

eCQI 101 Training Webinar Transcript

Welcome

Moderator: As you can see by the agenda, it's really quite action-packed. We'll ask you to take a break on your own. When you need to, just hammer from the Mitre Corporation. First of all, I thank him and his team for supplying the facilities and letting us use their space. It's wonderful here.

I will explain to you some of the logistics of the day. We will have a 12 to 1 for lunch on your own. There are some places around. We could tell you down Rolling Road a few blocks south, go out here and take a right on Rolling Road and there's a Panera and Chipotle and Five Guys and Chinese. That's the closest. Straight down, what's the name of this road, there's a Subway. We can give you directions if you want that.

Anyhow, back to the day. We're very excited to have everybody here. We will be posting the slides online, probably on the eCQI Resource Center. We'll send all the attendees the link. Sometimes after presentations, folks will need to tweak their slides a little bit, and then we'll have to 508 them and then post them. It may be a week or two.

The presenters, they actually asked for probably twice as much time, and so we were able to give them today. We'll ask them to go through the presentation and then allow maybe five minutes for questions afterwards. I think we have enough time built into the day that we'll be able to answer all your question. Certainly, we want you to feel free to share any experiences or questions, but also be mindful of the time that we have here.

I'll turn it over Minet and Tim, or Jeff. Jeff, do you want to talk about the logistics? Folks on the phone, I know there's about 25 or so people on the phone. You'll be signing on and off, I'm sure, throughout the day. Can you hear me now?

Female: Yes, I can hear you.

Moderator: Great. I think when we ask questions, I want folks in the room to please be aware we have microphones. They're wonderfully hung throughout the room, the large room, but please speak up so the folks on the phone can hear your question. We ask speakers to repeat the question when they're providing answers.

Jeff: Thank you.

Moderator: Thanks.

Jeff: I'll be very brief to keep us on schedule. Good morning. I'm Jeffrey Hammer. I'll be your site host for the day. I'm working with Minet and Debbie and Tim for a couple years now on eCQI-related project. Welcome to Mitre Baltimore. A few quick notes. As you all came in the lobby, you probably saw straight ahead a pantry kitchen area. The restrooms are over there. There are some vending machines at the back of the pantry area and there's refrigerators if you bought refrigerated food. Feel free to go there.

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Mitre Baltimore is a secure facility. You will see locked doors all around. It should be locked. You shouldn't have to go through them or need to go through them, but you can wander freely between here and the kitchen area. If you need to go outside, you can talk to the guard and he'll tell you the exact procedure for that.

There is Wi-Fi in the building, but promise not to use it while presenters are talking, okay? If you want to get on the Wi-Fi on the wall, you'll see at either end. It says [Outernet 00:03:55] WPA. That's the name of the network. You'll see the password below, the four-word password with a space between each word. If you want to get on later, at either end of the wall, you'll see the password for the week.

Any questions about the facility or anything in the office or the room? All right. Back to you.

Moderator: Thanks, Jeff. Minet, Tim, do you have anything?

Tim: Good morning, everyone. I'm going to do a quick zoom us out for a minute. We zoom back into this, where we're at this morning. How many people in the room flew in for this event? Thank you for coming. Thank you. Thank you for coming. I've been using this analogy that seems to work for most people. In the room today and then folks participating, we have just like today that's split in half. We have the submission piece this afternoon and we have the development piece in the morning. We have the same group of people in the room participating. It's easy to understand for those who flew in.

You had to go on an airplane and get here, right? Airplanes are very complex. They have a lot of challenges with them. If you think about what an airplane has to do for development and testing, and then eventually takes off and lands. That's what's going on with CQM. What we're asking for is, people here that are in the development piece, the engineers, the software folks, we're going to talk to you about HQMF and talk to you about some of the challenges that go into that, and then some of the things that are going to be pretty much breeze through. You're going to get 30 minutes on this. It's taken us since about 2009 to really get this stood up. Don't look for a lot of fidelity. You think about at that 30,000-foot where you flew in, right? Stay at that level.

This afternoon, you're going to get a lot more on the submission and it's all the challenges that are coming with landing that aircraft. Same problem we are having with landing eCQMs. There's 96 eCQMs in the air every year for us right now. Some of them do well. Some of them don't do well. There's many reasons for that. Some of them have been changed a lot. We [inaudible 00:06:06] version those aircraft lots of times. They have to land. They have to come down. We have to get people on board and get them off board. That's what we have to do with these measures.

When you think about what's going to be presented today, again, it's going to be very brief and some of it is very, very, very complex. I'm not asking for people to understand the relationship between LOINC and SNOMED in 10 minutes. Don't look to try and understand that. Just make sure if you have a question, speak up, especially for folks on

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the phone, or email to us and we will address it, because we have these CQI resource or everything we get from here continued to an FAQ, okay?

Thanks so much.

Minet: Good morning, everyone. Again, welcome to our little ... It's very casual, for one thing. First of all, feel free to move up. There's nothing wrong with sitting up here. It's okay. I think I just want to step back and the reason why we're even having this little get-together today. As we have, now, eCQMs are the way to go both at CMS and as well as our external stakeholders, so if this is your first time to be involved in anything that CMS is doing, it's because you have submitted measures that CMS is considering for our quality programs, electronic clinical quality measures that CMS was considering for quality programs.

What we want to do is we want to bring you, onboard all of you, because we do have a process in how we develop measures. What we want to make sure is that, everybody, those developing measures for CMS and as well as those that are developing externally, are all along the same page, because we are standardizing our process. There are things that we are requiring. You will hear all about that today. This is an orientation to what it takes to develop eCQM for CMS quality programs.

I won't go anymore into that. We will go ahead and get started, but definitely we will have room for Q&As. Please feel free. Again, very casual. Just feel free to ask your questions.

Our first speaker is Juliet Rubini from the Mathematica Policy Research. She's been very involved in the development of electronic clinical quality measures for CMS. I will hand it over to you, Juliet. I can move the slides for your. Just let me know when.

eCQM Development

Juliet: Great. Thanks. Actually, I think I have control here, so I will move the slides myself, but I'll let you know if that changes. Good morning, everybody. Thank you, Minet and Debbie and everyone else, for the opportunity to speak to you all today. As Minet said, my name is Juliet Rubini and I work on electronic clinical quality measure development projects at Mathematica Policy Research. I'm looking forward to a great discussion around developing eCQMs for CMS quality reporting programs.

Before I move on, everybody can see my slides, yes?

Female: Yes.

Juliet: Awesome. The airplane is off the ground. As background, Mathematica currently has multiple projects to develop eCQMs for use in CMS quality reporting programs, including one focused on professionals and another focused on hospitals. We're fortunate to be partnered with many wonderful teams. Many of those teams are

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present in the room today. I'm joining you today to give you a high-level overview of electronics clinical quality measure or eCQM development. There will definitely be more sessions later in the day to go into more detail of the topics that I'll introduce here.

I will stop periodically for questions, but as Minet mentioned, please stop me if there's a point where you have a question.

What is an eCQM? ECQMs are clinical quality measures that have been specified using the Measure Authoring Tool, or MAT, to be implemented in electronic health records. We'll talk more about the MATs in later slides. Measures that are included in CMS quality reporting programs are classified into clinical quality domains consistent with the National Quality Strategy. You can see those listed in the gray box on this slide. ECQMs are used in the meaningful use program for eligible professionals, eligible hospitals, and critical access hospitals. They're also used in Physician Quality Reporting System and Inpatient Quality Reporting. There are many partners in the development of eCQMs. There are also several resources and tools that you can use when developing an eCQM.

Two of the tools listed on this slide are required for use when developing an eCQM; the Measuring Authoring Tool, or MAT, and the Value Set Authority Center, or VSAC. The MAT is the application you will use for authoring your eCQMs and it will help you create machine-readable output without having to learn to code. Sorry. Was that a question?

Female: No. Go ahead.

Juliet: The VSAC is a library of standardized value sets that can be used in your eCQM. Value sets are groupings of codes from different terminologies that apply to your clinical concepts. You'll hear more about the VSAC later this morning.

The MAT uses the QDM or the Quality Data Model, which is another tool listed on this slide as its underlying structure. The QDM is an information model that clearly defines concepts used in quality measures and clinical care, and it's intended to enable the automation of EHR use. You will reference the QDM prior to using the MAT to identify data elements for your measured concepts. Each of those data elements will be assigned a value set of your choosing or creation, and we highly encourage the reuse of existing value sets. There's also an interface or an API, application programming interface, between the MAT and the VSAC. This allows your value sets to be pulled from the VSAC into the MAT when you're ready to complete your measure.

Last but definitely not least is Bonnie, way at the bottom of the tools column. This is a testing tool that will become your best friend. It allows you to test your eCQM fresh from the MAT with a set of test cases you built to determine if your measure logic is behaving the way you expect it to. You will hear more on Bonnie later this morning. There is more information on these stakeholders and tools available in the appendix of this presentation. This presentation, obviously, will be made available to you, if not today, later on.

I will pause here if there's any questions.

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eCQM Development, continued

Female: None from [inaudible 00:13:09] I think.

Juliet: Great. Thanks. What's the different between creating a paper-based measure and eCQM? This slide shows differences between the two process. I do want to highlight the two items. Use of the MAT and the VSAC are true differences and represent new tools that you will use in your measure development process. Also in the eCQM column you will see that there are several steps to ensure your eCQMs are standardized. This standardization facilitates the machine-to-machine transmission of an eCQM-related information. I will go into more details on the following slides. I also want to highlight that there is a reason testing, testing, testing is repeated three times. More on that a bit.

Let's talk a little bit more about the output of the MAT. We've spoke about the MAT earlier in a couple slides ago. The Measure Authoring Tool is a Web-based tool that you will use to create the data elements and logic for your eCQM. It will produce the Health Quality Measures Format, or HQMF, for data capture and calculation. ECQMs are also using this HQMF. It's the first international standard for the formal representation of electronic clinical quality measures. You'll be learning more about the HQMF later this morning as well.

The HQMF is exported from the MAT in two formats. It's a machine-readable format, which you see there represented on the left as HQMF XML, and a human-readable format, the HTML, or a human readable that you see there on the right. When you take a look under the hood, the HQMF consists of metadata, data elements, and logic. We're talk more about these on the next slide.

We're going to look a little bit more at the MAT output in detail on the next slide, but I do want to pause again to see if there's any questions. I realize there's a lot of information coming.

Male: [crosstalk 00:15:18]

Juliet: Should I keep going or was there a question? Sorry.

Male: You can go ahead.

Juliet: This is a sample of the HQMF in the human-readable format that we spoke about on the last slide. The gray box at the top is what we refer to as the header and it contains the metadata for your measure. The metadata is a description of your eCQM. It includes narrative statements describing the measure, as well as the denominator and numerator populations. You'll also include a rationale here on why your measure is clinically relevant. There are many other fields that make up this header, the HQMF, and you can reference those in the MAT user guide to find a complete list and guidelines for their completion.

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The lower portion of the slide shows an example of the body of HQMF. You'll start to see what looks like familiar parts for a measure, initial population, denominator, numerator, et cetera. You may also hear this session referred to as the logic.

This is where you see the QDM at work. The QDM is the data model that you'll use in the MAT. For example, this green box highlights procedure performed, hysterectomy with no residual cervix. That information represents your QDM element, procedure performance, and it's got an assigned value set, noting that blue box highlighted below. The information in that blue box contains the name of the value set assigned to your QDM data element. That long number after the value set title is called the OI or object identifier. It's the unique number assigned to this value set, and every value set has one.

Don't worry. Again, more to come on the HQMF later this morning. I'm going to talk a little bit more in depth about the QDM on the next slide.

The QDM consists of a hierarchy; category, data type, and attributes. On this slide, the left-hand column represents the QDM category. The middle column is the QDM data type. The right-hand column represents any attributes you may want to assign to the data type to express greater detail. If you look right highlighted here with the red arrow, this is a good example. We can see the laboratory test is the category of the QDM. Laboratory test performed is your data type and that you can add an attribute of result to refine down to greater detail. This information signals where in the EHR the data elements can be found. You can reference the QDM for a full listing of all the available categories and data types and attributes, and this will definitely be a crucial step in your measured development prior to building your measure in the MAT.

We talked a little bit about the QDM. We're going to talk now a little bit about value sets and their roles in eCQM development. Again, the Value Set Authority Center, or VSAC, houses all the measure value sets, and it's hosted by the NLM or National Library of Medicine. You'll hear more about the VSAC later this morning as well. Here on this slide, just as a brief intro, is a screenshot of a value set created within the VSAC. It includes the name, the OI, or object identifier, that long number, as well as the type, definition ID, developer and note sections. The contents of this value set are also shown. Code descriptors, code systems, version of the code system, and the code system's unique identifier are all shown on the last line there.

This example of value set only has one SNOMED code in it. It's not uncommon though to find value sets existing in the Value Set Authority Center with hundreds of codes in them, depending on their clinical intent. Again, we encourage reuse of value sets wherever possible. Remember that the VSAC and the MAT can talk to each other. Once you've created a value set in the VSAC, you'll be able to link it to the appropriate QDM data element in your measure in the MAT. When your measure is ready to be export from the MAT, the VSAC will automatically send that value set information and it will be included in the materials exported from the MAT.

Let's pause here to see if there's any questions regarding the components of an eCQM.

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eCQM Development, continued

A little bit more about value sets and the available terminologies. Many of you are familiar with healthcare terminologies. ICD-9 and CPT are commonly used in paper-based measures. This slide though shows the different vocabularies used in eCQMs and how they are classified into standard and transition vocabularies. Many of these standard terminologies may be new tools for you. These terminologies are available in the VSAC, so you will be able to search them should you need to build a new value set. More information on the terminologies is available in the appendix of this presentation.

Now, I want to come back to our QDM structure and show a little bit about how these standard and transition vocabularies fit into the picture. Again, the left side of this slide should look somewhat familiar. We've got the QDM category data type and attribute columns. The new fourth and fifth columns here that are circled in red represent the standard and transition vocabularies you can use with these QDM data types. You can actually find a full listing of all the QDM categories and data types with their appropriate vocabularies, both standard and transition, in the Blueprint. I'll provide a link to the Blueprint later today.

Let's revisit our example at the red arrow. With laboratory tests performed, with an attribute of results, it looks like this should be represented with a value set containing only SNOMED terms. As you look to build the value set, if you need to do it for this data type, you would use SNOMED terms. Just like all quality measures, vocabularies and standards associated with the eCQM development undergo regular updates. Changes and updates to standards and vocabulary occur with some regularity. As you can note here on the slide, SNOMED, LOINC, and CPT undergo annual updates to their content, while RxNorm, which houses information on clinical drugs, undergoes monthly updates. You just need to keep those timelines in mind if you're developing your measures.

We've talked about the components of an eCQM. We're going to move into the development lifecycle, but I do want to pause here to see if there's any questions. I will move on.

Now that we're familiar with the major components of an eCQM, we're going to talk about development, especially for eCQMs that you would like to submit for consideration in a CMS quality reporting program. The measure development lifecycle, this is a high-level overview of the development lifecycle and it's been taken from the Blueprint. Again, I'll provide a reference to that later in the slide deck. As you can see, there are five steps. The lifecycle is circular and it is an iterative process. For example, if you have your eCQM in the testing step at step 3 and the result of the testing shows it's not producing the desired results, you move back to step 2, make a couple of tweaks, and then come back to testing. This is done until your eCQM is stabilized.

I'm going to discuss each step very briefly and very high level, but I do encourage you to reference the Blueprint as needed, especially if you begin your development journey.

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Step 1 is measure conceptualization and selection. This is where environmental scans, literature reviews, and gap analyses assist developers in determining which measure concepts should be pursued for development. Narrative descriptions of the measure and its denominator and numerator are also developed here as well. Step 2 is measure specification. Once you have identified your measure concepts, you can then work with the QDM, the MAT and the VSAC to author your eCQM.

Step 3, measure testing, a crucial step in the development process. ECQMs need to be tested on many levels. Bonnie testing, which we speak about earlier and you'll hear more about later today, test your logic. There's also alpha or formatives and beta or field testing. Again, I encourage you to reference state Blueprint for more information on those steps in detail. Step 4, measure implementation. In order for your measure to be included in a federal program, it must be reviewed by the MAP, or the Measure Application Partnership. To have your measure reviewed by the MAP, it must be on the MUC list, which is the Measures Under Consideration list. This list is compiled by CMS. Therefore, your measure must be submitted to CMS and included on the MUC list to be considered for a federal program.

Lastly, step 5, measure use and evaluation. Each year, the eCQMs can be updated as long as it does not change the intent of the measure. These nonsubstantive changes consist mostly of updating value sets, current versions of the terminologies. You also do want to keep an eye on new or changing clinical guidelines and evidence that may affect your measure.

Now we're going to talk a little bit about the whole picture put together. This is a schematic of the data flow from when your eCQM is developed at the top to when CMS received data from the provider community at the bottom. After your measure is authored in the MAT and it's been tested and tweaked, been tested and tweaked, the final eCQM is posted to CMS.gov. EHR vendors download these eCQMs into their systems and submit for certification from the Office of the National Coordinator for Health IT. The HQMF queries the EHR for all the records that qualify for the measure criteria. The Quality Reporting Data Architecture, or QRDA, responds to this query by pulling this specific information and transmits the data to the receiving systems at CSM. You will learn more about the QRDA this afternoon.

The difference between HQMF and QRDA is that HQMF contains the parameters for your measure, while QRDA has the patient-specific data and it travels back to CMS. The data received by CMS is used to determine if the submitting provider meets the requirements of CMS quality reporting program. Even though this slide looks complicated if you start from the top and move to the bottom, it shows you a nice flow of all the pieces put together.

We're almost done on our three-hour tour of eCQM development. I'm just going to wrap up with a slide on development lifecycle and timeline.

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eCQM Development, continued

In a general sense, this is the picture of the timeline moving forward. You can see that measure testing happens earlier, and often, usually. This ensures that the eCQM will be implementable for providers who are participating in the meaningful use program or any other program that offers eCQMs as a reporting option. We mentioned Physician Quality Reporting System or Inpatient Quality Reporting program at beginning today.

Keep in mind, the MUC list, that measures under consideration list, does have a set time frame every year. You submit your measures between May 1 and July 1 for consideration to the MUC list. Then the MAT review the MUC list from November to December of every year. We do encourage you to start your MAT entry early, much before MUC submission begins, because it will take you several attempts to get your e-measure just right and to your liking.

At this point, I'd like to open it up for any questions. On this next slide, and this is included in this deck, I do have links to some of the resources that we spoke about, and there are some appendix slides for the stakeholders and the tools. One thing I do want to note with the Measure Authoring Tool. The application process involves a couple of steps. One of them being, getting your application notarized. It does take a few days to get that completed and mailed off. Just keep that in mind for your workflow.

Thank you. I'd like to open it up for questions. Did I put everybody to sleep?

Male: If people online have questions, they can go head and either raise their hand or enter a question to the question box, and we'll make sure that you can ask it or get answered.

Moderator: Juliet, we have one question here in the room.

Female: Hi, Juliet. This is [Carol Brown 00:28:33]. Can you elaborate a little bit more on the measure specification part of the measure development? Just go into a little bit more detail what that involves.

Moderator: Is that step 2?

Female: Yes, step 2.

Juliet: Step 2, okay. I just wanted to make sure I was understanding. It involves a lot. As I process this slide, this was a very high-level 30,000-foot view. Again, it's looking at the measure concept that you selected in step 1, refining down the narrative statements that describe them as you're refining down your initial population, your denominator, your numerator, making sure your exclusions are appropriate. Then it involves literally taking those narrative statements and working with the QDM to define which QDM categories represent those clinical concepts that you've identified in your measure. If you're looking for an active diagnosis of diabetes in your patients, you're going to look for the QDM type of diagnosis active and assign a value set, and then start looking with your value set that's appropriate for the diabetes diagnoses that you're looking for.

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Then once you worked through identifying all those QDM data elements that apply to your measure, that's when you start working within the MAT to assign any logical statements that help those QDM data elements relate to each other. If you're looking for a diagnosis that starts prior to an encounter or after an encounter, prior to a procedure, after a procedure, those are some simple ways of expressing things.

The QDM is two-pronged, if you will, data model and that it represents your data concepts, but it also has all the logical statements that you would use to relate those data elements together to basically make your sentence structure, for lack of a better term. There is a lot involved in that measure specification step. The Blueprint can elucidate things pretty well as well, but it's working with that QDM to identify your data elements, beginning to look through the VSAC to see if there's existing value sets that represent the concepts you're looking for, or if you're going to need to develop new value sets, and then working within the MAT to specify that measure and export it, begin testing it with Bonnie and such.

Does that help?

Female: Yes. Thank you. I have another question. Can you talk a little bit more about measure testing? Then the migrating [inaudible 00:31:07] measure, I'm thinking reliability, validity, room for improvement [inaudible 00:31:11] criteria. It seems like there's more. Tell us what you mean by measure testing in addition to that. Is that a truly separate [inaudible 00:31:19]?

Moderator: I'll start, Juliet, and then you can add and elaborate. You're right, like that side-by-side that we did between paper and electronics. We do all the reliability, feasibility and validity testing just like it's done in the Blueprint, just like when you're ready to submit for endorsement [inaudible 00:31:40]. What we found out with electronic measures, it's a totally different animal, in that we have to make sure ... Because, again, as you remember in the schematic, and this is another really important piece about eCQMs, is that there's no manual intervention anywhere in that process.

This is what we call a machine-to-machine. Unlike placed in paper where you can actually print and choose your population that you're reporting us, this you can't, right? What we have to do is we have to test that. We have to test that HQMF is read properly. You will go into this more later. We actually do have a section that's on implementation testing. In addition to those three that we would do for signed or paper measure, we're now also doing for implementation for even the standards and then for certification. Bonnie is [inaudible 00:32:39] because it helps us on those applications as well.

We automate it as much as we can in this process. We're not fully 100 percent there yet. There are still some manuals that we do. That's the difference. I don't know, Juliet, if you have anything to add.

Juliet: No. I think that was well-stated.

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eCQM Development, continued

Moderator: Does that answer your question? We'll talk a bit more about testing later. Anybody? Another question here in the room. Go ahead.

Female: Hi. Can you give us a sense of how many terms are currently under development or what the volume is that CMS is reviewing every year, how much competition is there to get a measure in? How does it all work?

Moderator: Right now, for eCQM, it's a very small population, whatever. I'm telling you though that when you open up the process either through PQRS, rolling quality measures, all year long, and then the process that Juliet described, which is a time-limited process, we have a lot of submitters saying that the measures that they're [buying 00:33:49] in our programs are [inaudible 00:33:51]. I would say 99 percent of them are not, because what we always do, we started to ask questions like are you in the Measure Authoring Tool. They'll say yes. The first year, it was like, "What is that?"

Now we've asked if they use the Measure Authoring Tool and then also the VSAC. We're trying to filter that down. Like I said, it's for electronic clinical quality measures. We don't get as much as we would like to claim for paper. As part of competition, I don't know how to answer that really, but we do review everything that comes through.

Female: It's a much less like this ginormous less than hundreds of submissions? I just want a sense of how many who are interested in working in the field right now.

Moderator: You know what, Sophia, it's different numbers for all of the programs, because the market is comprised of all the quality measure programs, so not just how many quality measures of each [word 00:34:54]. They tend hundreds of measures. However, for those measures that Minet spoke about that people submitted that they were eCQM, we didn't get a hundred of those measures. I would say probably 50 people said were eCQMs, but once we look at what they submitted, they turned out not to be. Probably, maybe five or six of them were eCQMs.

Just really briefly [inaudible 00:35:25] just one more is that after we ... Make sure that it is an actual eCQM, then we look at them internally as well to make sure that that measure builds steps or priorities. Do you have a question?

Female: Yes. I highly relate this to [inaudible 00:35:42] measures. When I'm trying to find out about the measure, I go into QPS and NQS website and I thought of it as human-readable HQMF. Is that basically [inaudible 00:35:52] to be able to tell me about the measure, what I would need to know from a policy perspective?

Moderator: No.

Female: No? Okay.

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Moderator: Only because I think you're asking two different things. The QCS is just a library of all NQS endorsements. Our eCQMs, the ones in stage 2, they are endorsed, however, when they were paper measures. Now I know NQS is working on endorsements, specifically eCQMs. I don't know whether it's specifically with that. The HQMF is the standardized format. Part of HIT, Health IT is standardized, right? Then you'll get the same data elements all day every day consistently. The HQMF, that's coming into the center where we do provide all that information. It's like [inaudible 00:36:55] the rationale for that measure.

This link right here, if you use that link, then it would take you to all our texts that we have in Stage 2 right now and it will show you the human-readable and machine-readable, the HTML, take a look at the HTML and that will do it for HQMF. You can try to look through that and see what it looks like.

Moving on. Our next presenter is Chris Moesel from the Mitre Corporation to talk about the standards that Juliet was talking about. Can you [inaudible 00:37:35] back from the room, dear?

Male: Yeah. It should be sending me right now.

Moderator: Great. Can people on the phone see the screen? Is that all right?

Male: Yes, we can.

Moderator: Okay, great. You make it full screen.

Male: [inaudible 00:38:03].

HQMF

Chris: All right. Good morning. My name is Chris Moesel. I work for the Mitre Corporation and I work on the Tacoma project. I'm the technical lead for the Quality Data Model, which Juliet just told you a bunch of stuff about. All of it was true, by the way. Good job, Juliet. I also was a coauthor of the Clinical Quality Language, which is a new effort to harmonize the Clinical Quality Measurement and the Clinical Decision Support domains, and to have a single logical expression language that can be used to describe both, as well as a single data model. CQL is what we're proposing as the harmonized language. It's really cool stuff. Also, I've been involved in some of the development of other standards like HQMF, the Quality Profile FHIR, and the upcoming QUICK data model.

Today I'm going to be talking to you about standards that are used in the development of eCQMs. Some of this is going to be a review based on Juliet's discussion, but that's good, because repetition is how we learn. I think we need to repeat it more than two times. This is only going to be your second time, sorry, you'll have to study at home.

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This is an overview of those standards. This is similar to the vertical slide that we saw before. This is a horizontal slide, and it shows the overall process of how the standards relate to measurements. On the far left side, you have all the data that might be interesting for measures. This is all the data that we might want to use. Measure authors, when they want to talk about that data, when they want to identify it, they use the Quality Data Model. That's their index into that data. That allows them to identify it and to speak about relationships between the data.

The Quality Data Model is really something that's for people like you and me that's author-friendly, but it's not something that computers really like a whole lot. We need to actually have that HQMF as well, which is a much more computer-friendly model. It's something that computers and systems can process more easily and it contains all of the same information that was in the QDM, plus a little bit more, so that now when you have an EHR or some other certified IT help technology, it can actually look at that HQMF to determine what is the data that I need to execute this measure.

It looks at that and it figures out this is the data I need and it pulls it from all of its sources that we have here on the left-hand side and it reports it out into the QRDA Category 1 files. Those are the quality reports. QRDA Category 1, typically, you'll have a QRDA Category 1 file for each patient that qualifies for the measure and that QRDA Category 1 file will contain all of this data for that patient that is needed to execute the measure. Ideally, it doesn't contain any more data than that. It contains only the data that you need for the measure, plus any supplemental data that might have been requested or reported as well.

Now that you have this big old pile of QRDA Category 1 documents, the calculation engine, which might be the same thing as the EHR or could be something different could actually take a look at all of those reports that contain all the data, it could take a look at the HQMF which describes what to do with that data and then it can actually calculate the measures and produce a summary report, which is in a file called the QRDA Category 3 file. As Juliet mentioned, QRDA is going to be covered in the afternoon. This morning we're going to focus on the left-hand side, the QDM and the HQMF.

I'm not as nice as Juliet, so I'm not going to pause for questions. You're just going to have to interrupt me, okay? All right. If you have any questions about these standards or other standards you're going to learn about today, the eCQI Resource Center is a great place to look. This contains links into all the many other places that you can find more data. It contains summaries. It's an excellent resource to be able to get at any of these standards. It also links back to all of the measures that we've been talking about for meaningful use Stage 2 as well. If you write down one link today, this is the one that I want you to write down.

Female: Give us a second.

Chris: I'll give you a second to write it down.

Female: Is that publicly available?

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HQMF, continued

Chris: Yes, this is publicly available. If you actually Google eCQI Resource Center, I think you'll find it. As mentioned, this will be in the slides and those are published as well.

Male: We also may have a question online, [Debbie Crouse 00:42:57]. You have your hand raised.

Chris: Debbie is here in the room.

Male: Okay.

Female: Yeah, I did. I'm sorry.

Chris: All right.

Male: That's fine.

Male: [inaudible 00:43:07].

Chris: We'll continue. I want to go into a little more detail about the Quality Detail Model, because in order to understand HQMF, you really do need to have an understanding of the Quality Detail Model.

The Quality Detail Model, this is a definition that Juliet actually read about half of it. I'll just summarize it really quickly. It is an offer-friendly language for speaking about eCQMs. It provides the nouns, it provides the verbs, and it provides the relationships that you need in order to specify an electronic clinical quality measure. That's basically what all that stuff says. That's online if you want to find it. It's broken out into several different components. I'm going to skip this slide because we're going to into some of those components in detail, and because I only have 30 minutes.

These are the categories. Categories represent broad concepts that you might want to talk about in measures. There are things like encounters, diagnoses, medications. You can see here the full list of what the QDM allows you to talk about. Categories on their own aren't really enough to speak about data. What you really need is some context. That's why we provide data types. Data types provide the context to the category. For example, the laboratory test category, we have a laboratory test order, we have a laboratory test that was performed, a laboratory test that was recommended. This provides the context we need and, in fact, when you're creating measures, you can't talk just about a category. You always have to speak with a context. You always have to use a data type.

For each data type, we do have a set of attributes that are applicable to that data type. This is what allows measure authors to actually dig in a little deeper into the data and find out more. For example, for the laboratory test performed, you can talk about the method of the test, you can talk about the reason for the test, or you can talk about the

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result, which is quite important oftentimes in clinical quality measurement. If you look at the QDM specification, you'll find a table like this for every single category that lists out the data types and that lists out the attributes. You'll also find definitions for the attributes.

For those who are more visual in their learning, who like the squares and boxes and all that stuff, this essentially is a lot of the same information in a different form. At the top, we have what we call QDM elements. That's kind of a phrase in QDM. Laboratory test performed, high-density lipoprotein result less than 40 milligrams per deciliter. That's called the QDM elements and that's our basic building block for defining measures. You can see here on the right-hand side we have a specific example. We've got the laboratory test category, the laboratory test performed data type. Then in the middle we have this high-density lipoprotein. That's the value set.

That's the thing that actually the group of codes that the measure author has said, if you find this code in the patient data, then that's good enough for me. That's what I call high-density lipoprotein. In this case, we have three LOINC codes. If you had a patient record at the laboratory test that has any one of those LOINC codes, then we would say, "Okay, that's good."

Got a question in the back.

Male: It doesn't actually give you the HDL result. It just tells you it's less than 40. Is that right?

Chris: In this case, so moving onto the attribute where we say the result less than 40 milligrams per deciliter, that is not a statement about a single laboratory test. What that is, is that's actually a query or a filter. That is the measure author saying, "I'm interested in HDL laboratory test, but I'm only interested in those ones that had a result that was less than 40 milligrams per deciliter."

Male: To follow up, so not in this particular example, obviously, but could the system then also ... If we wanted to look at a change, let's say. Let's say we were trying to lower the LDL, hypothetically, the bad cholesterol. Could you look for somebody who might have been 200 and now they're 160?

Chris: Correct.

Male: Could you set up? I know the different codes and all that.

Chris: Sure. That type of query is not something that is currently handled particularly well, to be honest. Being able to take a set of data from a patient and compared to an earlier set and try to determine the delta, that can be done to some extent in some edged cases, but without going into a lot of detail. You might be able to look for a code that actually indicates an improvement in that result or something like that. If you wanted to actually say I'm looking for a result that had a delta of 30 ... That's really not a good example, but look for a particular delta, that would be more difficult to be honest.

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HQMF, continued

Female: Another question.

Chris: Another question, great.

Female: The QDM elements, how many are there typically in a measure? [inaudible 00:48:39] potential numerator elements.

Chris: Sure.

Female: Are there other elements that was upon a denominator? Typically, there's two QDM elements or ...

Chris: Typically, there are many. Two would actually be really small. Usually, there's a handful. Maybe five or six would be the low end and then it could go up from there. QDM not only talks about data, but it talks about logic that you can use to manipulate the data and find relationships between the data. I don't have time to go into the details, but I do want to make you aware that QDM does allow you to talk about temporal relationships, attribute filters, subset operators, functions, variables, and then it has logical operators like 'ands' and 'ors' and those sorts of things, and tie everything together.

I think the best way to kind of understand how this all works is to look at an example. This is CMS 123 version 4. This is an actual meaningful use 2 measure that looks at diabetes patients who had an encounter during the measurement period and checks to make sure that they have the appropriate foot exams performed. I like this measure because it's actually fairly simple. We're going to take a look at the initial population. If you're not familiar with populations, we'll cover that a little bit later.

We can see here, in the initial population, all those pieces of QDM coming together to actually say something of value, to say something that has meaning for measurements. At the high level, we have four add statements. That's essentially saying that, in order to qualify for the initial population, a patient needs to meet each one of these four criteria. They need to meet all of them. The first criteria is the diagnosis active diabetes overlaps measurement period. Diagnosis is active diabetes. That's our QDM element.

Overlaps, that's our temporal relationship. We talked about temporal relationships. Overlaps basically means that if you took the diagnosis of diabetes or the condition and you plotted it out on a timeline and then you took the measurement period and you plotted that on a timeline, there should be some overlap, where both of them are active at the same time. The second two statements are just establishing the age. You can see here the use of a QDM function, the 'age at' function allows QDM users to talk about a patient's age in a simple way.

Lastly, we have this union, which is an interesting thing. A union is the way of [working 00:51:13] things together. What the measure author has tried to say here is, "I want to make sure that the patient had an encounter during the measurement period, and all of

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these types of encounters that are listed here, all of those are fine for my purposes. I want you to take all those different types of encounters, put them in one group, and as long as the patient has one encounter that's in that group somewhere that matches one of those criteria, then we're good. They can be in the initial population." That's essentially what the union is doing there.

That's the high level how the QDM comes together to define a measure. We can see here for the denominator exclusion, you have the QDM again. It's a little bit different, but you see a lot of similarity. Again, we're using the same tool essentially to define that. I'm not going to walk through this one line by line.

Finally, the numerator, which is pretty simple, which is just saying, these three things, all tied together with an 'and', must have happened. The visual exam of the foot, the sensory exam of the foot, the pulse exam of the foot. In order to be in the numerator, all those things must happen.

That's my whirlwind tour of QDM. If you want to find out more about QDM, you can of course look on the eCQI Resource Center. Another great thing to do is to actually look at the meaningful use 2 measures, which can also be found on the resource center, because those will show you the QDM that goes into each one of them. You can look at those and study them, and figure out how this stuff works.

We do have a monthly QDM user group meeting that we'd encourage any of you to attend. It's typically the third Wednesday. You can find the calendar on the eCQI Resource Center. Then if you have any further questions, that you're looking at this or you run into any issues or, god forbid, you find something that's actually wrong in the QDM, you can submit an issue over [inaudible 00:53:08].

Question?

Male: When you look at the qualification you have on that one slide, does the EP have to do all of those, like the diagnosis and the encounter or just the encounter and the diagnosis could be from any provider?

Chris: Right. That's a great question. I think that ideally speaking we would have the integration such that if something happened at a different provider like a diagnosis, that would actually be in the system of the person for whom it is being performed. That might not be the real-world scenario all the time. We can't really say for sure whether that data is going to be there. In an ideal world, yes, that diagnosis would be available in the physician's system and the physician would be responsible for having perform those foot exams.

Female: This is [inaudible 00:54:04] for measure.

Chris: Sure.

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HQMF, continued

Female: That depends a little bit on the program, but in this program, all of the data elements that are required needs to be available in the reporting provider's EHR, because they're not going to know if there's a diagnosis in the patient's chart in a different system. It just has to be present in their system.

Chris: Right. They're not going to know unless that data was shared with them.

Male: [inaudible 00:54:29].

Chris: Sure.

Male: How do we know what is best when an EP is required to do a certain step versus it could just be in the chart? Let's go back to the metro population one, this one.

Chris: Sure.

Male: The diagnosis could be in the chart from any provider. It's going to be EHR, correct?

Chris: Mm-hmm (affirmative).

Male: The encounter itself has to be by the EP. We look at these specifications to build this up. How do we know the difference between those? Which one is EP-specific and which one is not?

Chris: Sure. That's a great question. I think that you would need to look at the context and the definitions of what they actually mean. For example, in the QDM diagnosis, it's not necessarily talking about the acts of diagnosing a patient. It's just saying that a diagnose exists, so the patient has this condition. Whereas, encounter performed is talking about the actual action. I'd say that, generally speaking, that the encounter, when something happens, an action associated with it, you're probably looking at the EP where it's more passive, maybe not.

Even that, we can't say for sure, because, for example, this is using diagnosis as well, but if we actually were looking for a procedure of an amputation, for this measure, it probably don't necessarily care that the same provide who'd give the foot exam was the one who did the amputation, right? For other measures, you would want the procedure to actually be done by the EP. That's not something that electronically we're really distinguishing right now. We're just expecting all this data to be in the provider system and in most cases, it's going to be probably sourced from the provider, but sometimes you might have data from other providers.

I know it's not a great answer, but it's ...

Female: Really quickly, I think what he's bringing up is the issue of attribution. It takes a village to answer that one. I hate to tell you. We also indicated that it's also done on the program

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[inaudible 00:56:41]. The goal is really that, and we get this a lot, it's like a specialty, a specialist may or may not have this information on the application. Again, it's very complex, but what we're trying to do is just to standardize our care [inaudible 00:57:01]. One that we already have a diagnosis with diabetes, and do we do foot exams on a regular basis.

It's not as simple as that, apparently, when we're trying to implement these measures, but that's a really excellent point about attribution, so that we do have to struggle, that that's a lot that we're dealing with again, because, depending on the program, it's the reports, and whether it's a QRD-1 or a QRD-2. We can talk more about it later. [inaudible 00:57:32].

Chris: Sure. We have one more question.

Female: Chris, going back to the question about if eQMs can handle population, and we know that they can't right now, as far as comparing two [forces 00:57:47] and things like that, do you feel like for random standards are going to be able to handle those types of fairly simple calculations?

Chris: Sure. I briefly mentioned in my introduction the Clinical Quality Language. This language does have support for that type of expression. It's much more robust and provides a lot more capabilities than the current QDM. We're hoping that in the future, we might be looking at a case where you might still be using the QDM as the data model, but perhaps you would be using CQL for the logic. Then things like that would actually be possible. The CQL has been published. It's an HL7 specification that has been published. Now, it's just a matter of when does it actually become a part of the program.

HQMF. HQMF is essentially a standard for representing a health quality measure as an electronic document. It's got measure structure, metadata, definitions, logic, et cetera. In short, HQMF is the computable version of what we talked about with QDM, but it also provides a little bit more metadata.

Some key points about HQMF, it's XML. If you don't know what XML, we'll have an example of that later. Another thing about HQMF is it's fairly broadly scoped. In order for it to be useful for our purposes, we have what's called the QDM-based HQMF implementation guide. This constrains the HQMF further. It says, when we're talking about QDM-based measures, these are the things, these are the parts with HQMF that you can use, and it provides templates for translating a QDM data type to an HQMF data criteria.

HQMF is based on the HL7 reference implementation model. I don't know if we have any HL7 nerds out there, but if you're one of them and you love the RIM, don't worry. Underneath, there's acts and there's participant and roles and all that stuff. If you have no idea what I'm talking about, you are very luck.

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HQMF, continued

HQMF is intended to be fully machine executable. What we mean there is that, if a vendor has implemented HQMF, you should be able to throw any measure that's written in HQMF at that vendor and they should be able to execute on it. Of course, assuming that they have the data that's required by the measure. This is as opposed to, say, what happens often, which is vendors who are actually specifically writing custom code for each measure. We want to move away from that. HQMF, being executable, is one of the ways that we get there.

This also helps with authors. We've talked a little bit about testing and automated testing. Automated testing through tools like Bonnie is only possible because HQMF is executable, because computers can just read it and understand it and know what to do.

For vendors, even though there's a high upfront cost to implementing it, it's nice because once they've implemented it and they have that single code body, then they can actually execute arbitrary measures. When they find a bug, there's only one place to fix it, because they have a single code body instead of 93 different codes for the different measures.

Finally, for providers, you start to see value too, because as a provider, if you have a system that understands HQMF, you're not limited just to the measures that came with that system. Now, you can start thinking about taking some measures that might have been developed at the state level and executing those. Even better, you could develop measures within your own institution, institutional measures that now, if they're defined in HQMF and your supports HQMF, you can actually execute those, and the vendor doesn't need to know anything about the measures except that they're defined in HQMF. That's really powerful for providers.

I'm going to keep on moving on. Yes?

Female: Chris, I have a question, because usually we always hear that one of the things is EHRs don't talk to each other, people get stuck with measures that whatever their vendors [inaudible 01:02:07]. Is this HQMF thing fairly new? How convincing are you having to do to vendors and providers to adopt this? It seems logical, but it also doesn't ... I'm just trying to figure out how you ...

Chris: Sure. HQMF, most of what I'm talking about today is HQMF R2. There was a previous version called HQMF R1 that was released, and, to be honest, we did not see great adoption of HQMF R1 from vendors. It was pretty complicated, difficult to implement, and we did find many vendors choosing just to hand code measures at that point. We recognized this and said, "We need to be better. We need to create something that actually can be used." That's why we created HQMF R2.1. That was released, I believe, in January. It is fairly new and we do have some indications that vendors are starting to adopt it, but I can't really speak to any real numbers there. I don't know if Minet has more.

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Minet: Yeah. I just want to add a couple things. First of all, and this is why we're here today, is because QMS or our qualities measures that we're finding from HQMF. Now, between Stage 1 and Stage 2, what this also translates is that, to get credit for the programs, the quality programs, incentive programs is that you have to use certified EHR technology. The certification body now uses our classification to test out the vendors' products. The difference also between Stage 1 and Stage 2 is that Stage 2 is the first time that we actually required data to be submitted to CMS. Now, vendors are having to [inaudible 01:04:00] to get to use HQMF. That's what they certified.

Chris: Sure. I started five minutes late, so I get five minutes extra.

Female: I've got 3.

Male: 3? Okay. We're going to skip a bunch of slides. These are all different types of measures, proportion measures, ratio measures, continued variables measures, cohort measures, really thrilling stuff, I'm sure you guys are disappointed you're missing out but they will be in the slide deck. Real quickly, HQMF structure, we have a header, we have a body ... The header has all of the identifying information about the HQMF, so it has a master ID, it has a title, it has the author, the steward, the type of measure that it is, and the measure period, and then the HQMF body contains all the good stuff, so it contains the measure description that might have the metadata for humans right? It has [prose 00:00:45] that describe all the populations, it has prose that actually might describe the rationale or some of the research that went behind the measure. That's available in the body.

There's the data criteria, which is the section that basically tells EHR "This is the data that's needed by this measure." There's the population criteria which takes all of that data criteria and it ties it together to actually figure out if patients belong in the population. You can stratify using HQMF, and then if it's a continuous variable measure, which we didn't get to cover ... But if it is, then there'll be a measure observation as well. Now on the right hand we see in really tiny print, the XML for the HQMF, so in my last one and a half minutes, were going to quickly look at a QDM element and how it maps to the HQMF.

Here we have the datatype, the datatype maps to a template, in HQMF, and a template is identified using a template identifier and that's that long string of numbers with dots in it, so if you were to take that number and you were to look for it in the QDM-based HQMF implementation guide, you would find that it correlates to the diagnosis active datatype. You would also find a template that basically shows what the shape or the structure of the XML should be to represent that in HQMF, and that's what we have here. The [inaudible 00:02:06], the value set, and according to the template that should go into the value element, and you can see that there, and again if you were to take that long ID there, that means nothing to you and me, but if you were to actually take that and look it up in the Value Set Authority Center, you would find that it corresponds to diabetes and it would give you a list of all the codes that can talk about diabetes.

Overlap with that temporal relationship again in ... In HQMF, temporal relationships use temporally related information elements, with type-codes, and then when we talk about

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HQMF, continued

"Well what does it overlap?" It overlaps the measurement period. The measurement period was already defined in the header, so we're not going to redefine it here, instead, we have a reference that's just basically points to it, and says "Yeah it overlaps this thing that defines way up here, called the measurement period."

The enumerator is a numerator criteria element, and if you look at all of the things that are required for the numerators, those basically break out into precondition, again that are all references to data criteria. One of the things we try and do is not repeat ourselves a lot. We defined something once, that should be as enough and everywhere else we need to use it we just point to it.

We already talked about the human-readable, but I'm guessing that most of the people in this room, myself included, would prefer not to have to look at the XML, that's not really like our thing, right? That's why we have the human readable, we have a nice table that has all the metadata, you have the QDM, you have the data criteria, and then any supplemental data elements that perhaps have been requested to be recorded as well. That's published with the measures, [inaudible 00:03:43] resource center, and with the measure bundle, and that's probably where you're going to want to spend most of your time when looking at other measures, but if you want to kind of nerd out for a while, you can always look at the XML as well. There's your resources ... I think I'm done.

Female: Great. Can you define metadata ... You've used the term a couple of times, [crosstalk 00:04:05] header but just [inaudible 00:04:07]

Male: Yeah, so the metadata is information about the measures. The measure ... Kind of describes the logic and the data [unless they're immediate 00:04:17], but then metadata is actually information that describes the measure itself, things like the title of the measure, things like identifiers, [BMS 00:04:26] identifiers, NQS identifier, the authors, these are all kind of data that describe some of the attributes of the measure itself, but don't provide the measure of logic.

Male: [inaudible 00:04:43] Someone [inaudible 00:04:44], but how the [inaudible 00:04:46]

Male: The value sets, for example can have this diabetes value set ... That could potentially have ICD-9 or ICD-10 codes in it. Now when you're talking about recording and perhaps code translation and things like that, that's probably more for maybe Cypress or QRDA, I'm not sure, but ...

Male: [inaudible 00:05:15]

Male: Or even NLM, the Values Set Authority, but in HQMF, and in QDM, you're only talking about value sets, and those value sets may or may not contain ICD codes.

Okay. Thank you very much.

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Female: [inaudible 00:05:33]
Up next, David. Dave [Philator 00:05:46]. David?
[inaudible 00:05:48]

Male: [inaudible 00:05:59] yeah?

Female: Yeah.

Male: Yeah, I had a little bit of [crosstalk 00:06:02] 45 minutes.

Female: [20 00:06:05]. Did you [inaudible 00:06:06] or ... ?
[inaudible 00:06:07]
Do you want a ... Yeah.

Male: [inaudible 00:06:09] what I'm going to be showing them.

Female: Okay. Do you want Cypress first, or ...

Male: [crosstalk 00:06:11]

Female: [Minet 00:07:16] can you hear me now?

Female: Oh okay great, thank you. Sorry Dave.

Male: No don't worry.

Female: Why don't you go ahead and do the MAT demo? Need to give Lindsey control?

Female: Actually we're going to give ... I'm going to give kind of a verbal lead-in and then there's an attendee [Sandra Bartleman 00:07:36], that's actually going to be showing her screen for the demonstration, so if you could give ... Pass the presentation access to her, and her line ... I'm going to just give a quick overview here because ... Measure authoring, I think probably fits nicely following both Juliet and Chris' presentation. In short, Measure Authoring Tool is the web application that measure developers use to author their ECQM, and from the measure development standpoint, we as the Measure Authoring Tool team incorporate that Quality Data Model directly into the tool so that it allows our measure developers to talk about their clinical concepts using that Quality Data Model already.

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HQMF, continued

Sandra Bartleman's going to be walking you through the tool, but what I would like to kind of wrap up from a cycle is that while you're using this Measure Authoring Tool to talk about the clinical concepts in the element, you're also able to define the logic of how the measure should be calculated or should be represented within the Measure Authoring Tool. The final point, or kind of the shining glory of the Measure Authoring Tool are its exports ... Are the files that it produces, so the Measure Authoring Tool provides artifacts like the human-readable, or the HTML document that you've been hearing both Juliet and Chris talk about as well as the HQMF. Currently the Measure Authoring Tool does support HQMF for at least 2.1. With that I'm going to ask to see if Sandra's line has been unmuted, and if she can [inaudible 00:09:12] hand it over to her for the demo.

Female: Thank you Lizzie, again this is Sandra Bartleman, and I'm a health informatics service coordinator for the Measure Authoring Tool development team. Right now what you are viewing is our Measure Authoring Tool public website which can be accessed by visiting www.emasuretool.cms.gov, and to sort of echo what Lindsey was stating, is that the Measure Authoring Tool allows measure developers to enter their measure logic using Quality Data Model criteria, and they will use the value set from the Value Set Authority Center, of which we are connected, through the Measure Authoring Tool via an API that you can retrieve value set data from the Value Set Authority Center. Once you enter your measure logic into the Measure Authoring Tool, the export that is really the reason for the Measure Authoring Tool that you're going to receive, would be the human-readable document, be it XML ... Simple XML, excuse me, and then the ECQM HQMF XML file. In addition you will receive a value set Excel spreadsheet which would list all the value sets that you're incorporating into your measure, including all of the codes related to the value sets that you're utilizing.

To back up a little bit here, before you even get started as a measure developer in utilizing the Measure Authoring Tool, you would access the public website that we're viewing here. On the public website you have access to the new user registration form, and once you've completed ... Had the new user registration form notarized and mailed into the Measure Authoring Tool team, then you would receive an email that would have your user ID and password ... Would then allow you to log into the Measure Authoring Tool using the secure login available, again at the public website.

Before we move on to look at ... Perform a demonstration of actual tool, I did want to highlight some various features of our public website. This is definitely a resource that you would want to utilize, especially if you're just getting started using the Measure Authoring Tool. The very first thing that I would want you to look at is the fact that there is the news and alert, so in other words this is just going to be a place you can go to see is there going to be scheduled downtime? Is there something new posted to the website that you maybe haven't had an opportunity to review? Other things that would be posted here is upcoming training webinars that might be occurring. Just a really good place for us to communicate to you some very important information related to the

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Measure Authoring Tool. You can also move on to the training and resources page ... Again I want to tell you that this is really where you want to spend most of your time if you're just getting started on the Measure Authoring tool.

What you see here in these links, that you have availability to the user guide. It's a very robust user guide that is over 200 pages long, but it will really give you an idea of how to get started, and how to go about entering your measure logic in much more detail than I'll be able to cover today. In addition to that you have all of the training webinars that the Measure Authoring Tool team has offered since December 2013, or ... Excuse me, January 2013, so beginning with MAT version 2, all the way through our most current release which is MAT version 4.2.0.

You can also find a record of all the release notes, so just various updates, enhancements, and so forth that have been included, and added to the Measure Authoring Tool. You can get a nice historical perspective just by viewing all of those items as well ... Those release notes. I also would like to point out the fact that we do have a link to connect you to the Bonnie Testing Tool, so once you've entered your measure and you have your output, then you can go and see ... "How is this working?" And "Is it working as intended?" That gives you an opportunity to connect with the Bonnie right from the Measure Authoring Tool public website. The Measure Authoring Tool is also an open source application, and so you can get the most recent code and read the installation instructions to be able to have a local instance of the Measure Authoring Tool.

Finally the contact us page just allows you to connect with the Measure Authoring Tool support staff, if you have any questions regarding entering you're measures, how the tool is working for you ... We have a very skilled staff that's available to respond, and other responsive staff as well, so we encourage you to utilize this [form 00:14:37] that's available right on the public website.

At this time I would like to move forward to entering the tool, now as I stated before, if you were a measure developer and you're entering the tool, you'd enter the public website. For demonstration purposes, today I'm actually using a training environment, and so as we enter this ... This is not going to have any production data in it. All the measures that are entered into this particular training website actually are just measures that I have entered for the purposes of training and showing how the tool is utilized. The first thing I will do, is to enter my user ID, ...

Once you have entered your user ID, you will notice that you receive a welcome message to say "Hey you've made it into the tool." You also notice although this is kind of a similar-looking page to your login screen, it is different and that you now have the measure library, measure composer, MAT account and UMLS accounts tab. You will also notice your name in the upper-right-hand corner, and this red dot that you're seeing here, it indicates whether or not you have actively connected via the API to the Value Set Authority Center, to retrieve data, from the Value Set Authority Center, so because of the red dot right now, that's telling me "Nope I haven't yet established that active connection," and so what you would do is you actually enter UMLS credentials to connect to the Value Set Authority Center to receive that information. That would be

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something that you would need to establish if you do not already have UMLS credentials, and I'm going to at this time enter in my UMLS credentials, ...

HQMF, continued

Again you can see that I received a message saying "Hey you successfully logged into UMLS using your UMLS credentials," and I now have a green dot, to indicate that I can retrieve value set data from the Value Set Authority Center.

I'm going to move a little bit backwards here with the tab, because I'd just like to show you the MAT accounts tab which essentially allows you to just handle your own information related to your account, so your personal information from you first name, last name, title, organization OID, ... When you're registering, we do request an organization OID, and that would be entered at the time that your account is established ... An email address ... The email address would be one that you would have regular access to. We do send email notifications regarding scheduled maintenance, training webinars that are upcoming, and that sort of thing, so the email address will be utilized, to communicate with you ... Then we do ask for a phone number as well. Any time you make changes to your personal information in the Measure Authoring Tool, you will be asked to enter a password to confirm those changes and that ... Just to make sure that we're in compliance with recent security requirements, but also ... Best practices.

You also have the opportunity to update security questions ... Upon your initial login to the Measure Authoring Tool, you'll have an opportunity to set these questions and answers, and they would be used in the event that you forgot your password, or you forgot your user ID, and so if you ever felt as though you needed to update that information, you have the opportunity to come here, and then, again, if you wanted to update your password, notice that the password rules are here, and they are definitely something that you would want to pay attention to as you're getting ready to set your password. Those would be required to be reset every ... 50 days I believe is what it is right now, and so you would receive email notifications when your password's getting ready to expire, so again this is where you could go in and proactively change your password as that expiration date is approaching.

With that, I think this is a great opportunity to move into "Okay, I'm a measure developer, I'm getting ready to enter the Measure Authoring Tool and enter my measure logic and create a measure." The first tab that you're going to see is the measure library. On the measure library, you're going to see all the measures entered into the tool that belongs to the person signed into the tool, so this is your measures that you would initially see. If you were wanting to look at all the measures that are available in the tool, you would use this search engine to search all measures.

All measures are read-only unless the measure owner has specified that they want their particular measure made private, otherwise all measures are read-only so you can take a look at other activity that is happening in the Measure Authoring Tool. In the Measure

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Authoring Tool list, you're of course going to see the measure name, you'll see the version, and there could be multiple versions of a particular measure. You will also see if there is any kind of history, so ... The history would be, just to give you an example, "Has this measure been exported? Has it been packaged? When was the measure created? Has the measure been shared with another Measure Authoring Tool user?" You do also have the opportunity to share your measure with any other Measure Authoring Tool user, and ... You would need to be the measure owner to provide that share, or modify access, and that would happen utilizing this particular icon.

You may clone a measure as well. Great opportunity if you feel like you're needing to update a measure and you maybe want to practice inputting information or making changes, the clone is a good option for that potential use.

The very last icon that you're seeing here, is going to be your export icon. As I select this export icon, you're going to see all of the export options that are available to you for any given measure. The simple XML. The e-measure ... Which if you selected that e-measure radio button, this is going to give you the opportunity to either look at the human-readable, or you can look at the [inaudible 00:21:36] XML file using this particular option. Then the measure value set Excel spreadsheet can also be opened individually.

If you want to just receive an entire package, of all of the options ... All the export file options, then you would select the e-measure package option ... I'm just going to open this here very quickly so that you can get an idea of what that would look like, so here are your [scenes 00:22:06], a ZIP file ... If I double click on that ZIP file, you'll see the simple XML, you would see the human-readable HTML file available to you, you see the value set Excel spreadsheet ... I'm going to open this one really quickly just so you can kind of see ... This is not going to have anything populated in it ... I guess I'm sorry, this one does actually have some [inaudible 00:22:35] populated in it, so we have ... The value set Excel spreadsheet is going to show who your developer is, the OID that you've used, the value set name, all of those codes that was referenced before going to be listed in this value set Excel spreadsheet.

Finally, the last file that you're seeing here is the XML, or the HQMF XML document. I will open that up just to give you an opportunity just to look at that. Again, this is ... For me, as the educator, this is something that I don't spend a lot of time looking at, it is definitely a lot more involved, but it is available to you. This is exactly why the Measure Authoring Tool is in existence, to provide you this particular output, the HQMF XML file.

I'm going to return to the measure library ...

Male: We have a question in the room.

Male: Yeah, [crosstalk 00:23:45] what's the difference between the simple XML and the other XML?

Female: Stan or Lindsey, would you want to jump in to address that question?

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HQMF, continued

Female: Sure, this is Lindsey, so the simple XML is in essence ... It's the internal representation that the Measure Authoring Tool uses, so we obviously are trying to take something very complex and enable our user interface to enable our users to access the user interface, so we actually use that simple XML to represent what the measure author, or developer is using while they're in the Measure Authoring Tool, so it really is an internal representation, it is not a standard, it's just provided within the file ... Measure, within the complete measure package as [Ginger 00:24:38] pointed out, as the point of reference, but it is not a substitution in any way for the HQMF.

Female: Thank you Lindsey. When you are entering the Measure Authoring Tool and you're getting started and you don't actually have a measure that you're already working on within here, the way that you would go about creating a new measure is by collecting this particular folder with the green plus mark, and as I select that, you will have the option of creating a new measure. I could also create a version of a draft measure, so I'm done with the changes I'm going to make to this particular draft, I would like to take a snapshot in time of this particular measure, and create a version and that's exactly what you can do with that option, and then if there's a version in place that now it's time to maybe add some updates to that particular measure, then you can create a draft of an existing measure, and that option is available for you here as well.

I'm going to enter just ... Again I want to tell you that these are not real measures, so this Malaria prophylactic is in no way a real measure, but it is at least ... Give you an opportunity to see how to go through the steps of developing a measure. The metadata as we had discussed in previous section, information about the measure, it describes the measure, this is where you can generate a unique identifier ... Measure Authoring Tool identifier, the measure ... If it has an NQF number assigned to it, it could be entered here as well, establishing a specific measurement period. Identifying who is the measure steward? Who is the measure developer for this measure? Is this in fact endorsed by NQF? This also gives you an opportunity to enter your description, copyright information, disclaimers, identifying the measure type ... You have the opportunity to add a variety of detail to this measure, but especially identifying what are the population that we are including in this measure, and just a text description of what that population is supposed to capture.

That is all entered ... Again, metadata, that is all captured here in the measure detail tab, which you notice we have now moved on to the measure composer, so once you've identified what measure you're going to work on, you would be routed to the measure composer, and from the measure composer, we have the measure details. You enter in that metadata, you would then move on and enter your quality data element. Either the [inaudible 00:27:33] opportunity to retrieve these value set data, to be utilized for your measure creation.

Once you have value sets added to your measure, you would then take the value set, and you would create measure logic in the in the clause work space. Once you have the logic statement, in the clause workspace, you would then move on to the population

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workspace and say "Where do I want these specific clauses to be ... How would I use these clauses to define specific populations? The initial population ... Numerator, denominator." Then you would move on to the measure packager, which is where you would say "Now that I have these populations defined, which ones do I even want included in my measure package?" This point is where you would create those files. Again, the simple XML, the human-readable ... The HQMF XML file, and then the value sets Excel spreadsheet.

Then you have the option here too to add notes that could be viewed by other users, that you've shared the measure with, or just ... An opportunity to communicate whatever it is that you need to communicate via this measure note tab. Now this measure note tab, if you've noticed you can add notes [crosstalk 00:28:50] ... Sure.

Female: I have a quick question ... I noticed that on the Excel spreadsheet you showed us ... These VSAC [hours 00:29:01], people define them, they post them in this library ... Are those just ... Do you have to request permission to use those, or do you go in and get whatever you want that's posted in the library?

Female: From the Value Set Authority ... Okay, go ahead.

Female: I think there's some presentation on VSAC maybe a little bit later today that hopefully should highlight a lot of those answers to the question you asked. Really what the Measure Authoring Tool is doing is it's going to connect to the VSAC to pull in any value set information that you already have access to as governed by the Value Set Authority Center. There's probably ... There's going to be a whole host of other rules and stipulations around how that process works on the VSAC side, it's just that we use your VSAC or your UMLS credentials to retrieve what you should already have access to on the other side of that API over in VSAC.

Female: I think we [inaudible 00:30:00] 2 more minutes. [inaudible 00:30:04]

Male: One more question

Male: Who is using this tool to build these? I don't understand.

Female: The method developer. [inaudible 00:30:10]

Male: Who are owning the measure, or develop the measure?

Female: Yeah I mean not ... For our contractors, they designate somebody to [inaudible 00:30:23] but they initially [inaudible 00:30:24]

Female: So for our measure ... Again, for our measure to be used in any of the ... [EMS 00:30:30] program, that [inaudible 00:30:31] electrically specifies clinical quality measures, that measure is [inaudible 00:30:38] and must be entered into the [inaudible 00:30:40].

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Female: That's another way of using standards, and a standard tools, so that all the representation for the measures comes down to the format that is the same, to make it easier to implement.

Female: Okay, do you want to finish [inaudible 00:30:59]?

Female: Yeah. How much time do I have left?

Female: 1 minute.

Female: Okay, well real quick then I will show you, this is the place where, for example we were talking about HDL, or high-density lipoproteins and about that particular value set, and I'm going to just show you real quick here, you can actually enter in your value set here ... This is the value set OID for that particular value set that was being discussed in the previous section ... If you notice here that I entered that OID that corresponds with the high-density lipoprotein and then you can identify that is in fact that ... Laboratory test performed I believe, and apply it to your measure, and you see here that all the quality data elements that you're adding to your measure was listed here, and you would then take those quality data elements that are added, you would create clauses, and ... This is the clause library of clauses that I've already created, so this is the very basic clause here, pregnancy diagnosis during a measurement period, and this gives you an opportunity to actually view the human-readable ...

This is the logic that I entered, and there was my human-readable as it would be viewed. Then you would move on, again to the population workspace where you would take those clauses that you created and you would add them to your specific population, and then move on to the measure packager, where you would create a grouping ... In this instance we would want to add initial population, a denominator, a numerator, to be included in my measure package, and if I needed to add supplemental data elements, I certainly could do that ... Risk adjustment variables can be added as well. If you want to include that Value Set Authority Center data, so that you get that completed Excel spreadsheet, you would do that here, and then you'd create your measure package. Then your export is in fact created. Any other questions [inaudible 00:33:09] zip through the last portion.

Female: [inaudible 00:33:15] questions, [inaudible 00:33:17]? Great, thank you. [crosstalk 00:33:21]

Male: Go ahead and take control of the screen if you wanted to change the presenter from the next [inaudible 00:33:34]

Female: Do you need the [inaudible 00:33:36] ?

Male: All right you should have the screen now.

Bonnie

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- Male: While they're getting set up I'm just going to want to do a curt introduction of myself, according to Juliet I am your new best friend ... Not really me ... [inaudible 00:33:55] best friend, I just happen to be a person somewhat associated with him. I'm a software developer, I support [inaudible 00:34:06] and this [inaudible 00:34:07] project, I'm actually a developer on Cypress project, I'm not one of the developers for Bonnie, but as a Cypress user, or Cypress developer, I'm a heavy user of Bonnie, which is why I'm here today, giving this presentation. I'm going to start with a few intro slides, I believe I need to share my screen, is that right Mike?
- Male: Yes. You should be able to now. You are the presenter.
- Male: We're going to start with a few slides and then go into showing you guys the Bonnie [inaudible 00:34:40].
- Male: Dave are you presenting from your computer, or Minet's computer?
- Male: My computer.
- Male: Okay, hold on just a second. You can go ahead and share your screen. Yep, there we go, thank you.
- Male: Everyone on the line is now seeing my screen?
- Male: Yes.
- Male: [inaudible 00:35:28] okay. So far ... It's 10 o'clock today, and we've received a lot of information about clinical quality measures, and we've learned about how they're constructed a bit, using the Measure Authoring Tool ... A couple of pieces that make up the clinical quality measures, the Quality Data Model that Chris talked about a little bit earlier, as well as some of the standards involved ... HQMF, and we heard about simple XML, and ... There's a lot of stuff there, and hopefully you guys, from listening to the first ... 2 hours of these presentations, have kind of grasped how difficult a lot of this stuff is when it comes to defining these clinical quality measures. That's one of the reasons why people might see Bonnie as your new best friend, I would like to see it as kind of the red "easy" button from Staples, when it comes to kind of developing these clinical quality measures, and testing them as well. I think we've kind of talked about [inaudible 00:36:28] today so I don't really need to go into these clinical quality measures, but in short, you're taking clinical statements, and boiling them down into logical statements that a computer can understand. A computer can't understand the human-readable tests, you need to define it and kind of ... "If" and "but" statements, using defined data criteria, as well as value sets. That's kind of what a electronic specification, or the ECQM is.

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Bonnie, continued

I think we saw this diagram and [inaudible 00:37:03] charts that we breeze right through, but in short a measure defines the population that the measure applies to, it is then further specified as "Who makes up the denominator that is the patients who should receive expected care?" Then probing down even further into "The patients who receive the expected care for this measure." There are a few other populations within a measure, including the [accepted 00:37:31] and exclusions which our patients do ... Fall into "Who should receive expected care, but have reasons that they don't show up in the numerator?" For instance there's a measure referring to ... The medication be prescribed, a patient can always refuse a prescription, so it's a little bit more difficult than we have right here but I'm not going to really get into some of those nuts and bolts today.

I think it was kind of alluded to it, in some of the earlier slides, but originally a lot of this measure definition was done manually. Writing out the clinical quality measures, and now we've made them electronic, but at first ... The testing of those electronic measures was still done manually, so you can imagine taking some of these measures, some of which ... I think we have some [inaudible 00:38:29], but how many [inaudible 00:38:30] criteria are in a typical measure. It varies from 4 pieces of data criteria, up to 60. Then if you include all the "if", "and" and "but" statements, they can be very complex, so you can imagine that if you were manually testing each line of logic within a measure, it could take days, weeks, months just to do 1 measure.

How can we make that better? One of the ways they can make things better, and we see that in the world all over the place, is you automate it. You have it [inaudible 00:39:05] do some of that tedious fact checking, and then you allow the human users to do some of the more kind of advanced manipulation of it, take in ... Be able to automate out the [inaudible 00:39:21] or very simplistic measurements, or logic statements.

That is one of the reasons why Bonnie is your new best friend. It makes it so ... You too ... Do the very minute checks, it'll do that for you, and you can focus on the big picture of the measure that you're [inaudible 00:39:41]

With that I'm going to go into a demo, hopefully people will find this interesting and ... I know that demos and seeing tools can be sometimes more interesting than watching someone give PowerPoints. Another reason why I'm your best friend.

I don't know how to use computers.

The very first time you use Bonnie, you're going to see a screen like this, this is the login, I already have an account so I'm just going to log right in. Right now, the very first thing it's going to ask you to do is load in a measure, so I'm a brand new user, what am I going to load in? We just saw an export from the Measure Authoring Tool, that is what I'm going to load in. I have one of those on my computer already, so I'm just going to go ahead and load that into Bonnie ... I'm loading in a [inaudible 00:40:56] measure, which is an episode of care.

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All this is running on my local machine, so it might be a little bit slower than you would expect from the production system. It's going to ask me what episode am I going to be tracking in this clinical measure and it's going to be each inpatient encounter ... Going to be what the calculation is on. It's going to go ahead and load that into the system, which is a ... It's a [TMS-104 00:41:27], if I click on this, what Bonnie did, was it imported the HQMF version, so that is that XML machine-readable stack, and what Bonnie is able to do is it can parse that. I forget who was talking about the importance of machine-readable and executable stacks, and so Bonnie had no prior knowledge of TMS-104. All it knew was how to read the HQMF for that document, and it was able to parse out that HQMF and show this ... Very similar to the human-readable, you could probably hold up the HTML version and it would look almost exactly the same, and we can see ... I mentioned that measures can be complex, this [inaudible 00:42:10] relatively simple, but even though it's simple, look how many lines there are.

One of the important steps in Bonnie now, is to create test patients to apply against this measure. This measure is for ... Its [gimmick 00:42:31] ... Throat patients who have been discharged and [inaudible 00:42:34] therapy, so some of the dead elements that are required for this were ... The very first one is going to be inpatient encounter. What we see here, is the display changes ... I'm sorry for the people on the phones, [inaudible 00:42:49] screen now, but I just pulled in the encounter. An encounter, the data element, and I thought here, that over on the logic page, so this is ... Simply kind of human-readable, it changes a bit. We had an X before and it turned into this little snowflake. That kind of shows you that this data element is associated with that line of logic.

I'm going to go ahead and have an inpatient encounter, I'm going to have the lab for 2 days, and then we'll see that it also needs to have a discharge day time, which I'm going to add here ... A lot of it is auto-populated, so for instance, it knows adding a discharge day time, it automatically knew that that was probably going to be the stop-time of this encounter, so ... Bonnie's pretty smart at knowing some of the default behavior. It also pre-populated a code ... We mentioned the VSAC, Value Set Authority, so Bonnie actually goes out and pulls down all of the appropriate codes for the value set, so we see here that it pre-populated the one on top, but you can choose any of the other codes that are available for other value sets.

Female: [inaudible 00:44:08]

Male: Yeah.

Female: I know right now you need a code ... That could be tricky when we're developing and wanting to test measures but we don't have codes yet. Have there been any thoughts to allowing Bonnie to test measures that don't have codes?

Male: As in like a vetted [choices 00:44:27] that are on the VSAC? I believed in the Measure Authoring Tool, we saw the Excel spreadsheet, so the Measure Authoring Tool can create this spreadsheet which ... That actually is what it is, or will be loaded into Bonnie, so if we load kind of a measure ... The MAT export, it loads that value set and codes from that Excel spreadsheet, so that is kind of the draft value set.

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Bonnie, continued

Female: I get ... Some measures were developed and don't have any codes, because we need to request them from [inaudible 00:45:02] content, and actually slows down our ability to test on Bonnie, because you can't have a line of logic without a code? It would be helpful to be able to do the testing without a code.

Male: I'm not sure of the functionality of that yet, I believed that if you were able to create that Excel format, you could probably load the codes in that way, I don't know, I don't believe that there is a way to manually enter code into Bonnie for use ... Chris might have knowledge [crosstalk 00:45:35]

Male: Are you saying that perhaps we could take that spreadsheet and you could put in some dummy code, that could work in the interim?

Male: Yes, I believe you could, and I believe that they [inaudible 00:45:45] standard format, and we could look into providing [inaudible 00:45:52], if you wanted to touch base with me after this presentation or during lunch, we might be able to talk a little bit about that.

Male: [crosstalk 00:46:00] Also you can load draft value sets using Bonnie, to give a draft value set that you've reference in the measure from VSAC. You could put a dummy code in the draft value set that hasn't been published and get started that way with the dummy code.

Male: And that draft value set's also on the VSAC website?

Male: Yeah, create a draft value set using VSAC, you could use a dummy code in that draft value set, and load it in via Bonnie. When Dave originally added the measure, there was an option to collect the draft value set and that would allow you to do it that way.

Male: Thanks Andre. Andre's another one of the developers on Bonnie, he's up in Bedford at the moment. One of the other things, to go forward creating the patients, we have to have a condition of throat. What I did here was I actually pulled the data criteria over on the left, and I dropped it on existing data criteria, which can pre-populate some fields, usually the start and stop time, just to make it so it's easier for the user entry. We also know that it needs to have, ordinarily, a principle diagnosis for this measure ... I'm just coming to ... That's here. Once again we saw a whole bunch of "X"s turn into these little snowflakes. The other thing that's necessary is the need to put in a data [inaudible 00:47:42], I'm just going to do a very generic one, [inaudible 00:47:47] 70, as well as a name.

We see here, as I create a patient that had 1 encounter, [diagnosis is 00:48:07] the throat, and no medication [inaudible 00:48:09], so therefore, we're going to expect that that person did show up in the denominator for this measure. I'm going to set those ... You can set these at the beginning before you go into creating the patient ... I kind of get ahead of myself in this ... [inaudible 00:48:24] patients, right of the get-go, but what we

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see here is that this patient fits all of the ICP criteria, fits all the denominator criteria, but does not the numerator criteria. I'm going to call him [inaudible 00:48:38] [no-med 00:48:39], I'm going to go ahead and save this guy.

A great feature of Bonnie is the ability to clone patients, therefore if you have a base patient that you want all that data criteria carried forward into the next patient, all you need to do is press clone. You don't need to manually enter all the data again, whereas if you were making a manual patient, you would likely have to do a lot of writing ... The [inaudible 00:49:03] file of these patients over and over again, so I'm going to make this new patient, and instead of being no-med, I'm going to say with-meds and since we're going to be prescribing these medications on this chart, I'm going to up the numerator here, so I'm going to expect this patient to be in the numerator for this measure.

Female: Can I ask a question?

Male: Yes of course.

Female: How many patients do you typically ... Is there a short-hand for how many patients you would want to test? How many test patients you would want to do, like do you have patients for each line, for each major element?

Male: I'll get to that ... Once I finish this I'll show you something on the previous screen that can kind of help you gauge how many patients you're going to need for this [inaudible 00:49:50] measure. I would ... Part of the annual review for the [inaudible 00:49:55] measures, after the 2015 measures, and what we saw was ... We wanted what we called 80% coverage for the measures, so that the line of logic [inaudible 00:50:03] data element for each ... 80% of the lines within the measure, and I think I saw a range from a measure having 10 patients, to about ... Maybe 100. There's a pretty wide range depending on how complicated the measure ...

I'm just going to drag this medication data element over here, right on top of the diagnosis. It's going to pre-populate a medicine, and then what we'll see here is ... The numerator goes up green. That means that this patient now has everything for the ICP, the denominator, as well as the numerator. I'm going to go ahead and save this patient. What we can see here is, both patients are passing, both patients that we have created have the same expected results as well as calculated results, and then we also see that [inaudible 00:51:01] 32% coverage. Kind of hard to see on the screen here, but you'll see that everything lines, that has a piece of code or a patient that executes against it is highlighted in blue and kind of shaded.

That'll show areas that don't have good coverage, so we see that everything in the [IBP 00:51:21] is being covered, see that everything in the numerator is being covered, but we see that ... A whole bunch of stuff in the exclusion that is not being covered by any of the test patients. I'm going to go ahead and actually create a new patient. I'm going to start with, once again, this no-med patient, I'm going to clone him, and I'm going to see what happens if I create a patient that just has a hemorrhagic stroke. I'm going to call this person a new name. You guys get to make up whatever names you want during the

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measure review process, we saw a lot of people having this sort of naming convention where you'd describe what you want the patient to do, and then some other people just used celebrities. There were ... A lot of people were making patient records for President Obama. I don't know if he would be too happy with that.

Bonnie, continued

I'm going to go ahead and have this person have ... Different style of stroke, and see what happens here. He needs to have a principle diagnosis.

Once again we're seeing this patient show up in the IBP and the denominator. We're also seeing that the person is not showing up in the numerator. We would have expected this patient to show up in the exclusion, someone that would not always be calculated, counted against this measure. This is actually an error in the measure that I loaded, so if you were testing your measure, I would have expected ... This patient I'm just ... [inaudible 00:53:14] Chose the wrong one. I would have expected this person to be an exception, but they were not, so it shows up as a failing measure. This is something that the person using the Measure Authoring Tool can ... Can use the feedback from Bonnie, update the measure within the MAT, create a new export, and then upload that updated file into Bonnie, so I'm going to click update here, I'm going to browse to a sixth measure ... I'll see what happens now.

Male: If you're wondering what happened Dave, you're expecting that patient to just be in the ICP, not exceptions.

Male: Oh yes. Thank you, Andre. You've done this demo a lot more than I have. Originally if I had said that that person was only in the ICP, then they would [turn out as 00:54:34] failing, and then I updated the measure and then it goes into the passing. One of the things that is great about Bonnie, is that you can have a static patient test, which as you make new versions of the measure, you can apply the new measure definitions against your previously created patients, to see how the old patients pass against the new measures, which will be hugely important during future annual releases of these measures. Those are a few features of Bonnie, I'm going to go back to the slide deck, thanks Andre for that catch.

Bonnie was up and running last April. Currently it has around 800 users, but only about a quarter of those have actually actively used Bonnie to create ... For testing measures. There have been ... Those users have loaded upwards of 1500 measures, and they've created 8 and a half thousand patients for the measures. Some of the users generally are involved with the measure authoring process, and there have been a few members of the EHR vendor community that have started to use this for their own testing purposes. One of the great things is being able to create these patients and see how the patients light up the measures, in terms of coverage.

Female: [inaudible 00:56:23]

Male: Yes of course.

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Female: Can you borrow somebody else's patients so to speak? I don't know how you would say that but like, you had a measure and you see another measure in there that would probably fit some of this, could you ... I don't know [crosstalk 00:56:38]

Male: I could show you that, yes you can borrow other people's patients as long as they have set them up to be borrowed, so when we look at a patient here, I can allow someone to borrow my patient by clicking on the share. In doing that ... There's a feature up here, where I can import patients, and this will go into ... I'm sure that's user error, but if I go into the import patients, it'll show me a list of all of the patients that have been allowed to be shared. What it does is it doesn't ... It creates a copy of that patient, so therefore if you were to change that patient, it's not going to affect the other person who had originally created it. You don't need to worry about mucking up someone else's data.

Final notes, Bonnie is an open source project. I mentioned that I'm a developer on the Cypress tool, and I'm an active user of Bonnie, both in the measure review process, as well as creating the patient test [inaudible 00:58:10] for Cypress. Because of that, I have had to make, or I've noted some issues at times with Bonnie, and have committed code updates, which were vetted by the Bonnie team, and including in the Bonnie base line. This is open source, it is open for ... It's available on a tool called GitHub, for anyone to download, and [free 00:58:34] updates too, provided that they are vetted and pulled into the source. There's also a publicly available Bonnie, so I was showing you guys the Bonnie that was resident on my computer, but if you go to bonnie.healthit.gov, that is the public instance of Bonnie, and you will be greeted by the same welcome screen that I showed. Here is the publicly available Bonnie, bonnie.healthit.gov, [inaudible 00:59:09] login for the first time, you'll see kind of a register link, where you can register to become a Bonnie user.

Are there any other questions?

It looks like I got us back on schedule, so once again, another reason why I'm your new best friend.

Female: I think probably the important thing to know about this is just [inaudible 00:59:36] when we are developing the measures [inaudible 00:59:42] because historically, we did everything in the MAT. Threw it out there and hoped for the best, but now that we have Bonnie, we can do that while we are developing the measures, you don't have to wait until you're fully developed and then [inaudible 01:00:01] you can do it while you're developing.

Male: Dave I had a question. So we used the tool a little bit to create patients, and we had to go in after the fact ... It doesn't necessarily create a complete patient for all the measures, is that true? Specifically I think when we were working with the cumulative medication duration, some of the more subtle values ... We had to go in and set them by hand because it just generally created the sections we needed with the general codes we needed, but sometimes there was additional information, or is that not your expectation?

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Bonnie, continued

- Male: Are you referring to fields that are not specified in the measure that would be in a patient file?
- Male: I believe that it should allow you to create any piece of data that is expected to be in a patient [that fulfill a 00:00:08] measure.
- Male: Okay so your expectation is if it's in the measure definition, we should be able to specify it in the Bonnie tool?
- Male: Yes, that is correct and Andre, you can correct me if that's not the case but I believe ...
- Andre: Some things like cumulative medication duration, we used to support where you could just add a cumulative medication duration to a patient and say, if the duration of this was 10 days or 50 days, but we actually got the opposite comments back from a lot of users which cumulative medication duration is not really something that you would add to a patient directly. You would add on a medication, a frequency, and a dose and if it's cumulative medication duration that's actuated ...
- For something like CMD, you have to add frequency and dose in order to have cumulative medication duration calculated. There are some things like that where you have add additional fields in order to get the calculated fields as a measure of evaluating. If you run into problems like that, you can email the Bonnie team and we can help you out with how you represent them.
- Male: Yeah, for CMD, you'll be adding a fulfillment history and the Bonnie is more that [it looks at the history 00:01:25] and calculates how long are the duration ...
- Female: All right, I guess we're on to the VSAC. Can I have control back of the screen?
- Andre: Yes, just a second.
- Debbie: To promote DVT while Judy's getting set up, can everybody stand up? Stand up. Go, blood clots, go. Okay, stretch, stretch. We have a 30 second transition time here, built into the schedule, we are very generous.
- Female: [Crosstalk 00:02:06] creative assessment. Is that ... [crosstalk 00:02:12]
- Speaker 1: Can we use ...
- Female: See that popping ... [crosstalk 00:02:23]
- Debbie: All right, great. [Crosstalk 00:02:27] You can sit back down, we're focusing up front.

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VSAC

Female: All right, thank you, Debbie. [Crosstalk 00:02:36] All right, so our next presenters come from the National Library of Medicine. NLM is one of our very close partners when it comes to the Electronic Clinical Quality Measures. They are the owners of the value set, the owners and the curators of the value set. Today, we have two of our rising stars, or shining stars already, they've risen already, who will walk you through the VSAC.

Again, to pick up on some of the things that have already been talked about and I don't know if you want to start with that question about the relationship of the MAT to the VSAC and why we need that [UMLS 00:03:16] number, because historically, those were two separate applications that we had but we had over time, interfaced both the MAT and the VSAC so you can go into one. You do need the UMLS license and I'll have Dick explain that to you. Okay, thanks.

Dick: Okay, my name is Dick Winn. I'm the brand chief at NLM that is responsible for the development of VSAC as well as a number of other terminologies at NLM. Published, for example, [IX Storm 00:03:49] and SNOMED US edition as well, UMLS. Then just to refresh on the interaction between the MAT and the VSAC, the MAT is you basically use that to create your own measure. Then to support a measure, you have to create all the value set to provide the codes to match with all the patient records that you have. To that end, you have to ... VSAC house a number of code systems that is proprietary.

For example, the CPT for example and CDT, so those are requiring licensing. We do have a broad license with those organizations that you can make use of and to make use of, you need to have a license so that we can [give you 00:04:43] UMS license. You guys can go to the website at NLM and register and usually, the turnaround time is about a day or so just to get access to see those codes and use them. For your own organization to use them, then you have to have separate license with those organizations. Today, if you like for us to run through a brief log into VSAC and all that, let us know. We can do that a little bit later.

What we focus today is basically some of the improvement that has been working in the past, a year or so. Specifically, we want to address the fact that I think Kevin and Julie had been talking about for a number of years since the beginning of the VSAC, is the one piece flow of measure. For example, if you complete a measure, you could like to go through that iterative refinement of that measure by going through Bonnie and Cypress and make sure that everything works. What we did is we created something we call collaboration environment where you actually can throw a value set or any constant, you could see it actually is a content management system that you can invite [me 00:06:06] or any kind of subject matter expert to actually discuss ...

For example, I discussed the value set. You start with the value set because it's where I think we have in the past run into a lot of problems where people pick up codes are invalid or expired or maybe for animals as opposed to for human. We have reached a lot of QA on the fly as you create the value set on VSAC. We get rid of a lot of that for you

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already. However, there's also the context of a measure so that is basically where we would like to invite a broader population of experts to actually talk about what it is that you may have questions about. For example, in the context of measure, and you look at the ... for example an [IDD 00:07:00] value set for example.

Then if you look at a cross code system as well, so those things, at the National Library of Medicine, we try to incorporate a lot of mapping. We do have a lot of mapping across code systems that gradually we bring those onboard for you to use so that you have labs. Eventually, we're dealing with things that require expert knowledge. The collab environment is actually where you can have that forum and therefore you can have, for example the work, you want to have a work flow and each of the developer organization when they develop a measure, they do have a workflow how they know that's a measure. You can have that discussion and capture in that forum within the collab environment that we had developed.

Today, one of my lead development teaching chums is going to go through that, somewhat and then some of the workflow that we have developed. Also, I also have Phillip Chu in the back, he can answer you a number of questions about terminologies. We have developed a lot of terminologies now. We actually will explore some of the API for some of the folks that like to use computer to access terminologies in the CTS through standards. Some of those things, we're going to stick around and if you like to ask questions and details, we gladly would provide it to you on the one on one basis, if you like, on a laptop. With that I want to turn that to [Pishing 00:08:38]. He will go through some of these things with you.

Speaker 1: Okay, I'm [Pishing Chung 00:08:44]. I'm a software developer at VSAC. [Inaudible 00:08:49] today, we prepared this presentation that is for the new exciting new features we intend to probably roll out in the later of this year then after [I hear 00:09:03] for the previous presentation, I think I need to ask the question, how many of you is currently, is actually VSAC users? Good. It's great, we have more than half. Otherwise, probably some of this, whatever that I present here, I make assumption, you already know how to use VSAC. Then that's based on that, so like Duke mentioned about. Then maybe, I probably going to go through this in a high level quick and then maybe we will go back to some basic and do a brief demo of VSAC so at least, we can cover both.

Okay. Now, the first one that ... Let's see ... Let me change my eye glasses. Let's say I'm old. Currently with all the measure development, we already go through three years starting from 2012 all the way up to this year in 2015. The four years, we go through using that VSAC as provided the code system, also provided value set for the measure development. Then in there, most of the time that is that every measure that publish also for the CMS, published page two for example that measure, they published that as a group, the whole package together.

Building that, the VSAC after even though that all the measure authors, also they happen to be value set authors, they actually create all these value set but then they only contemplate on the one measure at a time. Since they're using value set, a lot of times, they using some value set. Basically, it's created by some other measure developer, maybe not necessary to the other manager. Then sometimes in the value

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set, they have two types, currently support VSAC. One is extensional, the other one is grouping value set. In grouping value set, actually you have dependency on someone else. Some extensional, you may have control, you may not have control.

VSAC, continued

The VSAC during our annual prepare for the population process, we actually run QA process and then to basically study all the interdependency. Then also we provided individual value set to study. I used to pick up some certain code, that code is maybe that's a better code you're supposed to use or actually some certain code may be expire already or will be expired by the time that it's when the measure is published. All the other type information, that is the process we go through. Since that is have interdependency, most of our analysis with all that is weak until most of the major development is done.

That is the whole package started. From this year, we think what we can improve on that if we actually with and [inaudible 00:12:13] from the MAT, from the Bonnie, also for Cypress so now we can actually take advantage of all that one and together with the VSAC and the new tools and then we'll probably able to [improvise 00:12:13] a piece, a one measure at a time. Then you can go through a study and authoring and then basically run the testing and then come back and two, using the VSAC collaboration environment and then that holds all the discussion. Then with all that one and you can do, it's a record improvement, you don't need to wait until the last moment and then we do a whole package analysis.

This is that one that is typically currently that is the flow that we have. It's based on the ... It's the whole package but right now, it's to do with one piece, we can do, you're using the authoring, you're using MAT and the VSAC and create a value set and then you can go the [the value set logic 00:13:17] with Cypress or you can go to simulation with Bonnie and so get a result. While we do this one and then basically that is a lot of that currently previously started the whole package, that there is an interdependency and then basically, we make that into a small piece. Then that is less complication there and so all of that, we want to avoid, all the outcome that is avoid although to started to do entire package this way.

Then we can shorten the package, that QA time and currently whenever there's a mistake that or whatever, some certain uncertainty and when we started the whole package, basically we have to actually coordinate with the developers and maybe 90% is perfect but then you've got a couple, they have a problem and you have to go back, go through the iteration again and again. Now, we're going to talk about what the VSAC coming the new improvement there. Basically, we have a four parts. I'm talking about the first one that is we have a new service is VSAC collaboration service and also that we introduce an expansion service improvement.

Currently that is expansion that is we can go through detail but that is more is controlled by VSAC and we like to give the developers have more control how you can fine tune your development. Also that together with collaboration service and also with

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expansion service, this expansion that come with some sort of scheduling there. We can actually provide it in the workflow, improvement and in the way it is, you can instruct VSAC once you put there a value set and you can instruct VSAC, maintain that value set for you in a way that it notify me when there's some certain code that's dropped or some certain system happen or if you have a dependency on some member value set.

When a member value set changed, it notify me. With that type of thing and also a couple of the [UI 00:15:33] improvements and then I can go through briefly with that. First one that we go through the VSAC collaboration. I think Maureen of the VSAC, she already present kind of this one in VSAC user forum. If you haven't heard about VSAC user forum, I encourage you to join that. That is monthly, every Thursday of the month and that is specifically discussing with all the topic related to VSAC. You can get a lot of great information from there. Basically, we need a central place since that value set by itself is only one value set that but the value set have to be using in context.

In here, most of them that we are talking about that is the manager so then you need a place that is so we can provide it, an environment for you to further discussion. [Inaudible 00:16:31] some certain code, if you goes on certain benefit fit into right in middle, is what they are using by a measure but in the meantime, you're using older code out of different terminologies. It sometimes can be a very kind of confusing to pick the correct code out of a code system. Then a lot of things that is you probably need more discussion, you can ask the expert to help you and then you probably want to whatever [inaudible 00:17:00], you're not the only one actually to ask the question.

Then you can have a place and discuss all the related value set and also the usage of the value set. That is why we provided the VSAC collaboration service. These ones, basically, this is the central site for the collaboration. Now, we're talking about what is ... That is a forum, that is a central place to discussion. Each discussion that is as a collaboration gets a site called a collaboration site. Typically, there are three types of collaboration sites and talking about ... one is a discussion specific only for one particular value set or you can discuss a base of a multiple value set.

In multiple so then is someone maybe they want to discuss a special logic that in your measurement development there, okay, so I pick the value set involving into that special logic and then I say, okay, make some sort of package and create a site for me, I can start discuss there. Also post and I may even increase the workflow to monitor the progress of that. Or the other one is actually I want to create a discussion, mainly just for one measure, in that sense that we can help with you that if I say you have an [HQMF 00:18:35] and then you can go to VSAC and say that, based on this HQMF, we had a whole discussion that related and put that into the collaboration.

In general, the flow that is how collaboration work is collaboration in the VSAC are two separate website but they are linked. They shared the same user account. You can directly go to collaboration or you can go to the VSAC. Some certain information that in the VSAC is already existing in the VSAC, we can help you to create a collaboration site like the membership of any of the VSAC user, you have to belong to some certain user group. You are belong to a school group or author group and all that kind of information, or you are a coworker so if you go through the VSAC to create a

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collaboration site and then that old information will enhance and automatically notify all the user.

VSAC, continued

Let's say for example, right now, you are an NLM user group and you belong to a school group and then if you go there and you say, I like to create an NLM collaboration site. Then if you go through the VSAC and then if you're logging with that NLM user group and basically, you create the collaboration site. Automatically, all the user in that group will get notice that here come a NLM collaboration site and then give you the link, directly go to that site. This is for creating the collaborating site and also that is, and for now, it seems the top communication.

If you involving multiple value sets and then ... or sometimes even though the single ones and then you want to get hold of various information to post into the collaboration so based on that, we can do a discussion in that one. Then it would be easier, you can directly go to the VSAC and from the VSAC, you can pick then what is the document, what is the information you want to post in the collaboration for the discussion. This is that in general flow so you only create the collaboration side once. Once that you have that one, that VSAC will remember what that site and what that content and what the membership is.

For now, you just need continuous update of your document if you need discussion and all the discussion and together with the document will be hosted in a collaboration. Once you create that site, you don't need to update any content, all you really want to just continue discussion, you don't go through VSAC, you can directly go to collaboration to post the discussion there. This basically, all the existing VSAC that membership with the school and other group, that will be also maintained in the collaboration part. This is ... I just go through briefly how that ... I just, in here, I'm only going to show you to do it as a single, one value set.

That is how that flow looks like. Then you log into VSAC. After you through, if by now I'm intent to only create one single value set group in the hosting in the collaboration, so I first identify that value set. In here, as the author that you go through the authoring environment in the VSAC and you identify your value set. Once you identify your value set and from there, that right now we will have a new manual, related collaboration there, value so then all you have to do is say I want to create site. Once you said that you create site, that is the site, we'll create it and from there, that I didn't show that here but then all the site link go to directly into site, will show up in this page.

If you want to post a document in the same place, it will post a document about all the information related to this value set at this moment. This is support that increment, it's right here, development and discussion. Anytime that even though you only added let's say that is currently, I create a value set, I'm including 10 code but I'm not sure some of them so then you can create, you can put into two more codes into there but you're in doubt. You say, okay, but I intend to put these two in and then you can actually it goes into there, you post this content into collaboration. In the meantime, you send the discussion invitation to the expert you think and then you say, what do you guys think?

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Should this code be included or not? This is okay ... This is a similar one, it's just more detail. Now, after that, if you want to directly go to collaboration, the collaboration of that and the VSAC, they share the same user log in and then you have ... It's the same log in, if you already log into the VSAC. If you through the VSAC link, you don't need to log in and you would directly been bring into a collaboration site. For any user, they go to a collaboration site, basically in the collaboration, there's a two type of a dashboard. One is a personal dashboard, the other is a site dashboard. What is personal dashboard? That is based on each individual user.

Each individual user, they have their own dashboard and then they can do basically their maintenance and also their management about their personal related information in that personal dashboard. In the personal dash board there, you have a link to all the site dashboard which is you are a member of, you can request a member of any particular site or you can create your own site through a VSAC and so just remember that if most of that, they have a two. One is your personal, the other one is for the collaboration.

Once that is like for example that in here, you can see that, this is the collaboration. This is a site dashboard that we have some deeper template and this is we created, but then the user can customize in here. It's more ... here it's called [it's a dashlet 00:25:39] and then we have six or seven different dashlet, we can put that into here. What it's showing here, that is a Wiki dashlet. Typically that is, with our default behavior there, that is a description that about overall, what is this site about. In here, this is a site that is about one measure.

Then this is showing up that and also that this Wiki part is mainly is announcement for the owner of this site dashboard that is it what they want to use or no. Then we're using this part to make some announcements and then the second part of this content, this is each, historically that all the content and post into this dashboard put into this site and then you can see that you have some people where that is location put and when that is ... all that information. Also that in main part, that you have a discussion. On the forums, it's ready for you, based on each topic and then we have a permission that in here that it depends on the different type of user.

User can be a steward, author collaborator or you just a viewer, just visitor. That is you can create the different types of permissions for each user when you invited them in. Now, oops, is it up a little bit? For each file in here, you can just double click or you can download it or then you can do an inline viewing in each of the documents and then that is actually showing and you also can download your document. Then for the offline viewing.

Mainly, we create that in a spread sheet and with multiple workbook inside there so they are arranged for easy viewing. For that is steward, if you happen to be an owner or in the owner group, you can invite any user that you want then to join your site or ask permission. They can either ask for permission to join in the site or you can invite someone to join the site. Once this site become your member, you actually can assign tasks to them.

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VSAC, continued

Male: Sure. I'm really lost. I've got two questions if you don't mind. My first question is so I understood from earlier presentations so the value set is created in feedback and that's sent over to the MAT?

Speaker 1: Right.

Male: My questions are one, who leases it to make sure it's correct and two, if I'm understanding correctly, VSAC preceded the CMS' ECM stuff. Was VSAC in place before or is it ... I guess I'm trying to understand the place of VSAC.

Speaker 1: For the VSAC, that is right like mentioned is right in the middle that is used by a measure. You start into there as a data element for a part of the measure. The [matter 00:29:30] itself also including a lot of terminology code who consists of the manager itself just a code list. For this code list and then this code list to be a valid code list, you have to put into the correct terminology system so then you're not going to randomly goes into that. We have a code and for expression, you call it XYZ because then that is no predefined clear concept of that code. To using, this code, that is what VSAC provides.

The VSAC, VSAC offering environment, there's no way you can put in any invalid code. All the code is have to be exist into some certain code system. Indirectly, that is VSAC already guarantee you're only using a value, a valid code that is exist into some certain code system. Then the second question to answer that, if you already have a logic and then you define that value set inside your MAT tool and then you put a value set into there but so now you said, this is for diabetics but now, you've got a whole code system in there. Are you actually select correct the code put into your value set to represent you concepts about the value set are put to represent to be in use inside a MAT or inside HQMF, that is a different question.

Then even though you're using a valid code, not necessarily, that code is a good usage in your context. That is a part that actually there's a lot of times, that if you have some expert or someone there you can discuss. You can say, let's represent that idea. Maybe this code is better than the other code. That is how the collaboration come in. Does that answer your question? Also that is I can go through that in the second half ... Let me go through this question, and go through briefly show you how that you can use in VSAC to do an authoring. Okay. Then, we go through this. This is instead of go through this, all that, we have a lot of new features in the collaboration environment so that I can go through the second for the item we're talking about all that extension service.

That is also so this is one part that is true in a collaboration. Right now, I would give you currently for the value set management, that is basic per value set. Then that is right now, we create a facility here. Right now, any store that they can define some certain keyword. Then that keyword can be used for by any value set to associate with that for you to get better management of value set. This is a briefly, basically, a layout to show you how can achieve that and then also here is a ledger to manage that if your

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collaboration ... then even for some steward, they want to basically that they are responsible of five measures.

Then in the meantime they also create, and each measure itself have a 30 value set so that in the end, they want to create 100 value set, collaboration site, how they manage all that and how to have the information floating along so we would create a couple of dashboards at VSAC to let them manage and track it between collaboration and VSAC. Currently, that is still in our development plan but not in a final stage that is how that we like to help the major developer based on HQMF and that they could easily create a collaboration site, using to host the discussion.

Because you can see that, briefly our discussion here, you can engage collaboration in the very early stage. When you just create ... I heard about a couple of questions, if you only create a couple value set to that data, right now, I know I have some sort of idea and then that idea and I know what I'm doing, that's why I asked who codes into my value set. I want to discuss, I want to test to see how that looks like and then I just want to try it. Then I get certain result, I want to see that, I want to host in some certain place. I say okay, so that I made go to Bonnie to test it and get some certain result.

Okay, I'm using this one. I go back into MAT, change my logic. I go to the VSAC, I add a couple more code. I run some certain tests so in the meantime, you can keep on using collaborations to coordinate all your work so that you can set the workflow, you can invite a [inaudible 00:34:45] expert at different times to give you comments. One way, but currently in a VSAC, that is we need some probably that is if there is anybody in here, they have some sort of suggestion that they think what is easy way that actually that can associate with the collaboration and creating some certain HQMF base side ...

Why not in our thinking about we're directly using HQMF, we can do that or we're just open to idea, any other idea would be easier for the user. The second one, that is important one, that is currently with the expansion, we have expansion service improvement coming later this year and currently existing expansion. The briefly that is, for any value set, that is two parts. They have definition and expansion. What that mean is you have a value set consumer. You have a value set provider which is they author the value set. The value set consumer, they're using expansion, that is expanded code list. As a good example, I like to say grouping values itself.

You only list that I have a ... It depends on three other guys. Actually there's no code list in there. Your code list is a forum. You are member value set. In that sense, that is the process to generate that code list is expansion service. In general, consumer using expansion; author, author of the definition. Then there's a process from that moving definition using the code system provided by VSAC to move that into an expansion. Currently existing, we only have two facility. One is package release which is like they called a stage 2, like annual release. That is the NLM run that service and under the instruction of the CMS and then provided and they run the whole package.

That is [we found out 00:36:58] which code system versions to use and then which legacy code you can use in all that [inaudible 00:37:02] and what kinds of QA. What is the special warning that NLM that we can pinpoint what the problem. That is one. That

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is manually that VSAC can perform. Then the other one is whenever you analyze and if you create your author of definition and the VSAC will automatically expand that for you and then whenever there's a new code system version show up in the VSAC, we will expand that for you. That is all controlled by VSAC.

VSAC, continued

We want actually to give this one to the steward, to the author. They don't control how they want that expansion got created. Other than the other two parts, we're still going to continue providing the service but right now, [as long as you know 00:37:52] that there's someone who wants to maybe during their development process and during that you want some better coordination with Bonnie or like ... I heard someone mention but if the code is not there, and once they're going to do that, you can use [inaudible 00:38:06] or you actually can create some certain expansion just for yourself. Right now in Bonnie, maybe [inaudible 00:38:12] can assume that.

In here, that is the good thing about this one, they would want to give the control to the users. Then we have a different way to do that, you can specify how the schedule you want to get that and there's a schedule that can be one hand schedule, just one thing. I just want to try that out or it's a formal or it's a recurring event or is it event driven. Like I mentioned by event driven because you have a new code system or it's because that you are dependent, that is it changes and then just give me that one and then you can specify whatever that expansion goes to or the information you can say that I want to put that into public repository.

I want everybody to take a look or I want just put into collaboration and only I select the user in my group that can do it and I will invite them. Then also that you can document all that in a collaboration site then all your discussions. I'm not going to go to ... Okay, six minutes, that this is the two new important features and then I'm just going to probably stop here and then briefly go to a VSAC to actually show you how the authoring work. You go through the VSAC, first, you need to here in main page, there's a lot of help. You can go to help here and it give you a definition, all the background, all the different work flow that is involving into ...

I just mentioned about that in here. You don't need a user account to get that. You can get into the help. Click that, you would get all kinds of help. Oops. That's related all the VSAC. If you need to find then if you want to using a VSAC then you need to sign in and then you need to following instruction. From the help there, it would tell you how to get your account with VSAC. I just changed my password. There's two main parts that I can ... One is the search value set and the other one is authoring. This authoring tab will show up depends on which group, if you are in the authoring group, you would see this tab.

If you are only set up as a consumer, basically you want to find a value set to use, you're not going to see this authoring tab. You're only going to see this search value set. In here, you have all the different ways to search your value set. Your value set, you can search by the CMS number. That is where it basically show you all the value set that is

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used by the CMS like a 100V4 or you can do if you want to use, you can do a CMS. In here, I want these three, I want to see what the previous version looks like, then you can go through the different search. It could be in different value set but in here, that's exactly the same.

You can get into the detail, go to a value set in here. It show you, this here is expanded code list and give you all the metadata and if I go on into that in here, it's some measure that is used this value set. This is [the grouping 00:42:05] value set, that is the code from these three value set. This is a member of that one so you can go into here individually. Or if you interest in particular code and then you can see that is what's this code, it's being used but in general, that is in here, this one is SNOMED CT code so you are using this one. It give you all the hierarchy and then you can go to the parent ...

Let me see, you can get all the detail about the tree, the hierarchy and how that is ... that about this code and what are all the neighbor and what is the sibling and who's the parent, the children? This one is the [inaudible 00:42:52]. Those kinds of information and the people in turn that involving. Speaking of one code into a particular value set, also you have lot of effort, that is you need to study [a lot 00:43:06]. That's why I mentioned about that. It's not just a typical search that you're typing and say [inaudible 00:43:11] tech, you get a code and then put that in. It's going to need a little bit more effort than that.

This is for to find it ... so you have all the different way in here and under the search tab to find existing values that you can use. During your MAT authoring you can go here, type in your query in here so I'm interesting to heart. It give you all the value set that ... Oh, I'm in the wrong place. That is in there, so I could have the filter. I need to clear the filter. Now, it show up that it show me all that value set related to heart. That is the way that is. You can put into more that is to filter that is when you search. Okay, I want to do a heart [and foot 00:44:10]. We're going to see if we actually have that. We do have a couple that are related to both.

If we search that whole space including the metadata, the value set name, also including all the codes used inside the value set and then to give you that information. This is consumer, you want to do that. If you didn't find any value set that in here that is suit your measure and then it doesn't fit your need, then you can author your own value set. You go authoring your own value set, if you have that permission and then you would have that in here after the tab here. All the value set that in here depends on which that if you are the author or if you are the steward will show up under your my value set area here.

This is all the value set that I work with so then it gives you some certain data in here. The status which is right now still, we still work on this one. We haven't finalized that. In the value set here, then let's say that I just assume I'm going to create a new value there. Here I'm going to create a new value set. I put this name and then if you happen to be with the multiple stewards then you have to identify which steward group is this one. Because the steward group is the one going to be responsible for this value set. Then some author maybe work with multiple stewards and then I assign myself to all

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the steward groups so that's why you see all that there but typically you wouldn't. You probably only have one.

VSAC, continued

In here, for any value set, the first important part that is you have to identify which code system you want to use. In here, I want to using SNOMED CT. In here, SNOMED CT, if I don't know anything or I just do a search and then give me all the code. Here is all the valid SNOMED CT code. Sometimes you even want to view some value set maybe using some historical code, you may, also including invalid code. This is a valid code. It's [O-F Off 00:46:33] SNOMED CT 20015 03 version, the US edition, that is the valid code based on the SNOMED CT that you should use.

Then you can just pick whatever. That is the code. You can just study the code. This is the similar screen. That is one and give you all the detail, all the contact about this code. Then you just select that and then you just F2 and then you got these two codes. Here is to show your logical statement. Basically, you are showing they are logically, conceptually, I think my value set involve ... should looks like so then you are defining your concept in here and with the help of the code system. I'm one minute over.

Female: I have a question.

Speaker 1: Sure.

Female: When terminologies are updated, is the act of replacing outdated terminology of codes with the new code is that a manual process or is there some type of automation that you've built in that to allow for that ... [crosstalk 00:47:52]

Speaker 1: Right, so the VSAC, currently, that is whenever we try to keep up, whenever there's a new code system published on the source, we will within a relatively short time put that into the VSAC. Typically, we do that [for maximum 00:48:07] it's monthly, whenever they have that within a week or within two weeks, we will put into a VSAC. It will be also true for SNOMED CT or LOINC and all that. Totally, the code system, we support what's in here. Whenever there's a new code system come up into here and then let's say that is, this is your existing definition then you already have that.

Let me first take these ones. When the new code system come up into here at the VSAC that you could actually do a trial expansion in here. Let's say that based on this new code system in here, that one that's to validate ... previously that your version is last year, 2014 09 and then here's the new code system come in. You can use this new code system here, you want to validate. Immediately, it tell you if everything is still good. If it's not actually that it's here, I have to pick something but then if you have something there that is become retired or invalid that if that happens, SNOMED CT give you a way to say that.

Okay, because why I would have this code and I basically split this code into a three more concept. In here, we will show that is here that is that you can actually from here,

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you can click there. We bring you to another page to show you this code. Actually right now being split into three codes so that it help you to determine but if we cannot divide that in here, say that what exactly this one code, let's split into three codes, that three code is exactly matched into your originally concept.

We do provide information for you to better manage this situation. Maybe you say okay, I need only two of them that represented one, just previously that description about that is not specific enough but with this new version of a SNOMED CT, actually right now, if that express that in ... only I need is two code. Then the other part, I don't need any more. Yes?

Female: Say, you've got the value set like owner and then you've got someone using it. Would the value set owner do this updating it and then if you're using it, it will just update automatically or can you use the value set, you independently have to go in and check this and update?

Speaker 1: No, there's two ways that they answer that. If one, a value set is published, fit into there, they have an expansion version. When you're using it, you specify this specific version. Then it can never change because that is a part of the VSAC [continuity 00:51:05] guarantee you that first version, if you request that code, it always give exactly that one, it never change. Or you have another option, you can say, I trust the owner of that one. Whenever there's a new version of that one, automatically using the new one.

Implementation Testing

Female: Anymore questions? Great, thank you, Richard. [Crosstalk 00:51:37]. Okay, thanks. All right, I know it getting close to lunch and you've all been sitting here and absorbing a lot of information. There's just one little piece. Again, we are available for questions during or after or even after you all get back to your office and absorb and process some of this information. What I want to talk about is implementation testing. From one of the questions this morning, we already touched a little bit on this. Through our process for electronic clinical quality measures, you know we admittedly, CMS was a little bit in the siloes, doing what we do and then what we did is because we realized through feedback that there were a lot of issues with our measures.

I'll talk a little bit about it later but what we did is we took advantage of adopting the lean methodology. By doing so, what that means it that we involved our external stakeholders in helping us in our continuous process improvements for our eCQM development. One of the things that was made very clear to us is that we really need to do a lot of rigorous testing prior to implementing them, prior to even putting them in the CMS quality program. That's what I want to talk about a little bit today is just again, how we can better that process. Why is it important?

It's to ensure that providers can utilize the eCQMs in the delivery of quality safe care. What we want is we want them to use it. That's why we are developing them, that's

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why we are putting them in our quality programs, that's why we are incentivizing them. At the same time, we also heard that utilizing our eCQMs or even just any of our clinical quality measures does add to provide a burden. You want to minimize that because the way like our stage two measures went out, they just went out. We didn't really put a lot of rigorous testing to them and so we're a little bit backtracking on fixing some of those.

We want to decrease the provider burden not just for utilizing the measures but as well as for reporting them to CMS. Of course, the biggest thing right now is to get good quality data so that is by doing this implementation testing, we will consistently get the same results and also that there won't be a lot of tweaking, officially manual tweaking to the specifications. What is it exactly? What we do is we would ... The measure developers during the measure development process would give the measures back to a vendor and what we're looking for are vendors who consume the XML, the machine readable specifications electronically.

We found out through some of our conversations that probably a majority of the vendors in this country right now are hard coding the specs into their products and so that really number one, of course introduces a lot of errors when we're trying to implement those measures and number two, takes up a lot of time. During stage two, we have the annual update requirement which means that we can update our measures as long as it isn't changed in terms of the measures but as you've already heard officially like with the value sets, those are updated on at least a yearly basis.

We have to stay in step with the most current versions of value set and data elements. In hard coding, they require 18 months. That doesn't even mathematically figure in our annual update. We are trying to encourage that to consume the specifications electronically. What implementation testing will do is it will simulate what that eCQM is going to look like in a preproduction environment so we're not pushing it out as live yet because we want to see what results it will yield through the testing.

We want to also make sure and again, this is that transition from like a paper or claim measure to an eCQM is again with paper claim, you can manually write, when it says, gender of the patient, you can use male M, female F. With our eCQMs, we have only one way of expressing gender. We want to make sure that through this testing that vendors and providers don't arbitrarily pick what they think needs to go in those measure specs and that's how come HQMF is our little box, that's our standardization. Because at health IT, that's what it's all about. We want to make sure that the intent of the measure stays as well through this testing process.

Then of course, facilitating the consistent and accurate implementation of the eCQM. How is it done? Again, we're collaborating with vendors and providers to give them the test cases that we've produced in Bonnie as well as even just the simple fact of whether that data element, it doesn't even have to be the whole measure at this point but even if that data element exists in an EHR product because sometimes our measures are what we call ahead of the curve and this is not a standardize data element that's currently being collected in an EHR.

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Implementation Testing, continued

It's not even in the EHR. Then again, they're very critical, of course, to the measure and then we give them the HQMF code to make sure it's readable and again, preferably that they consume it electronically. Capture of data is again what is needed so that like for certification, capture and collection and calculation of the data and then correct identification of measure population so we want to make sure that we're capturing the right people in the denominator and your enumerator. When is it performed? Testing is iterative. We have our mantra now is test early and often.

Then again, it depends on what part of the measure development we're talking about. This is again in addition to the reliability, feasibility and validity testing that we do. We have the same step with industry standards and so this is where for those of you who have already developed an eCQM and you think it's all good to go but if it's not in the HQMF of our 2.1 version, we will have to have you flip it to that version. Because then when we push it out for whatever program unit, it's going to be then it's instep with all the other measures that are in the CMS quality programs.

Again, the goal is to do this before including it in the CMS quality program because it may look great on paper but if it's really not impenetrable, we're going to have to cut our losses. We would want to do that prior to putting it out the program. This is just a little bit of a schematic on the different types of testing like we have already talked about. For Bonnie, again, it's the test driven development while you are developing the measure. The measure property testing that is like what NQS looks for. What's in our blueprint and then the ... That includes like the alpha and the beta testing and then the third piece is the implementation testing.

We are really like I said, ramping it up as far as how rigorous you test these measures. As I had mentioned earlier, we adopted the lean methodology in our continuous quality improvement process and we have major events which are weeklong events. We've had three so far and this testing piece has always kind of been one of the ones that we have never been successful at. We talk about it, we put groups together about it but it's for some reason, it just cannot get off the ground. It's huge, it's critical again to the success, not just for CMS, but for providers as well.

This time around, we built a national testing collaborative and again, it is made up of not just CMS but of our external partners and stakeholders. We're talking about major developers, providers and vendors as well. What we want to do is to build a rolodex so this would be across the country.

Speaker 1: ... so that when we're developing a diabetes measure, and we know provider X in Michigan, who's an integrated delivery system, can help us test this, we will then again consume the records electronically and show us, like I said, in a sandbox environment. Then we can make those changes to the measures as we approach to making them final. Again, this is going to happen anytime during the development process.

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Again, for those of you who are coming onboard with us as far as there are measures, know that you're not alone in this. It's a daunting task even for us. Again, it's really kind of like baby steps that we're taking right now. Hopefully, eventually, one day you'll get a complete ...

So far our experience has been we have worked with one, well actually one vendor in the National Patient Center Clinical Research Network to help us with this because Epic does consume the electronic specs electronically. They inspect electronically and so that we can do real time and a real life testing with them. Then the P-core net is again, has the same goals as we do as far as their measures go, and so they have offered to help us pass them.

Those are the kinds of groups that we are looking at whether it's a group like P-Core or whether it's integrated delivery system. One of our members, actually our provider members in the NTC, in the National Testing Collaborate, are Virginia Mason which is an integrated delivery system as well as LSU, Louisiana State University.

We try and test a big mass because again, depending on measures that we want to test, we obviously won't give like actually the hospital of specialty surgery was just at the knee, I mean they're probably, [inaudible 00:02:15] we're not going to give them the diabetes measures to test. That doesn't even make sense. We try and leverage what's already out there without having to reinvent anything, as far as them to help us to test.

That is it if anybody has any questions. You're already to just run out of the building and go to lunch. You actually have a few minutes more. Again, feel free to stop any of us during lunch or after lunch and we'll be happy to answer your questions. Any questions from the phone or are you all muted?

Speaker 2: I believe Steven Emerick had a question. I don't know if he still had that. He should be unmuted.

Speaker 3: Hey Steve. Are you there?

Steve: Can you hear me?

Speaker 2: Very quietly Steven.

Steve: Is that better?

Speaker 3: Yup.

Speaker 2: Yeah. Oh, now there's an echo.

Steve: Right, yeah, just to go back to the portion on VSAC when [Fishing 00:03:36] was presenting on looking at what happens when code systems update. VSAC doesn't really have a policing role much beyond making sure that there are not invalid codes in the value sets.

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The whole point of the VSAC collaboration is so that, especially while these things are in development, the value set geeks have a place to hash things out and make sure this code is the right one for this particular use. I just wanted to add that point. I'm sorry that I couldn't get my mike to work in time to do that earlier.

Implementation Testing, continued

- Cindy: Great, thank you. Anybody else, any questions?
- Speaker 4: I had a question about the Bonnie tool. Which version of the HL7 implementation guide is it set to and is there a way to choose different versions? We're stepping up to at least 3 in 2016 and this early schedule for when that would be available and just what combined with for that?
- Tim: For the HTMS?
- Speaker 4: Not HTMS, the HI7 implementation guide for security and 1.
- Tim: [Client 00:05:06] does not actually export or import QRDA 1.
- Speaker 4: Actually the Bonnie tool exports QRDA 1. That's what the pages are then.
- Tim: Yes, there's an export feature. I believe it's R3.
- Speaker 2: The new update is going to align to R3. The current version is the previous R3.
- Speaker 4: Actually we had a problem with previous version with the R2 for the 2014 submission but not for the 2015 submission [crosstalk 00:05:35].
- Tim: Hunter is on the line. He might be able to answer the different version of that.
- Speaker 4: Actually, the expectation is it's going to be 7XR3. Is there a schedule for that and when that's going to happen? Will it be selectable because we will need support for [crosstalk 00:05:52].
- Speaker 2: The R3 version is the current one [inaudible 00:05:57]. He uses it to test with 2015 minor updates. What's coming on the next Bonnie release is the QDM or [RD2 00:06:04] updates. We'll need to [relate the 00:06:07] update the [inaudible 00:06:09] 2015.
- Speaker 4: Actually I'm not sure.
- Speaker 2: It sounds like it would be very helpful if Bonnie had better information about the [birch name 00:06:19].
- Speaker 4: Actually that would be more ...
- Speaker 2: I can take that feedback and [crosstalk 00:06:24].

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- Speaker 4: Actually it would potentially be nice if they were selectable because with the 2016 coming up, we're going to be needing support for 2016, but we currently are working with 2015 submission period. It would be nice to be able to [inaudible 00:06:42] if you could take it.
- Speaker 2: Andre, I don't know if you were able to speak to that right now or if we should get back to everyone.
- Speaker 5: Hi, Andre's not on the line right now. I will bring the question to him over lunch and see if he can bring an answer when we get back.
- Speaker 2: I apologize for confusing you. The current line of spaces, the RT QRDA implementation guide to date.
- Speaker 4: Okay, thanks.
- Tim: There will be future editions in the 2016 refresher level. These are the film operator and the new measures. Just a good way to capture some of these suggestions on featured, why don't you go to ... Are you going to go Jira site?
- Speaker 4: Yeah.
- Tim: If we went to the Bonnie Jira site and put in a ticket for that feature. I'm sure it will be on their agenda for things or for capabilities that they may be available in future versions.
- Speaker 4: Thank you.
- Cindy: I've been working with JT and Kathy in the standard and tool lead work group. We are mapping out the timeline for the next 12 months or so of the various standards and tools that we use in relation to what ...
- We have the Bonnie tool in there and will add some clarification about the version and the standard so that we can make sure that that's [for you 00:08:13]. Also I think the suggestion of understanding what version of Bonnie works with what measures is also important and on more than one version. It's more than one version available. I think we have 2 things that we could do to help clarify that.
- Speaker 7: I didn't hear it mentioned earlier but I thought you might have mentioned a couple of the different meetings we had to manage the [IM 00:08:45] group.
- Margaret: We'll provide all the information. The question was the different meetings that we have where measure developers, such as yourself, would be involved in this. I just want to make clear we do have a couple of public-facing ones. We do have what we call a closed governance call. The public-facing ones, and some of you might have heard, are the E-mig, where we do talk a little bit more, as the name applies, it's actually the electronic measures issues group.

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Implementation Testing, continued

This is where those that have questions about the things that were raised by Chris on QDM so more about the technical specs on that. That's public-facing. Again, you know we'll provide you the information on that. The close governance call right now is limited only to the federal agencies, so CMS, ONC, NLM, I forget the name, and our respective contractors our respective measure developer contractors.

What we do is we work through these measures. There's going to come a time where a lot of what we talk about is actually rule sensitive as we are writing rules. We have to talk about measures that will be in future years which is not yet for public consumption. We limit those then to those, again, who are directly working with us, the ECQM for the CMS quality program.

For those of you who are not, or who are developing [intitulum 00:10:36], but are not CMS contractors, like I said that's one of the reasons why you are invited here today is because you have submitted measures that we're considering. We would like to get you onboard that close governance group as soon as we possibly can. We just have to check the timing on that. Again, we have to walk that really fine line. This is the reason why.

This is orientation as well is to bring you all up to speed so that when you do join that governance group, that you're not running screaming from the building, because it does get ... We are in the weeds on those calls. We wanted to provide that. We will let you know when you can start joining that call. Of course the e-mig ... Is there another public-facing one we have or the QDM user group that Chris had also mentioned earlier?

Cindy: Okay, I think in order to understand the afternoon's presentations that [Katie Wolfe 00:11:36] and [Rick Eimer 00:11:38] will be joining on in QRDA. Which is still how do we take all the information from the measures certification and send to CMS and that CMS will be able to receive it in the proper format. It's very complex. It involves all the QRDA quality reporting documents architecture standards.

That's what the afternoon session will bring. I know you're all very excited about that. Feel free to go out half-an-hour. We'll see you back here at 1:00. Again, if you go out of Mitre and go out of Rolling Road, take a right, and go a couple blocks, you'll be at the shopping center with a variety of places. If you go straight on [crosstalk 00:12:28] you'll run into a Subway. [crosstalk 00:12:31]

-LUNCH BREAK-

Speaker 7: [inaudible 00:13:52] are you a measure development?

Cindy: No.

Speaker 7: Okay, I just wanted to be clear about it, because measure developers don't do that [crosstalk 00:13:57].

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- Cindy: Does anybody else on the phone have anything to add to what Margaret and I inferred about testing? Jan are you on? Do you have anything else besides what I said?
- Jan: I am, but I can barely hear. I didn't here if there was a follow-up question to what you said Margaret. I apologize.
- Margaret: No, they just want to be sure what I said was accurate.
- Speaker 7: Oh, that's fine. [crosstalk 00:14:33].
- Jan: I think it sounded fine, yes.
- Margaret: If you just had anything to add.
- Jan: I just want to clarify because I know we're losing the story with this, that does not check or validate the actual content of what, from the patient's records that's in there.
- Margaret: [crosstalk 00:14:53]. What I seen that those checked at that point are going through the measure and sending back errors. We had basically, when you submit to CMS, you get a notification that we received your file, then we get another notification or error message if it error-ed out base on this [FEMA trumble 00:15:20]. Then you get another message based on what your calculation results are that you can retrieve a report.
- Jan: What I would add, or how I would say that, Margaret is what Margaret described initially was the validation aspects. We do go through multiple layers, so to speak, of validation. I think then what comes after that, and we kind of look at it as 2 separate pieces, is the actual measure's engine. That's the piece that actually goes through and pulls out the clinical data and evaluates it against the logic and the measure. It's kind of 2 pieces of processing that we do.
- Cindy: I didn't quite bring out the measures engine out as well. I didn't know how technical to get with this group. Our measure's engine does the actual clinical content validation and calculations that's able or sends back error messages if it can.
- Speaker 4: I work on the deck contract and specifically for period A1, and the validation we do it. I just want to be careful with, the [SUBT 00:16:31] tool it doesn't do measures validation. It [crosstalk 00:16:39] ... Since it's currently at 1, there is a single patient. There is very little specific measure validation that it can do. What it does is it'll validate co-system value sets that you provide were consistent.
- All it checks is that the values that you provided was incorrect to the end category. It doesn't say, "Is that the correct value set for a specific measure?" Because the QRDA 1 could be for multiple measures. You're not exactly sure which measure that section was being submitted for.
- Tim: It's in the second format, not content, the [SUBT 00:17:17].

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-LUNCH BREAK, continued-

- Speaker 4: Actually it checks content when you say not content, it checks if the code is in the value set that is provided and it checks the value set.
- Tim: [crosstalk 00:17:27] data from it.
- Margaret: Okay, so it does [crosstalk 00:17:30] calculation.
- Tim: I'm talking about [SUBT tool 00:17:33].
- Margaret: [SUBT tool 00:17:33].
- Cindy: There's 2 different tools, so the checking and may be different format verses some content.
- Speaker 4: Actually the [SUBT 00:17:42] tool checks the code that was provided, is in the value set that was provided. It validates that the value set was in correct to the end [count 00:17:51].
- Cindy: The hospital reporting testing system actually runs against our production system. It just flags it if the testing is from a different database. You're actually rounding the same algorithms you would if you were submitting them for production.
- Margaret: It's not going to go back to the electronic health records and see whether it was pulled from the correct spot.
- Cindy: You mean from the hospital?
- Margaret: Yes.
- Cindy: I'm not sure how we could do that.
- Margaret: I think that's the question that [crosstalk 00:18:22] was asking.
- Cindy: Yeah, I know, I mean we don't have access to the hospital system. [inaudible 00:18:27] this location now.
- Speaker 7: No, right we don't. We actually make a copy. We have to actually send a copy of their paper chart. We don't accept it. We validate it. We ask [crosstalk 00:18:37] ...
- Cindy: For [a home 00:18:37]?
- Speaker 7: For the chart, on the chart we [crosstalk 00:18:40] ...
- Cindy: No we have sample. We don't do that with a sample. That's what you use it as.

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- Speaker 7: Well for a program it's 500 hospitals out of 3300 that have to submit their measures.
- Speaker 4: Yeah, It's just a sample.
- Speaker 7: They'll submit their entire outpatient records. Then our independent abstractors will abstract for the measure and compare to what faces it.
- Cindy: That's a different ... That's validation post-submission, right? Is the way I'm looking at that. That's a different validation process that adheres and has been involved with the feedback. That's been the stuff that the NCNB here has been working on.
- Speaker 7: Yeah, I think you're absolutely right.
- Cindy: That's the validation [crosstalk 00:19:24].
- Speaker 7: However you validate it, the [states 00:19:28] are giving us a perfect [response 00:19:30], but how to reach [inaudible 00:19:31].
- Cindy: Yeah, I guess the question is there a way to validate the submission after healthcare actually submits them.
- Speaker 7: That I've heard through the whatever, I'm not supposed to say the word audit, but [crosstalk 00:19:51]. Whenever they're checking of the data that's submitted, so there is a sampling of auditing that occurs, [crosstalk 00:20:05] for review ...
- Tim: Do you want to explain that or not?
- Speaker 7: Sure, [Teddy gave up 00:20:12]. That is we cannot test that the value that we sent is accurate. We can't say that the admission discharge dates were accurate and maybe the patient was really admitted a week sooner unless it's done at that review time.
- We can only check the items that were mentioned in the [ballots 00:20:39]. The formats, the calculations, the value sets, the voids, the linking to what was in the e-spec things like that. There's really 2 levels of validation of the day they do it once submitted versus what we do in the chart. Tim can read briefly to the review of the chart data. Stand up so everybody can hear.
- Tim: Sure. Chart data goes to a small sampling based on the submission period. It happens in the year after submission. If you submitted in 2014, 2015 your data is going to get run through the program. The programs are going to say right now you have 5 submissions up for provider's company.
- Speaker 7: These are EP's right?
- Tim: This is for EP, right. For folks that don't understand the system of CMX, we call them providers who are in [quality land 00:21:39]. We go to other parts of CMX and they

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won't call them providers. We call them hospitals. In other parts they call them [features 00:21:49].

-LUNCH BREAK, continued-

The same thing, different title. I'm talking about providers because they're EPs, multiple providers, when they submit their data into the engine so it can run which is what was just described, the year after it's done, you can check against what was submitted and say, "Here's the Bell curve," and tell the 5% on the high or low end why.

That gets turned over for verification because you're an outlier. Does that make sense to everybody? If you're going to get audited you're . Why you're an outlier. Why you're an outlier could be there's something wrong with your chart. The chart didn't communicate well with the data, with the files that was sent, flew over to TMS. It could have been any of those things. It could have been you had fat thumbs.

It could have been you hit the wrong button on the EHR, so you put male instead of female. It's a female measure. The list goes on and on. It gets horribly complicated because we're dealing with multiple submission text and multiple measures with multiple versions of metrics. You have lots of different claims in the air. I'm going to check your flight plan annular at the year list a year later. Enough said, does that make sense?

Margaret: Now we're here for the enterprise, but I don't work on these [crosstalk 00:23:17].

Tim: The hospital checks very differently than ED. Right now it's not an audit, audit, so it's verification. If you want to talk to anybody that works in the Center for Organized [Integrity 00:23:28], the Office for the Instructor General, or the ICI. [inaudible 00:23:32].

Cindy: Thank you Tim, questions?

Jan: Is that actually, I wonder if does this auditing have repercussions?

Speaker 7: You didn't hear that word did you?

Jan: Okay.

Speaker 7: Could a review have a repercussion? Why it certainly could. I would imagine. Again, I'm not the expert on that.

Tim: The answer is yes, the repercussions are I would say threefold. One it could be there are problems with the measure. What you have in the air isn't flying very well. You need to mod it. It could be that the systems that we're talking to aren't doing very good on their data management. They're compiling data and submitting to us whenever MC does that. They need to fix themselves. Number 3 it could be that we, as in CMS, what we have built, isn't what you are landing.

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Then the question is where is the gap? You'll get that on the what we want versus what is being submitted. You always have that cycle. Things will change. We're updating. Our systems updating as fast as CMS is updating. The big systems are. Our little systems that have the same size claims out there that Epic can float, are they doing the same? No, they don't have the budget. How do we do that? Those things are always in the air.

Speaker 7: Just like systems level quality.

Tim: For the most part. We haven't got to the audit piece where we're going to point out somebody and go after them. Eventually the answer would be yes.

Cindy: Which questions will be dependent on where that program has set up, so depending on, whatever, there's multiple scenarios and multiple [conundrum 00:25:22]?

Speaker 10: All right, I think we've been cleared for landing.

Cindy: Cleared for a landing.

QRDA Basics

Speaker 10: This is probably what happens when [games 00:25:34] in the building more. It's like when the [airs out 00:25:37] all hurry up. All right, how do you actually create a QRDA 1? I think now is probably a good time because the question that I see is somewhat related. In an e-measure, ECQM, you saw this list of all the QDM data elements that were actually asked for or listed in that e-measure.

Each of those, what are the steps to actually putting those into a QRDA 1? From all the list of those data elements in a system, and this again, hypothetical, it doesn't mean all systems work this way, but they could, so you would take basically the data elements that are provided. Identify all of them in all the measures that you are looking at.

Go to basically try to find these data elements in a patient's chart. How do you do that? You have those value sets and those value sets have codes. Essentially what you're doing is basically trying to find those codes in patients' charts. This basically step is a little more generic in the sense like you don't necessarily look for the codes at the second step, in the second level, but you do that in the third one.

In the second one you just say, okay, let's say that what I'm looking for is laboratory results performed HDL whatever that one was. What I would first do is okay, I know it's lab test, so I would basically try to find all the lab tests for this station. That's what the QRDA spec calls scooping.

I scoop all the lab tests from this patient's chart. Then I filter based on the HDL codes only. This is called filtering. That's the third step. Once I am done with this step, right now I have basically all the lab tests for HDL only, and then I put both into my QRDA

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spec for this patient. Then I repeat for basically all the quality data elements that I have. The second step is scooping.

The third step entering. Put it in the QRDA, repeat. Some of the words that I just used, the first one scoop, and filter basically you understand now, you take all the, let's say, medications and you only filter down to let's say aspirin. Let's scoop and filter. Smoking gun is basically this concept that you only put positive evidence in a patient's chart.

If you didn't find anything in the patient's chart, that's considered as, even though it's a [con 6, 3 00:28:20], it's considered a negative result, so you won't put ... If you won't find something that's considered as this patients out, not, no evidence of information is basically equal to him absent or absent of this patient from the QRDA in the end. Now we actually have an example of an actual measure and how that would translate to a QRDA.

At the top in the grey is just a snippet of this measure, CMS 185. At the bottom is the QRDA 1 for this measure. Let's see how you would actually get through it. The steps sort of remain the same. You have your e-measure logic. This is all of it. We are initial, population, denominator, numerator, enumerator, tells you exactly how to do construct the populations and then all the data elements.

Let's say that your patient actually qualifies for the ITP. That means that I'm going to be making a QRDA 1 for this patient. Here's the, in the same measure, as you scroll down, you find the data elements that are requested in the C measure. These are all of them. It's not necessary that you actually find all of this.

In fact I would find it spectacular if you find all of these. That's not how it should work. You should technically only find a few of these. That should qualify your patient for this measure. Let's say I found these. For these I would basically then go to my QRDA mapping table. It says, "Hey, these are the data elements that this measure asks for. How do I report these?" I'll go to your implementation guide.

In the appendix you have that mapping table which tells you for this data element use this template. For this data element use that template. Coincidentally 4 of the data elements that I listed are here are all diagnosis active which means that the template for all those 4 is going to be the same, diagnosis active. There's one which is encounter perform. I have the template, QRDA template called encounter perform. I use that.

I'll scoop all of those. This is what I found. I scoop all of those into my QRDA patient data section. Actually that's [inaudible 00:30:52] should say patient data. Once I've done that I can fill in the rest of the meta data for the patients. I have basically a completed QRDA 1 for this patient for this measure. You would repeat that again for any other measures that you would remain. In this example there's only 1.

Then we come to QRDA 3. Before I go there are there any questions about QRDA 1? All right, either I'm really good or I'm really bad. Either you guys have understood everything, or you understood nothing. All right, I'm hoping it's simple.

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QRDA Basics, continued

- Speaker 7: We have a question.
- Cindy: Is there any indication where in the EHR this thing should be done?
- Speaker 10: That's a very good question. No, the guide doesn't tell you any of that. A lot of times what happens is that the practical application, the data can be found in different locations. You would know that as a provider or as a hospital, you would know in our EHR where do we store medications or in our EHR where is this data element actually found? Sometimes it happens that it's actually found in more than one location. It definitely happens. That sort of mapping is something that the implementation guide doesn't really go into.
- Cindy: That is the responsibility then of a sender.
- Speaker 10: Yeah, it's correct, yes.
- Jan: Cindy, to your point, in the beginning, in the beginning, [MU 1 00:32:33] and when we talked about that, that issue came up, the response was that we at CMS in effect should not be that descriptive because the location varies by the EHR. They wanted that left up to each individual EHR. We would just note all of the values test, the codes, and the exact description of what we were looking for.
- Cindy: To tie this to what [Kamet 00:33:05] said earlier about implementation testing, this is an important piece. We have to make sure that we're identifying the right places for [inaudible 00:33:15].
- Jan: Right, and that's the EHR and the vendor and the [inaudible 00:33:22] is confident that what we pull really reflects what the measures said before. The testing occurs at all those different levels.
- Speaker 10: In the QDM years ago we actually do have questions like this. There is changes that happened to the QDM, and Chris correct me if I'm wrong here, there's changes that happened to the QDM because the vendors come back and say, "Even though the QDM really says this, this is actually not how it works in the real world." That actually happened with diagnosis. Right, that was the reason for the change?
- Chris: Sure, yeah, the QDM community is comprised of vendors. It's also comprised of measure authors, and stewards, and other people in the industry. Certainly a lot of the great feedback we've received has been from vendors who have just guided us in a direction that will be more successful. At the same time we do try to walk that line where we don't want to just be happy with the way things are today. We also do want to push for the more ideal case. If vendors come back and say, "No, we don't [sell past 00:34:36] for this data today."

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We try to determine well is that something that we should set back on and say, "Okay, we're not going to capture that in CDM or is that something where we believe that actually if vendors did start capturing that, it would actually improve the quality of care." We'd say we'd worked with CMS or whoever and say, "Okay, we're told that this isn't going to work well in measures, but do you think maybe we should push on vendors to start recording capturing this data?"

Speaker 10: That's actually one of the bigger issues with creating ECQ vendors is that not you can take any measure and make it an ECQM. It's not always easy to figure out. What we can, as human beings, by looking at patient's chart. It's not actually easy for a machine to make those same decisions. One of the bigger, I would say probably the biggest challenge with making all of this electronic.

Chris: As Debbie mentioned. It's actually very intentional in the QDM that we don't talk about where the data should come from because for one thing we don't want measure authors to have to even worry about that. They just know that they want this particular type of data. You know we don't want them to have to know where that might be located in the EHR system.

Speaker 10: One way that people actually do overcome that is by actually mapping their database to the HL7, H2MS, or the rim. I wouldn't recommend doing that. Some people do that. That's ... Then they just read the HQMF and they know okay, if it's asking for this in our data base it means that. That's pretty much how most of them do it. They just don't map to HQMF directly.

Okay, QRDA 3 is a fairly simple standard. It's just the aggregate results of the fallback measure or for multiple measures actually I should say. It contains only the aggregate results for one or more measures. It's also an XML document. It is also CDA based.

If someone tells me like why? The huge sort of elephant in the room, by saying that this is a CDA document. A CDA documents are meant for patient's data and QRDA 3, I just old you, had no patient data. It's one of those things where you're just like, "Why did they choose to do it this way?" I don't know.

It contains absolutely no patient data even though it is based on a standard that is all about patient data. Ironically how they got over that elephant in the room in a way, is by just where it says, "Here's where you put in the patient data and your CDA." They just said, "No." That's it. There is no patient data. All right, so it basically is currently being used. It's a summary report basically. I've kind of mentioned it.

Again, main thing to keep in mind is that it has no patient data. It can be for more than one measure. It is in XML. It is a CDA standard. It also contains, like I said, it also contains a reporting parameters section, a measure section, very similar to QRDA 1. Here's what an aggregate report looks like. You can see that in the measure section, it just contains all the numbers that have been asked for and no patient data at all.

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QRDA Basics, continued

There is no patient data section, as you can see. All right, so it has, again, it has a header and a body just like every CDA document does. The header contains information about the actual organization submitting this, the author of this document. Normally CDA documents have the patient's information also. This does not. It actually nulls all that stuff out.

The rest of the 2 sections I won't go into detail. I think it's very obvious. It tries to match at least the header. It tries to match the QRDA 1 as close as possible. The main thing that I wanted you to keep in mind here where it says, "Record target is a required data element in CDA." That record target it basically the target of this document.

In the QRDA 3 case there is no target, so it's null. This contains [an L saver 00:39:34] or that's HL7 speak for now. All right, I'll breeze through these because there's really not much difference in this versus a QRDA 1. Reporting parameter section contains for example this submission here.

Any other parameter information that you need to provide for this report. The measure section actually points to the measure that you're reporting for and includes all the data that you are reporting for this measure and includes, or at least should include, the performance rate.

Then we can choose sort of the last sort of layer of this whole layer cake is the CMS implementation guide. Where does that fit in? CMS, the QRDM implementation guide, is basically they take the HL7 generic QRDA implementation guide and they constrain that, or tighten the rules, basically match the program that you're actually submitting this QRDA for.

That's pretty much it. Where QRDA 1 is sort of agnostic on the types of identifiers that you include in a QRDA, the CMS ID tells you, "No, we want your CCN. We want your Medicare number. We want your X, Y, and Z, and here's where you put it." So you know exactly how to format your QRDA to match a specific CMS program. Starting from last year, the CMS implementation guide has been combined.

It used to be separate but it has been combined into one implementation guide. It contains rules for both QRDA 1 and for QRDA 3. The CMS implementation guide is always specific for reporting here. If you know for this reporting year I have to use the 2015 or 201X, whatever that year it might be, you know which reporting guide here to use. Another way of looking at it, it's basically the icing on this whole cake.

It adds the most specific rules that you will need to submit data to any CMS program. It tells you exactly which program requires which elements, which parts for the XML, so very significant information. That's pretty much for the end of my talk. I still have a couple of minutes for any questions, anything that I should go over again. Otherwise that's pretty much ... That's all I had to say. Thank you.

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- Speaker 12: I don't know if you know this offhand, but does the implementation guide for QRDA 3 specifically tell the vendors to de-duplicate patients when their reporting is one time per year for example? By that I mean if Mrs. Jones has a mammogram, and I do the mammogram, and you order the mammogram also, Mrs. Jones is only being counted once. Is that in the implementation guide?
- Speaker 10: No, I don't think the implementation guide goes into that level of detail. The CMS implementation guide doesn't go into that level of detail either. I don't think so.
- Speaker 7: That's something that can vary based on the appropriate implementation very [inaudible 00:43:25] that's actually based on the measure.
- Speaker 12: Of course.
- Speaker 7: Some of the measures we provide guidance. Anyone who did this cannot. Even if you did [standing 00:43:34] mammogram for a year, it would [bill 00:43:37] for 100% if you can document that all the patients you see have all their mammograms appropriately.
- Speaker 12: Exactly, but I guess that my concern is if the patient does have a mammogram, and you and I are part of the same practice, the measure shouldn't count if we're reporting them as a group. I mean I don't have to order it, right, the patient ... I guess I'm thinking of the [crosstalk 00:44:01] ...
- Speaker 7: I think that's an attribution issue. It's not yet been ironed out if it's implemented in this program environment. I think for some of the big programs have a fair amount of leeway in which patients are your patients that you probably will get that.
- Speaker 12: I guess my question's probably more focused on from a group standpoint because the patient should only be counted once. Whereas again, if you and I were both in the same group, while individually we would each get credit because the patient has a mammogram, but for the reporting that patient should be a denominator 1, not a 2.
- I'm wondering if there is anything in any of our [EH CMS 00:44:38] implementation guide or any kind of instructions that we have that I'm looking to try to uncover some of the data issues.
- Speaker 7: I don't think that you will find [inaudible 00:44:47].
- Cindy: I think that's something we could follow up on to see where it would be appropriate to have that information. It'd be information it seems like it would be at the measure level, but we'll definitely follow up on that.
- Speaker 12: Since I've been talking to some of the vendors at different times to see what kind of [vios 00:45:11] I need with them. I'm like, "Oh, my gosh, how could you miss this?" Again, per group report.

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Cindy: Okay, I'll make a note of that. Anybody else. Questions for [Casey 00:45:20]? He had a smooth landing. Thank you very much that was really, really good, very clear [crosstalk 00:45:29].

I think you can take 5 minutes for a [BIO 00:45:37] break and then we'll come back and Rick [Siber 00:45:41] will be presenting on the understanding of the submission. If you [inaudible 00:45:49] that we're seeing, the report and stuff for how we can validate files at the CMS high level.

Again, we'll follow on our CMS and that colleague I think they will help respond to a couple of questions. See you all back here at about about a little before 2:35. [crosstalk 00:46:15]

Speaker 7: Do you think it's [crosstalk 00:46:17].

Speaker 13: I'm Cathy.

Speaker 4: [inaudible 00:46:20]

Speaker 13: I don't recognize your voice. I'm just trying to get voices down with names and [crosstalk 00:46:25].

Debbie: Okay, I think we're ready to get started again. All right, thanks for winding down conversations in the room. Folks on the phone, are you able to hear us?

Rick: Yes.

Debbie: Hi Rick.

Rick: Hey, how's it going, Debbie?

2015 QRDA Submissions

Debbie: Good, that's much better. Okay. I think we're ready to get started on the rest of the QRDA topic area and on the phone live from the West Coast is Rick Geimer from Lantana.

Rick: Hello all.

Debbie: Hi Rick. Do we need to pass the cursor to you?

Rick: I can either present from my screen or I can let whoever is running webinar click through. I don't really have a preference.

Debbie: Okay. Hold on one second.

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Rick: Why don't you go ahead and make me presenter and then I'll go ahead and run it.

Debbie: Okay.

Speaker 3: Okay, I've handed presenter over to Rick.

Debbie: Great, thanks. Okay.

Rick: We're back, and can you see my screen?

Debbie: Yes, sir.

Rick: All right, great. Let's get going. First of all, hi all, and thanks for joining. It's unfortunate that I have to follow KP Sethi not that he's a tough act to follow but really he just steals all my best jokes so I got nothing left. Let's go ahead and move on. This is me, Rick Geimer, I'm the CTO of Lantana. I'm also the co-chair of the Plus Seven Structured Option working group. I'm co-editor of Consolidated CDA and a variety of other specifications. What we're going to do today is walk through the items that are on the agenda up here, starting with a little bit of background on some mission statistics for a hospital ECQ on data.

We'll talk about submitting 2014's EMS quality measures for the 2015 reporting year, both for hospital and eligible professionals. We'll go a little bit into submitting test files to the CMS system and then the last piece of this will be going over some common QRDA submission errors for both hospital and eligible professionals. If there's time, we have an appendix to this presentation which goes into some more details about QRDA debugging approaches, some of their test files, known issues with error messages, etcetera.

We'll sort of play that by ear depending on how time goes and how many questions there are with the main content of the agenda. For starters on the statistics for ECQ on data, these are the numbers that we've got as of now. 2014 there were a couple hundred thousand total files submitted and if we note, about one quarter of those actually passed validation. There were fourteen successful submitter's there. 2015, we've got about eighty thousand total files and only about four thousand of those so far have passed validation but the total number of submitter's have come up.

What this really tells us though is that people are submitting a lot of files that haven't been necessarily checked locally, haven't been tested to make sure that they actually are fantastically and semantically valid. This raises the need for this kind of presentation to raise awareness for how to actually submit valid files, how to correct some very common errors that occur over and over and over again and get clear data that's submitted to CMS.

For starters, let's go ahead and dive into some of the 2015 information that's needed for QRB submissions. The hospital ECQ on receiving system has gone through a few changes in 2015 starting with the HQR 6.0 updated in April the 7.0 and now we're on 8.0. The

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important thing to note is with each of these updates, some modifications have been made to the validation system to tighten things up basically. QRDA files that were previously submitted, like in 2014 will no longer pass validation without some modifications. It's important to keep up to date with the changes in the system and the tightening of constraints that's going on to make sure that your files will still be considered valid.

2015 QRDA Submissions, continued

Here's sort of a timeline of the changes that the system has gone through. In January 1, HQR 6.0 was released with some 7.0 validations added. It was important to note that at that time, calculator results were not available. You could basically submit test files to get them accepted and validated but you wouldn't get measured results calculated from them. In April, April 30th, that's where HQR 7.0 phase two was released and this required that HL7 category one submissions must validate against HL7's schematron plus all errata that was basically published in October 2014. This is the first time that calculated results became available to submitter's.

On June 19th, HQR 8.0 was released and with that came several new changes as well which we'll go into on some of the following slides. Similar main ones here that are highlighted, this is not an exhaustive list by the way is that the reporting parameter date range must align with the program's calendar year discharge orders. There must be at least one encounter discharge within the reporting period. There's a new template- sorry, not a new template, it's an old template actually but it's a new requirement that the pair be represented in addition to some additional fascia data.

This is the one now that will actually recognized duplicate files. If you send a file that matches on the program name, the CMS certification number, patient ID and the reporting parameter date range, the system will recognize that as a duplicate of a previous submission and use the most recent one. Here's some of the references to the categories of changes and where they come from. The updates for high tech release 7.0 were from the CMS 2015 implementation guide and there's a reference to it there where you can grab it off the CMS website.

For high tech release 8.0, there was an addendum to the implementation guide that was released and so you can download that at the link below as well and see the changes for 8.0. Lastly, there were updates to the base QRDA specification itself, so you can actually go to the HL7 website to pull that down and get the latest errata to the QRDA specification. Let's go into the details of the updates for high tech 7 and then 8.0 and then we'll dive into the changes for eligible professionals as well.

The biggest change or the easiest one I guess is that there's a new template ID that's required. This is basically an ID for the CMS implementation guide. When KT gave the overview of QRDA and CDA and how they all fit together, I think you've got an introduction to templates. Template ID's basically are a way of stating that you conform to a particular set of constraints and so by adding this template ID, you're basically

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saying that you're conforming to the CMS implementation guide. It's kind of like raising your right hand, swearing before a judge that yeah, I'm doing it right.

However, when you do this it also allows the CMS system to validate that you're actually doing that. As we notice a few slides ago, a lot of people are claiming to comply but aren't actually submitting valid files. When you do this, when you have these template ID's, it's important to make sure that you actually follow all the rules that this template ID implies. Another change was to language code. In the previous system, the language we used was EN-US which means US English. A change that was instituted, it now just uses EN which means English in general so there's no additional specificity about whether it's US English, British English, whatever. Just stating that anything in the US language is sufficient here. In a sense, it loosened up the language requirements.

Patient ID number needs to be satisfied. There are several ID's that can appear for a patient. This one is basically a patient identifier number or an EHR patient ID, an MRN you can think of it as well. This basically is the ID that you know the patient by and it's important to note that when you provide this, you need to follow certain rules. It's the rules of HL7 and CDA and QRDA that require that the ID be specified using two parts. First of all is the actual ID or MRN itself and that goes in the extension of an ID element.

Then there's a root which basically you can think of that as the name space for this ID. It's an OID or object identifier that says this for instance is a Kaiser MRN versus an MRN from Blue Cross, Blue Shield or another provider. The reason why that's necessary is because two different hospitals could use the same ID and mean different patients because their systems aren't connected. That root basically sort of adds a little bit of scoping and says, "Yeah, here's the ID in the extension, but it's from this provider," and it adds up scoping so that the combination of those two actually gives you global uniqueness.

You can combine those two, the root plus extension and get a globally unique ID that you can use to identify the patients. I know OID's are a complicated subject for some people. We could spend a whole half hour presentation on OID's, we're not going to do that but the links down here towards the bottom give you a little bit of guidance. Which, if you need to get an OID for your organization, you can go to HL7 OID registry and grab one. They do charge a hundred dollars per OID now, so important to be aware of that.

Once you get one OID, you actually become an OID owner or assigner and you can assign your own OID's underneath there. Typically for organizations, there's never a need to spend more than a hundred dollars period and then you can create all the OID's that you want based on that one. There is also an OID guidance implementation guide from HL7 that addresses a lot of questions people might have about OID's including how to create your own OID hierarchy of patient ID's, provider ID's, things like that. I do recommend people to download that implementation guide and read it because again, it gives you a great introduction to OID's and most importantly, it's practical. It tells you what you actually need to know and what you need to do almost step by step. I highly recommend that guide.

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2015 QRDA Submissions, continued

Another change was requiring a CMS program name to be specified in the information recipient element in the QRDA file. Basically what you do is you put everything here that's in green and then you're going to add your own extension and note one of these programs that you're submitting against. This example here uses the hospital quality reporting for the inpatient quality reporting program or HQR_IQR. You can pick any of these and identify the program that you're submitting against.

Okay, so that's it for the high tech 7 updates. Now we'll go into the updates for 8.0. One of the big changes here was the reporting parameter date and aligning that with the calendar year discharge quarters. This previous example here shows basically a submission for the entire year of 2015 but if you notice in the CMS QRDA implementation guide addendum, there's a list of the discharge reporting periods and your submissions need to actually align with these dates that are in here. I'd say, okay, if you're submitting for the first quarter Q1, you want to use 2015 0101 as your low value or starting date and then the high value would be the end of that quarter which would be March 31st in this case.

Just be sure to align with these reporting periods. I've noted the dates here in this presentation but the authoritative source is actually the addendum to the CMS implementation guide which is listed up here on the website. Now we're going to go into eligible professional requirements for 2015. EP's basically need to report on nine clinical quality measures from at least three different [inaudible 00:15:32]. You want to submit a full year of data to qualify for any settlement programs. The submission formats were reported electronically for the EHR incentive programs via QRDA3 or for PQRS reporting, you can report electronically using the PQRS portal using either QRDA1 which the patient specific data as KB mentioned earlier or QRDA3 which is the aggregate data.

There are also group reporting options that are available on the GPRO website and there's an initially registry in the HR options for group reporting as well. The next few slides we're going to go over, again, some highlighted changes for 2015. This is not a complete list of all changes, this just catches some key ones that you need to be aware of when you're submitting data and following these changes will minimize errors. Again, didn't have time to get the complete full list of everything but these are just some big ones that we see over and over.

First of all, any UUID's or GOOID's that you supply in your files must be valid. You can't just for instance put for an ID, put in some placeholder like bad UID or TBD for fill in later. It actually needs to be a valid UUID. Basically, about every programming language out there has some easy way to generate UUID's so please take advantage of that. Get valid GOOID's in there and submit them wherever you actually need unique ID's in your documents.

The system also now checks and will reject duplicate measure and population ID's. In your QRDA's you have the ability to reference the measure that you're reporting against

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but it's important to not list the same measure twice. You can certainly submit a QRDA that applies to multiple measures, but each of those measures has its own version specific ID. You need to make sure that you point to the correct ID's and don't just list two measure references and then give them the same ID. The system will reject you if you do that. Make sure that you only submit the same one once. The same is true of population ID's and also stratum. Any stratum that you report against should not have two strata within the same population with the same ID.

The next one is the reporting period date. Basically we need the reporting period, that would be the current reporting period so this previous example was pulled directly out of a QRDA sample document which a lot of people use as a base for creating their own system, that's understandable but you need to be aware of what you need to update. The sample docs for instance has 2011 as the date and if you don't update that, you'll be rejected because you should be reporting against 2015 at this point. Be sure that your reporting parameter or reporting period actually has the current reporting period. Note too that the eligible professional reporting periods are different than the hospital ones, so this one is noting reporting for the full year.

Another addition for 2015 is requiring the patient characteristic payer to be present. I believe this is also true of the hospital quality reporting as well that now when you have the patient data section, it's requiring two entries to be present. Previously only one entry was required and they didn't actually specify what patient data entry you used, it just said you have to at least include one. Now, we're requiring two and one of them has to be the patient characteristic payer template which basically identifies the source of payment. In addition to some other piece of patient data, you need to say who the payer is. In this case, this example shows Medicare as the payer.

Speaker 3: Rick, before we go on there's a question in the room.

Dave: Rick, can you hear me?

Rick: Sure.

Dave: This is Dave [crosstalk 00:19:58].

Rick: Yeah, yeah, I can hear you.

Dave: Is there a time zone associated with the reporting period?

Rick: There can be but the usual recommendation with HL7 is whenever you're more specific than the day, that you should include a time zone offset. These ones just show submitting to the day, not to the hour, minute or second. A lot of examples you'll see and a lot of recommendations from HL7 is your is only being accurate to the day, you don't necessarily need to put that in but there's certainly no reason why you couldn't. If that's actually causing a problem in your system, maybe that's something that we could tweak in the CMS implementation guide to require the time zone in all cases.

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- Dave: We've brought this issue up a couple times. My real question is, is there a time zone associated with the reporting period? Not about what can you specify on ...
- Rick: Sorry. With the reporting period and stuff, I'd have to defer to someone else in the room to answer that question, I don't believe there is one.
- Dave: Yeah. I've asked the question several times and most people are not aware of it and I was hoping to find a reference somewhere because basically you do not want overlapping reporting periods between two years so there absolutely needs to be a time zone associated with the reporting period. It's just that, and I'll tell you right now currently because the processing center's in Northern Virginia, it's Eastern Standard Time and I just don't think that that default is correct. I'm curious if there's a reference that it could be something, it should be something because you can't have your reporting periods overlapping between two years and I'm thinking it probably should be universal, UTC or something. It's not specified so it's defaulted to the processing center and I think that's probably not the right reporting period.
- Rick: Yeah, it's a good point and we'll have to get back to you. I think that it's something that's worth noting and worth discussing and possibly would require an update to the CMS implementation guide to note exactly what time zone is expected for the report to be in.
- Dave: Okay, thank you, sorry.
- Speaker 3: Great question.
- Rick: No worries.
- Speaker 5: Is that flavor all required in the CAT1 or is it required in the CAT3 file also?
- Rick: This is the patient data section, so I believe this only in the CAT1.
- Speaker 5: Is it actually a payer that is required in the CAT3 but there are guidance on how you submit the null flavors because it doesn't make sense or an incorrect single CAT3 file that has a single payer associated with it. It's a limitation of standard but there are, I believe, the ID explains it.
- Rick: Yeah, yeah. This particular example was for the patient data section. Okay. One other one that I want to highlight is formatting a performance rate. This is specific to CAT3, so if your CAT3 is providing a performance rate and you're sending that back to CMS, you want to make sure that it's formatted correctly. It needs to be noted that it has to be a real number and should be left center equal to one. This bad example here has it as an integer, a value of two. The correction here is to make it a real number and actually give a value that's between zero and one basically.
- Speaker 5: Rick, Julie has a question.

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Julie: What's the rounding of the hospital?

Speaker 5: Is there any rounding associated with that number?

Rick: I believe as a real number, it's up to you to choose how you report it as. I don't think the standard actually says anything about the rounding that you use but I'd have to defer to someone at CMS to see if they expect a certain precision. Right now, I'm not aware of any. Okay. The last big category of changes here are the QRDA based specification errata and again, if you've been [inaudible 00:24:18] through 2015, I think a lot of folks have already encountered most of this and are familiar with the changes but I'm going to go over them anyway for folks who need it.

One of the big ones is that you need to specify a version specific identifier for an e-measure and it must be present in external document ID. It must, you know again, point to the actual version specific ID of the measure and you can't put in some place holder like example ID or a name of it, it actually should be the version specific GOOID that you would pull out of the e-measure itself. For example, the one for the 2014 [inaudible 00:25:03] update for ED1 is this UUID here and the ID's can be found in the measure themselves which can be downloaded from the ECQM library. There's also an appendix at the end of this presentation that has a complete listing of the version specific ID's for 2015. I'm assuming folks are able to get a copy of this presentation, you can just refer to these slides to get them.

There's also now a reporting parameters act ID which must be present and again, this just has to be a UUID or a null flavor in this case. This was for consistency within QRDA. ID's are required on just about every type of what we call clinical segment but there were a few where the requirements that had ID had been missed, so the errata just went unending and sort of filled those in where needed. Again, you can just generate your own UUID's using whatever software you have or there is also the option to just put in a null flavor.

Null flavor again, that's HL7 speak for null but the HL7 likes to think that their null's are tastier than other people's because you've got multiple versions of them. You can basically say there's no information. You can say it's unknown. You can say amassed. There's a whole lot of nulls that you can use within HL7 and they're differentiated by flavor so to speak. In general, you just use N1 which is the most generic flavor of null which means no information.

Payer effective time. There's the patient characters payer template, now where it also requires an effective time element to note where someone's coverage is applicable and whether or not it's expired or will expire at some known date in the future. Here's another case where there was an ID that was missing that's a reason observation. Now, files would be rejected if you're missing an ID but again, you can just auto generate a UUID or add a null flavor there to satisfy this requirement.

Okay. Let's go briefly into submitting a hospital ECQ on test files. The hospital receiving system basically can take category one lease two files and you can submit and validate

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against the 2015 constraints. Some big test files allows you to check the structure against the CMS receiving system. Reports are available that show you errors on the files and allow for corrections prior to submitting to the live production system. Again, to reduce the errors in the production system I highly recommend submitting test files first. When you've got them clean in the test system, then go ahead and submit your production files.

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Again, through the quality and secure portal, you can submit test and production files. That provides complete file validation and measure calculation. Okay. The next part of this presentation, we're going to go into some very common errors that we see over and over again when folks are submitting QRDA's. We'll tackle these sort of big four here. Really, these are four categories of errors. Many of them actually have several specific errors that occur within those categories.

The biggest one, one that I hoped we'd squashed last year but it seems to have reared it's ugly head again is people submitting files that are actually not QRDA files. When you submit a document to CMS, it actually needs to be in QRDA format. It's not legal to submit, for instance, a Microsoft Word document, that has a print out of a quality report. You actually need to send an XML file that complies with the CDA XML schema and validates against the QRDA schema-tron schema and also the schema implementation guide schema-tron.

Per KP, it needs to be a muscle car and that muscle car needs to be a Ford Mustang. In this case, somebody's sent like a Word document and that will be rejected. When you submit, you need to make sure that you're actually sending an XML file that conforms to all the templates that are required by CMS. In the appendix, we describe several ways to actually validate QRDA files before submission. If there's time we'll go through those but just be aware that you actually need to conform, again, to at least the CDA base schema, the QRDA schema-tron and also the CMS schema and by submitting test files first, you can sort of figure that out before going live.

Another common error that we see is errors with CCN validation. What you might get is a CCN null cannot be validated or the represented custodian or organization shall contain exactly one ID so their self contained this root and a valid schema certification number in the extension. What this basically means is that you need to send your CCN as an ID in your QRDA file. Here's an example of some example that will generate errors. One is if the CCN is completely missing the representor organization. Another one that we often see is where someone will submit an ID and they'll just include that root which is sort of a name space.

What this basically says is, the ID I'm going to send is a schema certification number but without an extension, they're not actually sending the actual CCM. This void here is not the CCM itself, it's the identifier for the set of all CCM's. This last one actually has a root and an extension. The extension's where the CCN is supposed to be but this actually is not a real CCN. That too, will be flagged as an error.

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Here's the correction. This actually provides the ID in the custodian area. Make sure it has this correct route and then in the extension you put your organization's CMS certification number. Okay? I kind of highlight this in italic here because you need to replace that with your actual number and if you don't have one, you need to get one. There is the option in the test system to use this dummy CCN as it's called, 800 890. That's only valid for test submissions and if you try to use that in the live system, it will be rejected. But while you're prototyping your code, you could use this for test submissions.

Service event errors is another category of errors that we see quite a bit. The service event basically says the kind of care that was performed during this document. These are some of the errors that you'll get. One, if the documentation of service event is completely missing. Another one where if you put in a wrong class code, the code should be character [inaudible 00:32:49]. Also a service event for CMS actually requires the performer to be listed here.

Here's some examples of some QRDX and L that will generate an error. In this case, we've got a [inaudible 00:33:07] in the element but it's missing a class code attribute that's required by the implementation guide. In this case we've got a performer and it has a type code but it's not actually from the value set for performer type codes. Then lastly we've got the performer's present here but it's missing the assigned entity that actually gives the performer's organization for instance.

Here's a partial correction. Up at the top, we've got a class code in here which is in provision of care, so you can pretty much hard code this in your final and it would be correct. We've also given a correct type code for performer at this point and added an assigned entity but in this case, we're missing the provider's NPI and also the organization's tax ID number. We're going to go ahead and complete this now by filling in all the required information. Those last little bits, we're adding in the provider's NPI and again, this is sort of the dummy NPI so it needs to be your actual provider identifier. Lastly, the organization here under the performer now has the organization's tax ID number present.

Now, there may be a case where you don't have a tax ID number or an NPI that you can provide, so again, HL7 allows you to use a null flavor here. In this case, the null flavor is NA for not applicable and so you can add that whenever your [inaudible 00:34:46] is null or whether your tax ID number is null, you don't have one basically. Terminology errors are another big set of errors. I could probably list over a hundred error messages that you might get that are terminology related. I won't go into all of them, rather I'll sort of give you an introduction to the class of errors in general and how to look up the correct terminology for ninety percent of your needs.

First thing you need to do is whenever you're submitting for anything that requires a code, I highly recommend going directly to the CMS QRDA specifications to look up what codes you need to be submitting for, what value sets as they're called. The example that we're going to use throughout this is the ethnicity value set. I picked that mainly because it's a short one, there's only two codes that are in there, so it's easy to get up on screen.

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What you do is pull down the CMS implementation guide and you look through in the various tables where different parameters are specified and you can look up either the fixed values if there are fixed values or the value sets that are used. These value sets here are listed as OID's, so it's important to pick that up and then grab the OID and note that. Then where you actually go to get the actual codes for that value set is the value set authority center also known as a VSACK. It's a service of the National Library of Medicine or the NLM.

You can go to this website to get there. One important thing you need to note is that you have to actually register for a UMOF account before it could download the files. That might take a day or so for you to get your ID back, so I do recommend if you're going to be submitting go in there and register in advance. Don't wait till the day you actually want to submit to get your codes. Go in there, register. What they'll do is they'll verify that you are actually a US resident, you're developing for a US use case here because many of the coding systems that we're submitting against such as SNOMED have licensing restrictions.

The United States has licensed SNOMED, so if you're in the US you can use it for just about anything but other countries have not done so, so that's why they double check to make sure that you're actually doing this for a US use case so that you're not going to violate the SNOMED licenses and other potential licenses as well. Once you log in, you can select an appropriate download. In this case, we're just showing the 2014 ECQM value sets for eligible professionals and you can sort by value set name and choose the format that you want.

For this example, we're going to use the XL file to look them up but they're also present in what's called SVS form at our sharing value sets which is an IHE specification for [inaudible 00:38:08], that's basically in XMO format. But as I said, we're going to show the Excel example. If you download the EP value sets and open up that Excel file, you can then search for that value set OOID and when you do, it's in this column here. You can scroll down and find the codes that are legal for that value set. In this case, the codes here are under the code column. Any descriptions of these codes are under the description column.

2135-2 is Hispanic or Latino. 2186-5 is not Hispanic or Latino. These two here are the actual code that you would put in your QRDA. One other important thing to note as well is you'll need to capture this code system OOID. This basically says what code system this came out of and you need to put this in your QRDA file in addition to the value set OOID. We'll describe how to put in the value set OOID in the following slides as well.

Here's an example of some QRDA XML that will fail validation. In this case, the ethnic group code was entirely missing. That will definitely [inaudible 00:39:23] terminology here and here, the element is present but it's empty. I see this over and over again where someone will just put in an element that's required but then actually fail to put in the codes that's needed for it. Here's a partial correction. Really not a correction, it's just

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another way of doing it wrong I guess. We do actually in this case have a code and a code has been specified but instead of actually putting in the right code, they put in the description or the display name of it. That will fail.

Then, in the code system, they mistakenly put in the OOID for the value set, not the OOID for the code system itself. The complete correction for this is to actually put in the correct code in the code attribute, have the code system from that spreadsheet listed and then note optionally put the display name in the display name attribute. Now note, we're not showing the value set here, so the subsequent slide is going to show how to actually provide the value set OOID as well. There are many parts in QRD where you're required to put the value set OOID, not everywhere but I highly recommend putting it anywhere where you've actually got the value set OOID because that will save you a lot of trouble if you get into that habit.

Not that there's this special SDTC colon value set extension as we call it. We call it an extension because it actually wasn't part of the base CDA specification. When CDA was created back in 2002, we didn't know that later on we'd actually need to be providing value set OOID's. We thought the code system would be sufficient, so this is actually a change to the CDA schema. CDA does allow connections but this is basically an extension that was validated and endorsed by the Structured Documents working group, formerly known as Structured Documents Technical committee, that's why it's SDTC and is used in a variety of implementation guides now. This is part of the schema, just note that it's got this different name space because it wasn't part of the original CDA specification.

Sometimes also, just like for ID's, sometimes you need to say that you don't have any information about update for a code. Maybe someone declines to state what their ethnicity is for instance, so this allows you to use a no flavor, in this case, NI for no information to state that you actually have no information about what the correct ethnic group code would be here. If you need other null flavors, you can look them up in the QRDA specifications but in general, I just recommend that people to use NI unless you've been given more specific guidance by an implementation guide.

Okay. Those are the common errors. Next I'll go over a few debugging approaches that we like to highlight. One of the key ones that I like to recommend to people is just doing local validation before you get to the point where you submit anything to CMS. Realize that QRDA is in XML format and there is a schema for it and that when you're crafting your QRDA's you need to be valid against that schema. That's sort of the bare minimum that you need to do. Also, there are schema-tron schema's that available from 8 'till 7 as well which will do the additional checks.

Again, the main schema will double check that you're actually using the defaults and active CDA correctly. The schema-tron will actually let you validate that you're actually submitting a QRDA CDA document. These two go hand in hand and all that matters in my recognition, should perform these base validations locally before you do anything else. I say it over and over again, but you know my consulting practice at Lantana, we often will help people get their systems up to speed and one of the first things that they

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do is someone will say, "Hey, I generated [inaudible 00:43:54]. Take a look at it," and I'll just open it up against the QRDX mal schema and nine times out of ten it fails.

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I have to go back and say, "You actually didn't make a QRDA. You didn't even make a CDA." It's a very basic step, there are plenty free tools out there to do schema validation. I recommend everybody to do that. There's really no excuse not to. Once you've got those basics handled, then go ahead and submit your files as a test submission using the CMS operational system, again through quality net. The appendix slides have more information on validating, using a variety of tools.

There is now also a pre-submission validation application or PSVA that's in pilot at the moment. This is a client fed application that offers managers, hospitals and providers a tool to validate QRDA files in your own environment prior to submitting to CMS. The benefit are it reduces CMS processing time by reducing errors and making sure that you don't get files that are invalid. That saves time for everybody, it saves time for you as an implementer because you're not going to be submitting files that are just going to get rejected and it saves time for CMS because then now they don't have to waste processing cycles doing validation on bad files.

It's less re-processing of the same file over and over again. If you're just submitting test submissions and you submit it, you get an error back, you make one correction, submit it again, get another error. That means lot of again, of your time and a lot of CMS processing time just debugging your files. The more you can do that offline, the better. It also reduces file storage, all these things are good benefits here.

Important to note that the pilot application is currently available for download in the six year file transfer, SFP section of qualitynet.org and there's a full lead that's scheduled for January 2016. I do highly recommend that you download the PSDA and partake in this pilot. Basically all you need is a quality net log in and have the EA charge data upload roll assigned to you in Quality Net and then you should be able to see the PSVA in the Ask Your File transfer section of Quality Net.

Okay. Some other schema validation resources, again, CMS [crosstalk 00:46:29].

Debbie: Rick?

Rick: Yeah, sorry, was there a question?

Debbie: No. I just wanted to remind folks on the previous slide the pre submission validation of pilot [crosstalk 00:46:51], or you're keeping the [inaudible 00:46:47] available?

Speaker 7: What we've done is that the actual pilot is sort of collecting information that could potentially be applied to the release in December has ended but we still have left it open for people to download and to play around with it It has three different interfaces, you can use it as a command line interface. You can also integrate it as an API into your

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applications. It also has a [inaudible 00:47:17] interface that you can use individually on your desktop.

Debbie: Great, and that's for hospitals?

Speaker 7: Yeah, and that's for hospital and it only does the schema tron and CMS specific checks is what it does. It does not get down to the clinical data, that's only done by our measured [inaudible 00:47:38].

Debbie: Great, thanks, okay, great.

Rick: Okay. Let's go ahead and continue here. Again, for hospitals, you can submit test files through the ECQM receiving system. You can submit test submissions through there and also, I highly recommend signing up for the hospital quality reporting list serve and participating in a upcoming training opportunity. There is a link to register for that. At this point, let's throw it up if there's any questions on the presentation so far and we can sort of pause if there is time and people want to go into the appendix with some specifics about debugging approaches, how to download schema's and schema-trons and run them in some example tools, I can go into that. But I figured there may be more questions and such, so I'll defer to you Debbie if you want me to continue with some of the appendix information or pause it here.

Debbie: Sure. I have one question first and I want to confirm something with the DQRS folks and the ET folks [inaudible 00:48:50] submission. I thought that the receiving system could accept QRDA 1 or QRDA 3 prompts for legal use or EP's.

Rick: [crosstalk 00:49:07]

Debbie: [crosstalk 00:49:09]

Rick: Yeah.

Debbie: I thought that if you're an EP, participating in [inaudible 00:49:16] use, you can either submit QRDA 1 or QRDA 3.

Rick: Yes, that's right.

Debbie: Yes. I just didn't want to leave that one, one of the slides will change that because PQRS and [inaudible 00:49:29] will use for EP's are aligned with the types of files that we could not receive, that they would accept. QRDA 1 or QRDA 3 or a new [inaudible 00:49:47].

Rick: Yes.

Debbie: Okay, so we'll just change that. I think [crosstalk 00:49:56].

Rick: I think I had that in the slide, but maybe I was confused here on the incentive programs. Is that where you're saying we need to QRDA 1 out here as well?

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- Debbie: Yes, correct. I think the only difference is that for me, [inaudible 00:50:11] will accept all vary denominators but for PQRS, there must be at least one Medicare patient [crosstalk 00:50:19].
- Rick: Got it, okay.
- Debbie: Okay. Thanks. I think that I want to ask the audience, really, we have a big mix in the attendees today and I want to make sure that you all know what information is available on the slides about debugging and the types of software that you can use for that but I'm not sure that this audience would need to hear about the details of that right now. Can I hear some feedback? Do you want to hear about the debugging? I'm seeing heads going in both directions.
- Rick: It may help that we are going to do another webinar I think in a few weeks where we can go into that, so there may be an opportunity to follow up on that later.
- Debbie: Okay. I think that would be great. In the September, I believe it's on the 11th, but again, [inaudible 00:51:38], there will be another presentation that goes into more details of QRDA's position and it's for a very technical audience of [inaudible 00:51:53] and participants. I think the important thing is Rick, maybe if you could just mention what the debugging is, the [inaudible 00:52:02] in your slides and then I think we can move.
- Rick: Yeah, sure, sure. The slides basically go into an overview of how to download the schema's and schema-tron files from HL7. How to sort of view and navigate the schema's using off the shelf XML tools, how to associate and validate against the schema and letting schema-trons, schema too and getting errors and then basically doing offline corrections. One thing that I probably need to add here is an example of how to use the pilot of the PSVA tool, that pre submission validation engine tool. I don't have those in these slides yet but I think it's worthwhile to get that in. Even though it's still pilot and the actual pilot is over, I think it would be good to get in some examples of that in here as well. I'll try to do that in advance of the webinar.
- Debbie: Okay.
- Speaker 3: We have one more question from the phone attendees. Caller Ranesh wants to know what is the max size of a CAT3 file that can be submitted for production and Stella, you're unmuted if you want to add onto that or follow up.
- Julie: Sure. [inaudible 00:53:27]
- Speaker 8: Is it an EP slide [crosstalk 00:53:31].
- Julie: EP's are the only ones to submit to our [inaudible 00:53:34].
- Speaker 8: Yeah, it is a [inaudible 00:53:33].

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Julie: I think you need to speak up a little bit. The question was, what is the maximum size to [inaudible 00:53:46] that can be submitted and we have CMS dev expert.

Speaker 8: G5 [inaudible 00:53:53]. Twenty megabyte or forty megabyte.

Rick: Twenty megabyte compressed and forty megabyte expanded.

Julie: Okay, appreciate it, thank you.

Debbie: Is there any other questions for Rick or [inaudible 00:54:19] anything on QRDA submissions? The takeaway message here is again, we are here to help. We are here to help you with testing, with [inaudible 00:54:30] files, with questions. Please reach out to us so that we can help you be successful with your submission. All right, thank you so much. Rick and KP, we appreciate [crosstalk 00:54:49].

Speaker 8: Thank you.

Rick: Debbie, do you need me to stay on the phone here for any of the subsequent presentations?

Debbie: No, I don't think so. KP's going to be here and we'll hear about [inaudible 00:55:00], so I'd like to welcome again to the front Dave Silata who is going to talk today about [inaudible 00:55:12]. First case in [inaudible 00:55:15] and maybe a little bit about the Cypress validation utility.

Dave: Thanks Debbie.

Debbie: Great.

Rick: All right, thank you.

Dave: [crosstalk 00:55:24] is now 3:30, that I may not be people's best friend anymore or I could be.

Debbie: Oh right.

Dave: I can think of an additional thirty minutes, so I can go for ...

Debbie: Yeah, you have two hours [crosstalk 00:55:38].

Dave: I can go for an hour and fifteen minutes. Let's do this.

Debbie: I'm sure we'll be getting out a little early today [inaudible 00:55:46].

Dave: I think Rick's presentation goes perfectly into this, talking about kind of a pre-testing EHR's prior to actually going game day submission to CMS for reporting. I don't know if you can make it so I can present?

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- Speaker 3: Is it you or is Vanessa's computer?
- Dave: It should be me, I still had her connected.
- Speaker 3: I don't see you on the attendee list currently.
- Dave: I might need to log back in. Yeah, I closed my computer over lunch and probably killed the session.
- Dave: It seems like I should be joining right now.
- Speaker 2: Yup, I changed the presenter over to you. All right we see your screen on the webinar.

Cypress

- Dave: Great. Once again, I'm Dave [Pilata 00:00:38]. I'm a member of the [Mider Dakoma 00:00:40] team. My role is I'm a developer on the Cypress project. I will be presenting Cypress today to you guys. I'm going to be giving a brief presentation followed by a demonstration similar to what it is with Bonnie before.

At this point I believe everyone knows what a clinical quality measure is so I won't go into too much detail in there. I'll talk a little bit more about what is Cypress and why is it important to this group as well as the E-system environment in general. Cypress is a testing tool for HR. These are modules for calculating meaningful use clinical quality measures.

It's used as the official testing tool for the ONC certification program. It's also an open source tool which means that anyone is free to download it and use it for their own purposes. That means that it's really available for use in the testing lab as well as the vendor can download copies of Cypress and use it in their own environment.

Rick was just talking in a previous presentation how important it was for developers to do testing in their development time frame instead of waiting until submitting it to CMS to figure out, "Oh, wait we have issues." Having Cypress be open source, allows people to use the same tool that they're going to be using for certification to test against the same standards that they're going to be submitting with a lot of the same business rules and validation rules that the submission tools are going to be validating.

There are essentially 3 forms of testing that is done within Cypress. We call them capturing exports. Importing calculates an electronic submission. Capturing exports judges the ability for an EHR to import data from an essentially an arbitrary category 1 file. Import it into their system and create a [QRDA 00:02:50] category 1 file and send it back with the correct information in it.

I'm glad that we had the QRDA presentation right after lunch so people were able to learn about what QRDA category 1 and category 3 are. The first one is really the ability

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for systems to take in the information that they find in the QRDA category 1 and then generating that file format.

Importing calculates judges the ability or certifies the ability an EHR to actually perform the measure calculations against a set of patients. That's really about can they take in a whole bunch of essentially QRDA category 1 files as a specification data, run those through the measures, directly put them into ITTs denominators, numerators, exceptions, exclusions, and then create a QRDA category 3 file with all that information in it.

The third on here is electronic submission. That's really just judging the ability for the vendors to package all of that information, that patient data, as well as the aggregate information in the same format CMS is expecting it. That's the QRDA category 1 and category 3. We've seen in the 2 previous presentations that they're actually I would say 3 levels of validation in terms of the standard. There is the CDA schema. There is the HL7 schematron and then there is a CMS schematron.

Right now in terms of the Cypress certification, it only does those first 2 levels. It does the CDA schema checking and it does the HL7 schematron checking. The certification program does not currently do the CMS schematron validation. We do have a tool that does allow you to run your files against those schematron rules. That's the separate validation utility that Debbie mentioned.

The Cypress is a very simple tool. It's probably going to be the simplest one that you've seen all day today. There's really only one really use for using this. It's creating testation. Seeing if you can create correct cat 1 files and seeing if you can create the correct cat 3 files. It's very simple. It's really just these 7 steps. I'm going to walk through 5 of them because 2 of them actually take place on an EHR system.

I'm going to show a few steps on how one creates a test to certify against ACQM or multiple ACQM and show how Cypress produces a patient test deck. How the user can download that QRDA, the test deck from Cypress, in multiple format. Then it's up to the EHR to input that information into their system and then generate their own outputs. They're going to then submit those into Cypress using their tool. Then Cypress will show results from that process.

This is a bit of an eye chart. I don't mean for people to read this. This more or less is illustrating the steps that one would go through and you're going to be getting these as follow on material from this meeting, so if you want to look at it more as a user guide, you can feel free afterwards.

This is just the first step. It's when one creates a test, one ... I'm going to waive over here. As you create a test you name it and then over here is a pick list of a whole bunch of measures. All the measures are categorized by type. For this particular example, I'm just going to chose one measure. It's CMS 68 which is for documentation of current medication.

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Here is a summary list of all of the measures that one can test and certify with Cypress. There are 64 eligible [pressure 00:06:57] measures and 29 eligible hospital measures. Those are the ones that you're allowed to choose from that pick list when you're creating a test.

Cypress, continued

Speaker 4: Question, David.

Speaker 2: Correct me if I'm wrong, but these versions of Cypress they only let you take all EP or all EH right?

Dave: That's still the case with the current version of Cypress. You can only test one set of measures at a time. You can either choose to make a test for EP measures or a test for EH. You can't make a test that has both. I think that there were legacy reasons for doing it that way. We've carried that forward. I imagine next time that we have a new release, the Cypress version 3, which will be coming out next year, I imagine that will be part of the design considerations and whether or not you can create a test that has multiple EP or EH.

Speaker 3: Can you design a test against this pick around the EP list in the original measure?

Dave: Oh, yes, individual measures so that you can choose. You don't need to do all 64.

Speaker 3: Okay.

Dave: You can choose 1 or you could choose all 64 if you really wanted to. You're just going to choose all 64 EP as well as all 29 EH at the same time. Here's just a stock picture of what a measure looks like. We have talked about this a lot today. I included it just in case we didn't have the same background. Basically a measure describes the care that's expected when you go into an EP environment. It's describes the population, the denominator, the numerator, and exclusions, and exceptions.

When you create a test, the first thing that Cypress does is it goes back to our database and creates a patient test deck which essentially pulls out a random set of patients that apply to the measures that you're testing again. We had a question earlier about the amount of coverage that Bonnie had, or the number of patients that you would need, for complete coverage of measures.

I mentioned that some cases we saw a test that had 10 measures or some measures that you could get complete coverage of 10 measures, and some that you would need upwards of 150. You'll see here that we have a test that has 8 patients in it. The reason for that, so you would think, "Well you're not going to get anywhere near full coverage if you only have 8 patients to test that."

One of the reasons for that is we have the limitation that is expected that an EHR be able to manually enter the test patient into their system for certification. We had to make a, essentially, a minimum set of patients that covered the population, a piece of

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the population that the measure described. You'll see that they're very limited patient test deck.

One of the things that we're looking to move forward with is being able to really be able to include more patients so that we can fully test these measures and fully certify these DHRs that are doing these calculations instead of having a minimal set of patients. It's a small patient test deck not because we, as developers, are lazy. It's because it's not feasible for users, or to make people go and hand enter thousands of records for certification. You had a question?

Speaker 4: I was a little confused as to what you just said about you would have say the 8 test patients, but what would be EHR's task? Would they be expected to have additional patients or they're only tested on that 8?

Dave: They would only be tested, for this particular measure, they would only be tested on these 8 patients and how they apply to the measures of [inaudible 00:11:06]. What we see here is we have random needs [inaudible 00:11:14] back here, on the left is the name of the random patient as well as the corollary in our master patient list which is the patient that is in our database that will be reused across tests.

This is one way that we can do have debugging or when people have questions when they get into certification that, "Oh, we had this patient and we believe that he's in the numerator, and you said that he's not." We used that correlation between the random patient and the cyber patient to do that.

I mentioned the limited number of patients within Cypress. There are 56 patients within Cypress. Those are used to test all 93 measures. Once again I was talking about the kind of limitations and why we have so few patients. We wanted to make sure that they have coverage across all of the populations within the measures. That they don't necessarily test all of the [larger caps 00:12:15] [inaudible 00:12:15].

Speaker 5: Do they certify the vendors? That is do they certify for on the EP side or either individual or group reporting?

Dave: I'm not familiar. I can't say that I know the answer to that question. We can get back to you on that if you want.

Speaker 5: Yeah, I mean I don't need an answer obviously today. That would be something that we need to seriously consider for the government's different ... The vendors are not getting it.

Speaker 6: It depends on what programs.

Speaker 5: Right, but I'm talking about [inaudible 00:12:50].

Speaker 6: If the program requires the HR certification, the EHR that's used by either a group or an individual of EP has to be certified.

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Cypress, continued

Speaker 5: Right.

Speaker 6: What you're saying is is the group's information in file?

Speaker 5: What I'm saying is will Cypress have and/or certify that ABC vendor and submit off for [inaudible 00:13:18] on behalf of a group as opposed to individuals?

Speaker 2: Yeah, it doesn't matter whether [inaudible 00:13:24].

Dave: Yeah, it doesn't currently do that level of checking.

Speaker 5: Okay, thank you.

Dave: You're welcome. When that test deck gets created, it is associated with the test. It allows the user, in this case either the test proctor or the EHR vendor to download that patient test deck in 2 formats. One as an HTML version which is human readable as well as the QRDA Category 1 file. We see on the left it's a stylized version of it. Then we see the XML on the right.

Steps 4 and 5 are done by the EHR. They'll take those files, either the human readables, or the XML files, and import it into their system. Then they will perform calculations to either create the category 1 files themselves or the aggregate report for the category 3.

At this point, they'll be able to upload their results in to Cypress. For the category 3 test they upload a single file. For a category 1 test they'll upload a zip file of the patients of the category 1 file. At this point Cypress will display test results that will go in and we'll validate those files. Then we have a display that shows where the errors are occurring in their files.

We also provide the ability to download a package that includes all of the test patients in multiple formats, an HTML version, a [JPEG 00:15:17] version, and a QRDA version, as well as their original, the files that they submitted, and then a breakout of all of the errors in a PDF file. That is interesting. It was showing up kind of weird where ... Mike, can people on the phone still see my screen?

Speaker 2: Yeah.

Dave: Okay, we can see the whole screen now. What does Cypress validate for category 1 files as well as category 3 files? The first one, and we test a patient zip file, so does the patient zip file correctly include all the patients that are needed for this? I think we heard that that is any patients that would fall into the IPC for that measure.

Does the zip file have a valid directory structure? I'm under the impression that the submission tools required to be a flat zip file, if there's any directory structure in it, it returns an error for that. Once we get past the structure of the zip file, and the contents

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of it, it validates each individual patient file, so that the first 2 things that we checked are the first 2 levels of validation and that is does it conform with CDA? Does it conform it with the agents coming through our data implementation guide?

Then we also do a few additional checks. For instance, is all the relevant smoking gun data included? That's all the information that is needed to make a measure calculation. The second one down here is the data filter for the measures that are under the test? We don't want people providing information that is superfluous for the measures being tested.

If someone, the measure that we're going to show is for documenting medication, if someone includes stuff that has nothing to do with that, it'll throw an error saying that you provided too much information. The last one here is are the correct codes and value sets being used?

We'll check to make sure that A, the code that you provided is correctly in the value set that you sent it from. We also make sure that the value set that you're using is appropriate for the measures that you're testing against, so that you can't just use any value set in code in your cat 1 file. Similarly for the QRDA category 3 file, we do the 2 layers of schema and schematron checking.

We make sure that all of the correct measures and populations are being reported. If you, I think we saw in this particular measure that for CMS 68 we want to make sure that you use a correct measure ID for that as well as you're reporting the IPC as a denominator and numerator for that measure and nothing else. We also want to make sure that you only report that once.

That was of the common issues that we just heard in the previous presentation. We want to make sure that the reported population values match the ones that we expect. That's making sure that when we hand a vendor a set of patients, they run run it through their calculation's engine, they're coming up with the same results for the measure that Cypress is.

Does the supplemental information match the expectation? Can they correctly report all of that demographic information? Are performance rates being calculated correctly? It was mentioned that that was one of the issues on previous year for submission, so we included that validation in Cypress and as well as are people reporting the measurement period correctly for the measures? Yes.

Speaker 5: Sorry, I don't mean to be jerky or anything, but back on the previous slide, the cat with respect to the QRDA 3 and the performance rate being calculated correctly.

Dave: Yes

Speaker 5: Any thoughts of how it could come to pass that we received data that was completely improperly calculated from allegedly certified systems?

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Cypress, continued

Dave: Well this going to be new this year that we're adding the chapter for performance rate. The reason why that hadn't been the case was that Cypress formerly only checked against the HL7 version of the implementation guide. The HL7 version of the implementation guide has a "should" statement for performance rate. Therefore, we don't check any of the "shoulds". We only check the "shalls" to certify against the "shalls".

It is likely that because of that people were not calculating this correctly. Now what we do is if a vendor provides a performance rate, even though it's still a "should", we will check to make sure that it is right.

Speaker 5: Only if it provides a performance rate?

Dave: Only if it provides ... Yes, because it's a "should" requirement. We only go against the HL7 implementation guide.

Speaker 6: What's different in the validation utility then?

Dave: Yeah, the validation utility will make it a required field. Right now with Cypress, since we only go against the HL7 version, we can't enforce that it has to be there. If that makes sense?

Speaker 6: Yes.

Speaker 5: [That's good 00:21:38]

Dave: I mean it's unfortunate, but ... What are the versions of Cypress? Right now there are 3 versions that are currently available for ... There are 2 versions that are currently available for certification. That's there, see the 2 bolded ones on the bottom, that's Cypress 2.6.1 and Cypress 2.6.0. Cypress 2.6.0 will be available for 90 days after our release that just happened in July. It'll be available for [30 days 00:22:08] through October.

We see here the versions of the measures that we validate against as well as the versions of the standard. Cypress 2.6.1 is used for certification against the 2014 measures. It uses the QRDA cat 1 and 3 that were released in 2014. That was the Errata release of the QRDA files. Then Cypress 2.7, which is not currently available for certification, are going to use the test against the 2016 versions of the measures and uses the QRDA cat 1 R3 version.

Speaker 5: Do [these charts 00:22:53] have to re-certify them when they go to '15?

Dave: No, that's actually one of the frequently asked questions that's on ONC's website. I believe it's if you certified since 2012, you don't need to re-certify when you use the new measure. You are expected, as an EHR, to report using the new version. I think a lot

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of times, what people have seen, is that vendors will continue to use Cypress as they're developing towards the new version of measure but may not re-certify. I don't know. I can't necessarily speak to that. That's just one of the things that I've heard.

Julia: Can you hear me Dave?

Dave: Yes, we can Julia.

Julia: Okay, great, I did want to point out a comment similar to earlier is that again, Cypress doesn't require people to demonstrate that they conform to the program requirements. Things like [inaudible 00:24:03] reporting that are not related to the current business of Cypress.

Yes, we do know that the vendors pretty much use it formally to test internally [inaudible 00:24:15] the new Cypress version. They do not have to go back and re-certify. That's because if there's a patient that is happily [inaudible 00:24:24] people will re-certify the next requirement [inaudible 00:24:33] with current clients. The client will [inaudible 00:24:35].

Speaker 2: Can you subtitle that?

Dave: What Julia was saying there? What Julia was talking about was just reemphasizing that vendors don't have to re-certify when the new measures come out and that a lot employees will still use the new version of Cypress in-house to do their testing prior to that.

Speaker 2: Without requiring calculations as a mandatory thing, the data we get, forget groups, from individuals in the QRDA 3 file name and not use a file.

Dave: Then you're talking about the performance rate?

Speaker 2: I am, yes.

Dave: Unfortunately, yeah, I have a hard time with understanding how vendors can't do division in some cases. Moving forward, it would be nice to be able to put that as being part of the paper requirements. Right now, and the Cypress validation utility will provide that additional check and additional level of when people do testing to make sure that they are in fact doing division correctly. Yeah, it's hard to understand that issue. Yes.

Speaker 3: Actually, maybe half of it was answered by Julia already, but if there was someone who was certified in let's say Cypress 2.6, and they were certified, but in 2.6.1 there was a big that was fixed, that would actually mean that they would not have passed certification. Has that ever happened?

Dave: Julia, I don't know if you have the answer to that?

Speaker 2: Sure.

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Cypress, continued

Julia: I couldn't quite hear [JC 00:26:32].

Speaker 3: Pardon?

Dave: She couldn't quite hear.

Speaker 3: Basically the question, Julia is if I'm a vendor and I certified against a certain version of Cypress, and there was a bug that gets fixed in a subsequent version, does my certification still stand? Does the fact that we found a bug nullify that?

Julia: The certification would still stand if we introduced bug fixes if they're found in previous versions. The expectation is that [inaudible 00:27:09] according to those bug fixes but you don't [inaudible 00:27:13].

Dave: I think what Julia was saying was that the expectation is that you would keep your software up-to-date with the bug. You wouldn't be forced to re-certify.

Speaker 3: Okay.

Dave: We're now going to pull up the system. I had mentioned earlier that Cypress is an open tool which means that it's free to download. You can either download the source code, you can download Cypress a virtual machine, and you can also download it as an Amazon machine [instrument 00:27:44] which allows you to deploy it to the cloud.

What I'm going to show you today, I downloaded the virtual machine image. I have running locally on my machine here, I just Oracle, VMware, VirtualBox up here. When we open up the website once again we'll see that the URL is local host. That means it's running on my machine right here. Just once again just wanting to emphasize the fact that these tools are available for vendors to use in their own environment early and often.

To use a plain metaphor, we don't want people showing up at CMS's door stop with QRDA files right when we're landing and that's the first time that they do any testing. We want people to really start testing, who knows, maybe right when they go wheels up. At the very least when the pilot comes on 45 minutes before the flight and says, "We are starting our initial decent into Baltimore, please makes sure that you stay aware, and then I'll let you know when we're about to land." I flew down from Boston so that we're getting ready to land takes [inaudible 00:28:53].

It's probably about 10 minutes into the flight which is always fun. Here's the home page at Cypress. We'll see that I've already created a demo vendor. It says, "This demo vendor, as a demo product." These are totally made up names [August Fall 00:29:15]. There's no vendor out there called Demo nor are there a product called [August Fall 00:29:19].

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We see that there are no tests available. What I'm going to do here is I'm going to create a test which will allow me to create a name. I'm really original so I'm just going to call it CMS68. I choose which bundle that I'm going to use. Right now our normal [pledge 00:29:36] is ... We just have one bundle per Cypress release. A bundle is almost synonymous with measure [urban 00:29:44] or measure [year 00:29:45].

The 2.6 bundle has the CMS 2014 measures in it. I choose what type of measures I'm going to want to test against whether it's EP measures or EH measures. We see there's lots of measures. I can choose to select all of them, none of them. I'm going to just select one of them. As this is creating a test, in the backend is running, it's our master patient list. It's finding a random set of patients within that list that apply to this measure.

I'm just going to refresh this screen right here to see what it came up with. We see that this particular measure is going to have an IPT of 16. Out of this measure is actually, it's kind of confusing, it's what's called an episode of care measure which means that a single patient can show up more than once in each of the population. For instance, we see here that we have 10 patients but there's 16 in the IPT. Sometimes that confuses people when they're reporting demographic information.

You can get demographic information even in an episode of care measure it's still reported as a per patient basis not a per episode basis. We see here, and once again the random name that were created we see that there are 2 people that show up within the IPT. If we click on a particular patient here we'll see all of the information that is in that patient file. This is above and beyond the information that is required for the measure.

It requires the EHR to sift through and pull out the information that is relevant for the measure under re-certification. I can then, I mentioned earlier about downloading this information, I can use it to download an individual patient from this particular screen or I can download the test data here which will provide a zip file of all of the patients that were generated for this particular test. I'll do that. We'll see that its downloaded stuff. I don't really need to show you that.

What I'm going to do here is I'm going to upload some results. We will see what happens when a test file is submitted into Cypress, what behavior it shows, how it shows error files. It looks like I'm probably going to have to wait for it to actually push out the file. Once again it's running mostly on my machine so it's a little slower. Computers always know when demos are being given.

That's one of those things that if anyone's software knows that if you're going to do a demo chances are your computer's going to freeze. I'm not sure what's going on here. That looks like it froze my browser. Why don't we go ahead and log back in. I apologize for that. The virtual machine has been running all day. I imagine it's just kind of getting tired. Okay, and I killed my computer.

I'm actually going to go to the different version of Cypress at the moment. That virtual machine is not behaving too well. What we see here this is actually just an example of a

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product page where it shows all of the ongoing tests. It'll show the number of times the tests have been run against them as well as whether or not the test have [half-end 00:36:40] results or failing.

Cypress, continued

It's a good dashboard for people, as they're using Cypress, to gauge the level of success that they're having with all of the submissions. What we're seeing here is I just uploaded a file, essentially an arbitrary category 3 file reporting on CMS68. One would expect there to be errors. You wouldn't want a test or a file that I created, Julie Child's style, in the oven, so we'll work through it. It's always good to see these.

What we have here is a ... We see that there's 21 errors in this file [to field 00:37:42] display features that show where the errors are showing up. For instance down here we see that the QRDA file that I provided was only reporting 14 people in the ICT when there should be 18. My file was reporting 15 people in a denominator when there should be 18 and that I was reporting one in the numerator. I would actually match the number of patients that were in the numerator. We see that that shows upstream.

We see that there were a lot of errors with this particular file with respect to [inaudible 00:38:15] the numbers that were in the populations I had mentioned that as well as where the demographics are a little bit off. We also see that we're supposed to include a value of a population for the denominator exception. We also supposed to provide some [inaudible 00:38:38] data saying zeros are essentially are for that [nuclear 00:38:43] population. Those are errors with the calculations.

Similarly if I had reported an incorrect performance rate, that would show up here. If I did 1 divided by 18 wrong, it would have said you should have this number here. Then other errors are QRDA errors which there aren't any issues with the format of this document. That would be the scheme in a schematron rule. It didn't break any of those. I'm going to go back to the presentation again. I had mentioned that we only run against the HL7 implementation guide in schematron rules.

There are a few additional validations that we started to do now with the errors that we've seen with submission that's included in the performance rate calculation that's doing a few other checks with measuring period just to make sure that we catch some of those in the first [inaudible 00:39:58] program and don't wait for vendors to submit to catch those. When it comes to the schematron rules, we've created this tool called the Cypress validation utility which is separate from Cypress proper which allows vendors to use this tool, upload.

At the moment it only allows you to upload a single QRDA category 1 or a category 3 file. We're in the process of updating that to allow you to upload you a zip file so that you can test a whole bunch at once. Then it'll run checks against, not only the Cypress checks, making sure that the correct code and values and that you use, but it also runs you against the schematron rule. That's available at ...

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Speaker 3: For CMS.

Dave: For CMS yes, the CMS rule. I'm just going to go to this link. [inaudible 00:40:57] Cypress. This tool is available on the Answer Web. We see here it allows me to select a QRDA file. I'll select this cat 3 that I had just submitted. I'll say that I'm submitting against the 2015 feature RS. This is a category 3 file. I'll have to confirm that we're not providing any THI information.

Since we're allowed to upload category 1 files, we want to make sure that people will at least acknowledge that this is a test system and they shouldn't be uploading real patient information. Once they upload this, I don't know that I would expect to see any errors show up. We'll see. Oh, yeah, here we have a whole bunch.

Speaker 4: Coincidence, I think not.

Dave: Yeah. I think I actually uploaded this the wrong year which is why we're seeing these. We see some errors so that this is coming from the CMS schematron rules. We see this little tab here that will show you where the errors are being thrown. Over here this error thing that we have an invalid [HDMS 00:42:25] that ID found.

I have a feeling that it just happens to be I clicked on the wrong year on that one. Once again, it's pretty simple. You upload one file, you select which program you'd want to submit it against, or if you only want to run it against HL7 schematron files you can select this non-recording year. It'll run those files. Are there any questions on the Cypress certification tool or the Cypress validation utility?

I have 1 more slide, technically 2 more slides. Here are some. We're an active community. We have a website where you can download information on all things Cypress, projectcypress.org. We have 2 demo servers. We have demo.projectcypress.org and the validated.projectcypress.org.

I promise that demo.projectcypress.org doesn't freeze like my computer just did. If you guys have any questions about the tools that you're using, either the Cypress [inaudible 00:43:50] or validation utility, we're always welcome to hear feedback. You can send an email to talk@projectcypress.org which is actually a ... It's a public account. This goes to a Google group. It's not a single ...

It's monitored so you can send information in and then we'll post it. The reason why we do that is to harness the wisdom of the crowd. A lot of times people ask questions, or they won't ask questions, because they feel like they're stupid for asking them, so having people have these discussions in open forum allows people to learn from other members of the community as well providing their own feedback about their experiences.

We also have bi-weekly tech talk on Tuesday where we talk about future changes within Cypress. We've talked ad nauseam before the last release about the changes that we were going to be making to the validation since we added a few rules that were above

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and beyond what's specified in the IG. Now are there any final questions? This really is my final slide. I hope that I'm still your best friend.

Speaker 4: You are, you are.

Speaker 6: Great, thank you David.

Speaker 4: Great thanks, terrific. We have 3 minutes to waste.

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Closing Remarks

Speaker 6: I just want to close and just by saying first of all thank you to Mitre for hosting this event. Everything worked beautifully except for Dave's laptop at the end. [crosstalk 00:45:39]. Thank you so much. We really appreciate all the help. Thank you to the speakers for the wonderful job that they did. They've really had some challenges with the time frames and the amount of materials to present to an audience that had come from many backgrounds.

Thank you all very much for your participation for staying here for your pertinent questions and issues you raised up. We really appreciate it. We all learned something. We all took some things, will take some things back, and try to make things better for you all and easier. Boy, I just want to thank you all for being the ones to get those QRDA's ready because that is complicated stuff and appreciate your work.

We are available for any questions. We will be posting the slide. They have to be 508-ed and things like that and these letter changes. We'll be sending them out to you all before they're posted probably [inaudible 00:46:54]. I'll see what's the best process to do. I'll leave it up to Minet because I'm going on vacation Friday for a couple of weeks.

Speaker 5: Where you going?

Speaker 6: Again, just to the beach, Ocean City. Enjoy the rest of your summer. Take some time to play and enjoy the sunshine and you can have a safe drive home. Thank you.

Speaker 4: Thank you.