one of the studies. STRIDE is the example we’ve given here. And then we went through and said what is our best source for each of these criterion? For some of them such as age, Corporate Data Warehouse alone we judged to be sufficient. For others, we felt that we could not find a reasonable strategy within CDW to make a determination such as looking at the patient’s decision-making capacity, so we turned to chart review as a substitution strategy for collecting that EHR data. Some of them, as you can see, we used combined strategy. We used some data from CDW and some chart review data to get to the ultimate criterion that we were trying to define. And so I’ll give you a little bit more in terms of examples there because I think this idea of using chart review and CDW together to increase efficiency and precision is a really important one.

So validating data poll algorithms. One example here, I mentioned earlier, is trying to figure out when patients leave the hospital whether they’ve been discharged to a skilled nursing facility or whether they’ve been discharged home was an important element for one of our studies. We could not find a CDW data field that accurately captured disposition to non-VA facilities post discharge, so we knew that we needed some augmentation-type strategy. We did find within CDW a consults table that could identify when patients had consults entered that gave us a signal that the disposition might have been to somewhere other from home. So for example transportation consult or a consult for home IV infusion therapy. So we created an algorithm to look at the available data that we had within CDW, then we conducted a chart review using VistAWeb, which you’ll hear much more about in the second segment. And we looked at the matches versus the ones that did not match and tried to figure out whether this was going to be an appropriate strategy. What we learned was that we could not define an algorithm that completely defined this variable independently with aggregate data from CDW, but we could definitely narrow the pool of patients for which a chart review was required. We did define an algorithm where if there was an absence of any of the consults that I just mentioned, transportation, et cetera, that was associated with a very high likelihood that the patient was not in fact discharged to a facility. So with that specificity, we knew that we did not need to chart review those cases, and we were able to focus on the cases where there was a reasonably high suspicion that they may have been in fact discharged to a facility. That was a big help with efficiency.

A second example is looking at whether or not a person was on bed rest during their hospital admission. For those of you that work with CDW extensively, you’ll be familiar with the fact that there is an orders table within CDW, so we started by looking within that orders table for any order with bed rest in the title. We conducted a similar chart review using VistAWeb to see whether or not the chart review data and the CDW pull data matched. We then did a deeper dive on the ones we found that did not match, and in doing so were able to tweak our algorithm. So for example, some orders had the term BR for bed rest in the order name instead of bed rest. A challenge of using CDW for these types of tables like orders is that there is variability site to site, so you have to be sufficiently comprehensive in the algorithm construction to make sure that you’re getting data from all sites in a uniform manner.

So we made some tweaks like that. We also, in working directly with our sites to figure out why we were sometimes having disagreement between chart review and the CDW data, we found certain processes in place at sites like starting all patients on bed rest orders until they had been evaluated by the admitting team. That led us to adjust our parameters a little bit. This was an iterative process, but by the end, we got to an algorithm for identifying bed rest based on CDW that performed very well, and we were able to discontinue further chart reviews for this particular eligibility criterion. So in this case, using the data combined actually got us to an algorithm that was independent on CDW, and we didn’t need to use the chart review throughout the process.

The other reasons that we mentioned earlier, sometimes doing a check on whether the CDW data domains or tables that you’re using are appropriate can be an appropriate use of chart review. So in our Group PT study, for example, we were using the appointments table to look at Group PT visit participation and realized that this was not identifying all of the people who actually had been there. We knew that this was undercount, and it led us to think about the domain selection as being non-ideal. Looking at an encounters table, for example, probably would give us a more comprehensive view of what we are really trying to achieve with that measure.

This is not one that we use in Function QUERI, but certainly chart review is very important for evaluating complex aspects of care or defining measures that require clinician judgment or any sort of implicit review, care coordination between providers being the example there. And the final one that I’ll point out is that chart review, central chart review from multisite study, can be really helpful when real-time data are needed. So Corporate Data Warehouse data pull will bring in data on a cohort. If you’re recruiting from that cohort, often by the time you have gotten to calling an individual patient, there could be a rationale of wanting to look at that patient’s record and make sure status had not changed before actually reaching out and making contact. In some of our studies, for example, we are calling after recent hospitalization knowing readmission rates are high. Certainly in some populations when mortality is high, it’s important for staff to be able to look at that record and do a double check that they’re contacting patients at an appropriate time before actually reaching out and making that contact, and that can be another situation where chart review is very helpful.

I'm going to pause now and pass the baton to my colleague, Liz Mahanna, for more discussion of tools to support electronic chart review activities.

[Silence 18:46 to 19:09]

Dr. Elizabeth Mahanna: Hi, this is Liz. I'm just waiting for my screen to come up. Heidi, is my screen up?

Heidi: Yeah, we can see your screen. We just need it in slideshow mode.

Dr. Elizabeth Mahanna: Okay. Did that do it?

Heidi: Nope. We’re still just seeing your regular PowerPoint right now.

Dr. Elizabeth Mahanna: Hmm. Can you send the popup again? I think I chose the wrong screen. I'm sorry about that.

Heidi: Sure.

Dr. Elizabeth Mahanna: Okay, is that better?

Heidi: There we go. Yep. We’re good.

Dr. Elizabeth Mahanna: All right. Sorry about that. All right, hello everybody. I'm going to talk a little bit about tools to support electronic chart review activities and some tips and tricks for chart review. And so in thinking about what tool to use for electronic chart review, there’s a couple of questions to keep in mind. One is what level of data is needed. Is it local or regional or national, and that corresponds to where the study population is. If it’s the local facility, then CPRS would be the appropriate tool to use. If it’s VISN or national level, then it’s likely going to be central chart review, and by central chart review I mean tools such as VistAWeb or JLV.

Another question to keep in mind is how many sites are to be studied and are there study staff to conduct chart review at the sites. If it’s a local site or just a few nonlocal sites and study staff are there to do chart review, then you can use CPRS. But if it’s a few nonlocal sites and there’s no study staff there, then you’re probably going to need to go with central chart review. And then central chart review rather than independent local reviewers is best for several sites due to the considerations of expense and training and quality control and logistics.

This is an overview of some of the main tools for electronic central chart review. VistAWeb was developed to facilitate sharing of individual patient data among patient providers at other VAs. It provides read-only access to all VA sites where the patient received care, same as JLV and CAPRI. But the thing about VistAWeb is that it’s scheduled to be decommissioned, and the most recent update I saw on the VistA website is that it’s scheduled to be decommissioned in summer of 2018.

Joint Legacy Viewer, or JLV, is the tool that’s replacing VistAWeb, and it has a user-friendly interface which is composed of widgets, which I’ll show you in a moment. You can customize your screen with these widgets. You can sort and filter and save your views so that when you log back in you come back to the same view, and you can also create and print customized reports. It’s got well-organized and integrated information. There’s a button for JLV directly from CPRS, which used to be a VistAWeb button. And one potential drawback is that sometimes there can be some lag time at startup or when toggling between widgets, although this seems to be getting better, and it may only be the case in certain regions.

CAPRI I'm not going to talk about that much. It was developed to facilitate coordination between the Veteran Benefits Administration and Veteran Health Administration in the determination of VA benefits. We haven’t used this with our study, but there’s resources at the end if you’d like to look more into this tool.

And then there’s one other tool to mention, which is VINCI ChartReview, and that’s going to be discussed by the next presenter.

This is a screenshot of VistAWeb log-in page, and the reason this is included because if you decide to use it, logging in can be a little bit confusing at first, and so this box on the left is where you want to choose your home VISN, and then you’ll log in, and then you’ll need to know the patient’s VISN and VA both. And then just follow the instructions to enter either the patient last name or the last name initial and last four of the social security number.

And then this is a screenshot of the JLV patient portal. Unlike VistAWeb, JLV does require two-factor authentication, so you’ll need your PIV card in addition to your VistA credentials. And then to search for a patient, you’ll need the full Social Security number and then either the name or the date of birth or just the DoD ID. And so in JLV, there’s these widgets. Each of these boxes here is a widget. And it has different data in each one, and you can customize your view with whatever widgets you want to use. You’ll just drag them in from this tray at the bottom. And then if you want to get rid of any of these views, you’ll just click on one of these little Xs at the top right. And then the only other thing to quickly mention here is that this icon here, which looks like a piece of paper, is the reports icon, and from there you can create customizable reports and print them.

This is a resource that’s available that maps VistAWeb data locations to JLV widget, which can be really helpful if you started from VistAWeb and you’re transitioning to JLV. And this is actually a two-page document that you can find at this link below.

Once you have a good idea of the data that you need and your sources and your sites and what tools you plan to use, you’ll want to complete a DART request for permission to access the data, and DART stands for data access request tracker. And it’s a good idea to ensure your data sources and locations and tools are included in your IRB protocol because you’ll submit that as part of your DART request, and they do look at that. And also you’ll want to specify either national electronic health record or your specific sites you’ll be working with, and in your HIPAA waiver too, which also gets submitted, and that’s for research. If you’re accessing the tools as part of operation, that permission is through NDS, the National Data Systems, and here it’s a good idea to mention your operational partner in your project description, and you’ll request national versus site specific access. And the VHA Data Portal at this link below has more information and step-by-step instructions on how to do this.

This is just an overview of the procedures that we used in the Function QUERI STRIDE study for screening patient with chart review. And I think Nicki went through most of these in her presentation, but the one to mention a little further is this one at bottom, develop user guide, train staff, and perform QC checks.

This is an excerpt from our Function QUERI STRIDE chart review user guide. And so each VA’s electronic health record information is organized and named a bit differently, so it’s important to document information locations for each site. And so you can see, for example here, these are different locations for these two sites, and here, these are different locations. These locations for the data were found using VistAWeb, so we’ll need to update soon for JLV. And the purpose of using a chart review user guide is to increase standardization and efficiency.

Just a few lessons learned from our experience with chart review in the Function QUERI study. We found it’s the best way to collect complex clinical chart data, and it’s a good idea to allot time at the beginning of the study to determine the best methods for electronic health record data extraction and validation because, as Nicki showed with the bed rest order example, some measures or data may take longer to establish accurate and specific extraction of the data through a multistep process. It’s a great idea to make a detailed chart review user guide. It’s a great key to standardize review and increased efficiency. And when we created our user guide, we conducted team meetings in the beginning to discuss questions and resolve differences, create the manual, update the manual. We held a training in the beginning for reviewers, and then it can be helpful to conduct periodic quality checks every so often. For example, you could have two people conduct chart review on the same patient.

Central chart review may take a bit more time than CPRS because of page loading issues and time. And it’s a great idea to split up chart review duties if possible on your team. We trained seven people on our team to do chart review, and we’ve completed close to a thousand chart reviews in eight months. And so that would be pretty tough for one person to do, so it’s great to have several people trained to share the load. And it’s also a good chunk task in one- or two-hour increments.

Next, Daniel Denhalter is going to talk about the VINCI ChartReview tool.

Daniel Denhalter: Hi everyone. How are you? Thank you for the opportunity to present. Let me switch over to my screen here. So as we’re kind of getting ready to jump into these, there were a couple poll questions that I don’t know if we were going to facilitate or not. Hira?

Heidi: I can pull those up here. The first question is we’re wondering have you ever used the VINCI ChartReview tool for research? First response: Umm, what’s the VINCI ChartReview tool? I’ve never heard of it, I’m sorry, I've heard of it, but I've never used it. Yes, I have used it a few times. Or yes, I use it all the time. And we’ll give everyone a few moments to respond before we close that out. And it looks like we’re slowing down, so I'm going to close that out. And what we’re seeing is 55% of the audience saying umm, what’s the VINCI ChartReview tool; 41% have heard of it but have never used it; 4% have used it a few times; and 1% use it all the time. Thank you everyone.

And our next question here is what has been the largest barrier to conducting research in the VA? Lack of knowledge of tools and resources, access to data or environment issues, haven’t had the need or chance to conduct research in the VA, or no problems or barriers. And again we’ll give everyone a few moments to respond before we close it out. And it looks like we’re slowing down here, so I'm going to close this out, and what we’re seeing is 38% of the audience saying lack of knowledge of tools and resources, 42% access to data or environment issues, 16% haven’t had the need or chance to conduct research in the VA, and 3% have encountered no problems or barriers. Thank you everyone.

Daniel Denhalter: Thanks for those. I know that especially here at VINCI we appreciate knowing some of the concerns and barriers that might be existing in trying to conduct chart review.

So chart review, before we jump into the tool itself, I wanted to cover just a couple items that are fairly important in understanding whether or not we’re abstracting, annotating, and then the process associated with each as you get going through conducting your chart review and even further utilizing the tool that we’ve developed to facilitate our needs here at VINCI to conduct chart review, especially using relational databases and [unintelligible 33:05] CDW.

So first I wanted to talk about abstraction versus annotation. Abstraction tends to be a higher-level capture of information reflective of all the information that you’re reviewing for that specific patient. When you’re abstracting, for example, you create a picture for that patient of all the different pieces of information that are there and come to some refined conclusion based off of all that information. So it’s a summation of all of its parts, and it’s a high-level capture. And we’ll get more into this, but it can also include pieces of information associated from annotation itself. So again, abstraction is this review of a record and making a determination based off of your review that labels or gives that patient or that document something concrete for a summation of all the information that you have reviewed and it’s decided on.

Annotation tends to be a little bit more granular than that. Even though it has very similar part to abstraction, annotation is more of a detailed information capture. For example, often we will capture every mention of a certain item that we’re looking for with inside the record. Annotation is done by capturing a span of text with inside the patient record and giving it value such as saying that it has a classification or a label that has meaning. So it’s in essence teaching the computer how to read that note and reading that piece of information and giving that specific span of text some sort of value that’s needed for the rest of the project. Typically it’s captured concept by concept, meaning that we’re going to, say we’re looking for smoking, we’re going to capture every value related to smoking in our study. Patient smoked, their pack years, and all the information necessary. And then it can also have additional information associated with it such as attributes. You can have a span of text highlighted and captured and given meaning and then have a date associated with it or an option to say, yeah, this patient is smoking or whether or not the patient has external support to help him quit. Often annotation can be used after it’s completed to fulfill the need for an abstraction, meaning that you can take all of the information that you’ve captured regarding annotation, say again, for example, smoking and take it to a higher level saying that this patient smokes based off of all the individual concepts that you captured from the annotation. The other way that that’s true, abstraction, because it’s a higher level, you can’t go back and capture the individual concepts and the individual items inside the chart after the abstraction is completed without going through and doing an additional review.

So to review functionality, the tool itself, this is VINCI ChartReview, has multiple levels of classification where you can capture the information. And when I say classification, again, that’s labeling an area of text or the document or the patient with some sort of meaning associated with that. For example, on a patient level, ChartReview allows you the ability to indicate that that patient is a smoker. At the document level, same example, you can say that this document contains information regarding their smoking status. Text within a document, an example of this would be saying that the patient smokes so many packs per day. And then we also have quite a few different other levels that ChartReview can capture and can be customized to capture, and that can include the event level. For example, if you wanted to capture every single surgery that the patient has had and the outcome of that surgery, we have the ability to classify at that level. We also have the ability in the same example to capture an instance where, if you wanted to see every appointment that the patient has had, we have the ability to capture information on the appointment [unintelligible 37:46].

Some of the other benefits to the ChartReview tool that we utilized is that it writes directly back to a relational database, which helps in conducting analysis for the information and also kind of keeps it in a secure location that you can take the unstructured pieces of information that were discussed earlier, mark them, write it to a table or a view with inside a SQL or relational table or relational database. And then you can do additional research based off of that information.

In addition to that, ChartReview uses elements and schemas to customize the views and the information that you’re reviewing, and that is reusable within the same project. So if things are slightly changed or slightly different, you can reuse the elements and the schemas that identify the information that you’re capturing multiple times to give the end user a little bit more flexibility in what you’re trying to accomplish.

The next part is it also has an evaluation tool based off of abstraction and annotation. The evaluation tool can do, as we mentioned before, quality checks. It can do inter-annotator agreement or inter-rater reliability, which allows if you have two individuals who do the same abstraction or annotation on the same patient or on the same document, you can pull both of those together and see how well they agree. And then it has tools built into it that allow for that comparison. Other benefits that it has, it has exportable reports. If the relational table isn’t what you’re after, it can also export to an Excel file where you can do additional information or additional analysis on it.

And then it also has for my benefit and for others who are doing project management for annotation and chart review, it has enhanced project management, which allows you to organize the information that you’re sending to the reviewers and allows you to control which projects they are able to access and which projects they are able to see and allows you to kind of track where things are at and addressing issues as you’re going through the projects.

As you’re considering a chart review project, especially within the VINCI environment and by using this tool, my colleagues and myself have developed a process to ensure the highest level of success. First, the key important thing is to define concepts and variables associate with your project. We do this through what we call a concept sheet. It’s a document that allows you to define clearly what you’re trying to achieve, what items you’re looking for, and what you would like the output to look like. Usually with a little bit of guidance from the VINCI team, we can facilitate that document and help you organize your thoughts and make it as successful as possible when using this tool.

The next item is selecting the appropriate annotation tool. The VINCI ChartReview tool might not always be the best selection, even though it’s my favorite to use in this process. We have other tools that might be more appropriate for the item that you’re, or for the variable that you’re trying to achieve in your research study. And our team is happy to lend a hand in trying to identify that tool and provide training if necessary on the tool that we would recommend.

Next is the record selection. Record selection is always kind of a challenge with inside of a chart review project. And this is usually defined earlier on, but there’s other aspects that are needed. For instance, if you’re looking at smoking, there’s quite a few different aspects of smoking that you might need to see. ChartReview, the tool itself, has the ability to display both unstructured texts such as report text and lab comments as well as structured data such as data treatment, diagnosis, medications, labs, to help try to facilitate that overall view that we’re trying to achieve in annotating and abstracting for these patients or these records that we’re reviewing. So knowing which one of those items from the relational tables and CDW that you need to be able to conduct your study are fairly important, and we’re happy to help with that. And we have a great database manager team here at VINCI as well that can help with that process.

The next step is we develop guidelines. Guidelines are key to keeping your annotators or your abstractors on the same level. These require a few iterations, usually with a content expert to ensure that we’re capturing the data correctly. After the guideline is developed, it’s important to identify the annotator or the abstractor’s required qualifications. For some of the abstraction or the annotation that we conduct, it is essential that they have clinical knowledge or expertise to be able to make some level of inference as necessary for the abstraction or the annotation capture for that specific type of project. And for information, VINCI also, my colleague and myself oversee a team of annotators who have clinical expertise if that’s something that’s needed from a project standpoint.

The next step is to train and manage the annotation/abstraction. This is an ongoing process through the whole project. Occasionally there’s times where a concept has changed or it needs a little bit of review that requires additional training and additional management.

And then last, of course, is to measure the annotation and abstraction quality. This is only a last step but an ongoing step throughout the entire process. We do this, as mentioned before, by an IRR, inter-rater reliability, and IAA, an inter-annotator agreement, and also using the kappa coefficient.

Before you is an example of the display of ChartReview with everything that can be included. As you’re looking at the screen, starting on the top middle section, you’ll see where it says CR SYNTH Smoking Patient. This is a simple descriptor demographic page where we can capture information on a patient level. This box reflects the patient's information, and if something is classified in this box, the patient receives that classification as a whole. For example, they could be marked as a current smoker. Below that is an example of a document clinical element configuration, and clinical element configuration is a customized view of one data point. For example, documents or labs or medications could all be an individual data point. In this example, I have documents before you. The left side of that box shows you a list of the documents for this synthesized patient. And the right side shows you documents, or the document in detail where we can capture specific text for annotation. In this case we have tobacco use disorder, and we’ve marked that phraseology and gave it the knowledge that that patient is a current smoker based off of that annotation, tobacco use disorder.

On the left-hand side are a handful of items that help us control the information that we’re trying to see. The top is just an explanation of the task name, the principal ID, in this case is the patient, any description if necessary.

The box below that is something new to ChartReview. It’s form-based annotation. A lot of the times when an abstraction is being completed, and again an abstraction is the higher level where you’re giving, based off a lot of information, giving a delineation of that patient or that event a higher level. A lot of the times when an abstraction project comes to us, they already have a tool in place that has a list of questions that they need answered. ChartReview has the ability to incorporate that list of questions into its tool and have the reviewer answer those questions and also apply annotation. So for instance, this tobacco use disorder in the far right corner is directly related to the first question, has the patient ever smoked? And the answer is yes. We have the language inside the document that proves that they are a smoker. Then below that we have annotations and a way of controlling which annotation you’re on and managing those, and right below that you’ll see the word certainty and tobacco product type. I apologize for the misspelling. In here, these are attributes associated with the annotation, so we can mark the tobacco use disorder, and then we can also give it some information. For example, high certainty. We’re pretty confident that this statement means that they’re a current smoker. And then we also later in the note and other places we can tell what type of product they’re using. We can put that into a text field to help facilitate research as well. So again, all of this information that you’re seeing gets outputted into a relational table that ChartReview is based off of, and it can also be exported to an Excel file as well.

So some of the projects that we’ve had a lot of success with using ChartReview. One example is a colonoscopy project that we recently completed, that we’re still completing, that reviewed colonoscopy records and adenoma data across multiple documents and brought them together, related them together, and have a solid output for them so we can trace from the moment a colonoscopy is completed to the pathology and the outcome of the pathology document and be able to relate those two and all of the items that are associated with that, which are pretty pervasive.

Another example of a project that we completed is peripheral artery disease where we analyze multiple data sources to determine peripheral artery disease, amputation, revascularization status.

Another project was an alcohol quality measure project where we determined the link between improvement processes and alcohol misuse.

And we’ve also done a travel history where we look for key information with inside the records to determine the patient's travel and where they traveled and its correlation to Zika virus, dengue virus, and chikungunya virus. These are just a small smattering of some of the projects we’ve done. We do quite a few projects, and we get more projects in on a regular basis, and we utilize ChartReview to help us. I provided this example list to kind of give you an idea of what ChartReview has the ability to review. As you can see, anything from a colonoscopy record and pathology record all the way down to text with inside of a document that indicates where and whether or not they traveled.

Thank you for the opportunity to present ChartReview, and we’ll have some more information on how to contact us in the future if you would like to know more or if you would like to utilize our resources. Hira, I'll hand it back over to you.

Heidi: Hira, do we have you on the call?

Hira: Hi. Can you hear me now?

Heidi: We can, yes.

Hira: Perfect. All right, Dan, can you scroll through the last few slides. Yeah. Here is the information about VINCI services. You can find more information here and contact them for more help. For some information about VIReC options for specific questions you can go to the HSRData Listserv, which has about 1,300 VA data users. And a lot of people use this for help about data. You can ask questions, and there are several experts on the Listserv who are available to help. You can also contact the VIReC help desk. Some additional resources. And I think we can go straight into questions for the presenters.

All right, so one of the first questions we got: This one is for, it looks like Liz and Nicki. What was the sample size for the STRIDE study? I'm curious how feasible it is to do chart reviews on large sample sizes.

Dr. Susan Nicki Hastings: Well, this is Nicki. The total sample size for the STRIDE study is 2,000 participants. We will not be reviewing charts on all 2,000. We do want to determine the outcome of discharge to skilled nursing facility. This was one of the reasons that it was really paramount for us to determine a strategy that could limit the number of charts that we needed to review in order to determine that outcome. So the large amount of chart review that we do is by way of identifying a smaller sample within that 2,000 of participants that are going to be administered surveys. And so as Liz mentioned, that’s a more targeted chart review, but we have already conducted about 1,000 of those, I think, was the number that Liz gave. So these are not comprehensive chart reviews but certainly do take time. It’s a reason that we invested so much up-front time in resources and to making sure that anything we went into the chart for it was absolutely essential and tried to create as much in the way of combined strategies as we could. Liz, would you like to add to that?

Dr. Elizabeth Mahanna: No, I think that’s perfect, Nicki. Thanks.

Hira: All right, thank you everyone. We’re getting several questions from the audience, so I’ll continue rolling through those. Do you need to complete a DART when using only local data, CPRS?

Dr. Susan Nicki Hastings: This is Nicki. So in my experience, the DART has been required to attain access to regional or national databases that are not readily available with a clinician’s view of the local CPRS instance. If only CPRS chart review is being needed and there’s no supplemental data coming from one of these alternative sources, I think you could probably proceed with that with just the local data permissions in place. If there’s another expert on the call who would like to counter that or provide more data, I would certainly be welcome to hear it.

Hira: Sure, there is actually. Linda Kok is on the call, and she said that, no, you do not need to, so you are correct.

Dr. Susan Nicki Hastings: Okay. She said it in fewer words with more confidence, but glad we agreed.

Hira: All right, thank you. This next question is for Daniel. How can we access the concept sheet?

Daniel Denhalter: If you would like a copy of a template for a concept sheet, you’re welcome to e-mail vinci@va.gov, and I'm happy to send you a copy of the template.

Hira: I’m sorry, your voice cut off a little bit at the end. Can you repeat that?

Daniel Denhalter: Oh, I just said if you would like to have a copy of the template for a concept sheet, if you would e-mail vinci@va.gov, I would be happy to provide you a copy.

Hira: All right, thank you. One person asked, or commented, I'm not sure I understand why we should use the VINCI chart abstraction tool over the others. What are its primary benefits over the other tools available?

Daniel Denhalter: So this is Daniel again. So I mentioned a handful of the benefits that are associated in one of my slides. However, one of the benefits that we have definitely seen in working with it is a lot of the customizability of the information that you’re being able to see. When you’re utilizing VistAWeb or JLV, it tends to be a lot of information that you have to parse through. And if you have ways of constricting or refining what you’re looking at, ChartReview can handle those customizations so that the reviewer has a very concise view of the information that you’re trying to accomplish. And in our experience, it significantly reduced the amount of time needed to conduct chart review.

Hira: All right, thank you. How does one access the VINCI ChartReview tool?

Daniel Denhalter: Same information as the concept sheet. If you send an e-mail to vinci@va.gov, I'd be happy to talk with you and give you more information and give you access to it.

Hira: Another question about the ChartReview tool. I was told that the ChartReview tool can handle only 10,000 charts per patient. Is this true? And if so, how is a record defined in this case?

Daniel Denhalter: Can you repeat that question one more time for me please?

Hira: This person wrote in, I was told that the ChartReview tool can only handle 10,000 charts per patient. If so, how is a record defined in this case?

Daniel Denhalter: So ChartReview can handle quite a few more records per patient than that. We’ve tested it past 56,000 records per patient, so I don’t know where the 10,000 came from, but that information is not correct.

Hira: Okay.

Daniel Denhalter: There are some limitations with inside ChartReview when it comes to some of that. When we define a record, we usually try to encourage the reviewers to specify a window or an amount or something to reduce the amount of records that the patient, or that the reviewer needs to look at to make a determination for that patient. And we try to guide that while we’re constructing the concept sheet and describing the variables in addition. Reviewing 10,000 records obviously isn’t feasible, but ChartReview also has the ability to search and filter and sort to help reduce that if you do have that many records to review.

Hira: Okay. Another question: Would you need DART permission for access to TIU text notes for research use for VINCI ChartReview?

Daniel Denhalter: The answer is yes. We also ask a lot of the times, since Social Security numbers are included inside of a patient’s record, that that’s also part of that. If you need any more information regarding access issues, vinci@va.gov can also help tremendously in that, and they’re pretty responsive and they’ll get you all the information that you need in a quick manner.

Hira: All right, thank you. We’re just about at the top of the hour. I still have several questions here for you guys, but I will send those to you in an e-mail, and you can respond to the audience. Thank you guys so much for taking the time to present today’s session. To the audience, if you come up with additional questions, you can contact the presenters directly. Their contact information is on the screen. You can also e-mail the VIReC help desk at virec@va.gov, and we will direct your question to the correct person. Daniel, can you slide over to the last slide of the presentation? There you go.

To the audience, please tune in for the next session in VIReC’s Database and Methods Cyberseminar series. This session will take place on Monday, July 9th, at 1 p.m. Eastern. Dr. Kathleen Akgun will be here to present Phenotyping Physiologic Measurement of Lung Function in the VA EHR Using Automated Tools. We hope to see you there.

[ END OF AUDIO ]