Pioneers in Quality Electronic Clinical Quality Measure (eCQM) EtoE Webinar Series

CAC-3 and EHDI-1a eCQMs

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Lisa Anderson: Hello everyone. I'm Lisa Anderson, the project director for eClinical in the Department of Quality Measurement at the Joint Commission. I would like to thank you for joining us for our Pioneers in quality 2018/2019 Expert to Experts Series. Today we will be focusing on the CAC-3 and EHDI 1a eCQM.

For participants that would like to use the closed captioning service, please see the link on this slide. This information is also accessible via a participant pane in the go-to webcast platform. The Joint Commission and CMS designed the Pioneers in Quality Expert to Experts series to support hospitals adopting electronic clinical quality measures and transitioning to the new clinical quality language or CQL. We introduced this series with a CQL basics webinar, followed by sessions covering the stroke, AMI, ED, and VTE eCQMs, and based on participant feedback, we have extended the webinar session to 90 minutes to allow for a live Q&A session after each measure's presentation.

At the end of today's session, participants will be able to apply concepts learned about the new CQL expression language for CAC-3 and EHDI-1a, identify their common issues in question, and prepare to implement CQL for the 2019 eCQM reporting year 2020 data submission. The slides are available in the event resources Pane. Click the triangle to open the list. Once selected, you will be able to download and print the slides.

These sessions are designed to be interactive. The questions pane will be open throughout the presentation to ask questions and view responses in real time. If possible, please indicate the slide number you are referencing in your question. Additionally, you can visit links or resources noted on the screen. Please note, a recording of today's presentation, the slide deck, and Q&A documents will be available on the Joint Commission website in several weeks. We hope you find this information helpful and share it with interested colleagues.

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The following staff and speakers have disclosed that neither they nor their spouse or partners have any financial arrangements or affiliation with corporate organizations that either provide educational grants to this program or may be referenced in this activity: Lisa Anderson, MSN, RN-BC, Project Director, eClinical, Department of Quality Measurement; Marilyn Parenzan, MBA, RHIA, CPHQ, Associate Project Director, eClinical, Department of Quality Measurement; Elvira Ryan, MBA, BSN, RN, Associate Project Director, Department of Quality Measurement; Lynn Perrine, MSN, RN, Senior Nurse Informaticist, Lantana Consulting Group; and Xidong Deng, PhD, Centers for Disease Control and Prevention.

I am now going to turn over to Elvira and Marilyn to begin their presentation.

Elvira Ryan: Good morning everyone. This is Elvira Ryan, and I'm the clinical lead for the Chart-based Children's Asthma Three Measure, and by way of review, I'll just offer an overview of the clinical rationale and the intent of the measure. Asthma is the most common chronic disease in children, and a major cause of morbidity and healthcare costs nationally. In 2015, almost 50 percent of the children with asthma age 18 and younger reported having an asthma attack within the last year. Chronic asthma in children accounts for a significant annual loss of school days and subsequent annual loss of workdays on the part of their parents. The guidelines continue to support patient education for the self-management of asthma.

With respect to the home management plan of care, there were five basic criteria that had to be met in order to satisfy this measure. The first criteria was that arrangements for follow-up care were made prior to the discharge of the patient from the inpatient admission. This meant that the patient should have an actual appointment scheduled prior to discharge. The reasoning being that, more often than not, if there were no appointments made, chances are that the follow up would not take place.

With respect to the second criteria, environmental control and control of other triggers, it is key to note here that it's very important that this component of the management plan of care would be individualized to the patient. Environmental triggers in one setting might not be the same for a patient in another setting, so that the plan of care should address an individual patient's specific environment so that it would pay attention to their unique needs. The method and timing of rescue actions was a key component also of the plan of care, and that was to instruct the patient and their caregivers when it was appropriate to take action, what steps should be taken, and when, at a given time, the patient might have reached a critical stage where it necessary to contact a physician.

The last two criteria address the use of controllers and the use of relievers. If the patients were prescribed these medications while they were in the hospital, these needed to be dressed so that they were well aware of the names of the drugs, the dosing, and the timing for administration. I will now turn it over to Marilyn.

Marilyn Parenzan: Thank you, Elvira. Good morning everyone. This is Marilyn Parenzan. I am an eClinical associate project director in the Department of Quality Measurement at the Joint Commission. Before we dive into the measure specifications, I want to take a few minutes to provide a framework for today's presentation. CQL, or Clinical Quality Language, is used to write the measure specification, and the

goal today isn't to teach you how to write CQL but to help familiarize you to the CQL terminology so that you're better equipped to read and understand the specifications to support your organization. So, we will be somewhat technical in nature throughout the presentation, but with eCQMs the technical jargon impacts the clinical intent of a measure, so it is important to be acquainted with those aspects. And with that, let's get started with a high-level overview of some of the CQL basics to set the foundation.

Slide 14 shows the evolution of the standards to create eCQMs. eCQMs consist of three components. First, we have the metadata, which uses the Health Quality measure format, HQMF, which is the basic electronic specification for the measure. Second, we have the data model. We use the Quality Data Model or QDM for short, which defines the relationship between patients and clinical concepts in the standardized way. And lastly, we have the logic, so as of January 1st, 2019, we made the transition from QDM to CQL because it allows for more flexibility in the logic with better timing precision so that the logic can be better aligned with the clinical intents of the measure.

Slide 15 shows a screenshot of a human readable file. For those that are new to eCQM, a human readable is the file format of measure specifications for a person to read versus a computer, and the first thing I want to point out is, if you look under the initial population, it's only referring to a single line; for example, TJC. encounter with principal diagnosis and age. So this is a major difference from the QDM version, where there were lines and lines of logic. With CQL the logic is simplified into what we call definitions. And we title these definitions using more natural language to capture the meaning of the logic it represents.

The second thing to note are the definitions and functions section. I've bracketed these two sections together as building blocks, because, collectively, these are all the definitions used to build the population criteria referenced at the top of the page.

So, to give you a better understanding of the CQL structure, this diagram depicts a visual representation. If you can imagine that these blocks are like Legos, and if you've never played with Legos before, you're given a set of directions that instruct you on how to connect several Lego blocks together in order to build a structure. Well, we can take that same concept into CQL, where we have the clinical specifications as the directions to build definition, and each of those definitions are like Legos or building blocks, where you use one to build upon another until we have a complete definition.

So, looking at the diagram, the definition we're building is the initial population, which is defined as C. Now, remember, each block represents a definition and each definition has a name and logic to represent a population criteria. So, in block A, this is looking for specific encounter type, so, for example, either an in-patient encounter, or maybe an emergency room encounter. You'll also want to note that A is the largest block to represent the largest patient population. So the idea is, as we start building the population criteria, we want to start narrowing down the scope of patients. So, now in block B, rather than repeating the encounter logic again, we can simply pull definition A into the logic and then add the next criteria we're looking for, in this case a diagnosis.

This is how we connect the definitions together, by nesting one into another. So, then, definition B now includes the encounter type and the diagnosis. We need one more block to complete the structure, which is an age block, so we follow that same pattern, where we connect B with A to create C. Hopefully you see how we build off of the previous definition so that each successive definition helps to constrain the logic, so now in C we have all the criteria we've defined, the encounter type, the diagnosis, and the age of the patient, and that's how C becomes the initial patient population.

On slide 17 we will look at this concept in more concrete terms. We have three definitions to build the initial population. At the bottom of your screen, we'll start with TJC got nonelective inpatient encounter. It's looking for an inpatient encounter. Then in the next block, TJC.All stroke encounter, notice how it starts with the previous definition name. We then add diagnosis criteria. And then in the next block of encounter with principal diagnosis and age, we start with the previous definition and then add age criteria. So then, finely encounter with principal diagnosis and age is directly used as the initial population. So, as you can see, using this methodology of building blocks makes it cleaner to read and allows us to reuse the definition throughout the measure specifications.

Now, there are a lot more terms used in CQL, but these are just some of the basics. So, as I mentioned, CQL uses definitions, and all definitions have a name, and that name should encompass the meat of the definition and should be unique so we can identify it within a library. Libraries are created at the measure level, so each measure builds its own library of definitions as they are written. But we also have global libraries that can be shared across all measures, which is the purpose of creating a library, so we can easily share definitions rather than reinventing the wheel each time.

So, to identify if a definition is coming from a library, we have a library alias. So, if you look at the yellow highlight, a library alias is denoted as a prefix in the name of a definition in this example, TJC. Some definitions may come from a specific library so you will not see that denotation. Next, we have the expression, and expression refers to the content of a definition. We use this term a lot when referring to the logic.

Looking at a basic construct of an expression, expressions use data types. Data types describe a part of the clinical care process, which refers to a specific category in QDM. For instance, the encounter perform data type is in the encounter category. A medication administered data type belongs to the medication category. Each data type has their own set of attributes. Attributes provide specific details about their data types. So, in the example .relevantPeriod is an encounter performed, meaning a relevant period defines the start and end time of the encounter.

Next, we have a value set, which specifies the kinds of data or codes that we are looking for relative to the QDM category. Ultimately, these are the codes the logic is looking for in the EHR. So, in this example, the value set of nonelective in-patient encounter consists of SNOMED codes to satisfy the logic. We would expect to see that any one of those SNOMED codes is present in the patient's record.

Lastly, we have an alias. Alias in expressions are used to give a source a name so that a bit of logic can be referred to easily within the expression to avoid restating. And on slide 20, just briefly, there is a terminology section in the human readable where you can see all the value sets and direct reference codes used in the measure. The value set authority center is where you would go to verify these codes. Each value set has a unique object identifier referred to as the OID number to make it easier to research.

One of the most common questions we get is, what does union mean? Union is a CQL operator that combines two or more lists together. So, in the diagram, any element in list A or list B will satisfy the condition, so anything in the red. From this, you can understand why we related union to the meaning or, because anything from A or B will meet. And just to clarify what lists are, lists are the results of what the logic is looking for in the EHR. Let's look at the example given. The logic is looking for diagnosis code of either perforation of uterus or uterine window or uterine rupture or ectopic pregnancy. So, what union does is it combines all the diagnosis codes into one list so that if the patient encounter has any of the diagnosis codes, it will satisfy the condition.

Intersect is another common operator in CQL, which is only looking for the common elements between list A and list B. So, the red depicts the shared elements between the two lists. To add some context, let's look at an example. If list A returns a list of all inpatient encounters with age 18 years and older and list B returns a list of all encounters with a CBC level, then this intersection is a list of inpatient encounters with age 18 years and older and a CBC level.

Okay, so that wraps up our CQL 101 crash course. On slide 23 we transition back to CAC-3 Version 6. The version is important to note, since it will be the version used for the reporting year beginning January 1st, 2019. The initial population reads, "Pediatric asthma inpatient ages 2 through 17 years and length of stay less than or equal to 120 days that ends during the measurement period."

The highest-level definition for inpatient population is encounter with principal diagnosis of asthma with age between 2 and 17 years. Let's dissect this definition. Three conditions must be met in order to be included in this definition. The patient must meet all requirements in the global.inpatient encounter definition. More on this in a few minutes. The alias name is highlighted in blue and serves as a label so that the listed patients identified in this clause may be referenced later. Throughout this presentation, we will be using blue highlighting to indicate the name, the alias names.

Secondly, for the patients identified in the previous logic, the patient must be between the ages of 2 and 17 years at the start of the relevant period, which is the admission date for this measure. The patient's birth date is compared to the start of the relevant period by a function called "calendar age in years at" to calculate the patient's age. The global prefect indicates that this function is called from the global library. And third, the patient has a principle diagnosis in the asthma value set. Principal diagnosis is an attribute of the encounter perform data type.

Now, on slide 28, let's dive deeper into the global.in patient encounter definition. This definition can be found in the global library. Three conditions must be met in order to be included in this definition. First, the encounter must be an inpatient

encounter with one of the codes listed in the encounter inpatient value sets. There are three codes in this value set that are described as emergency hospital admission, elective hospital admission, and just plain hospital admission. Again, the alias name is highlighted in blue and serves as a label so that the list of patients identified under the clause may be referenced later.

Second, the length of stay for the inpatient encounter defined on the line above must be less than or equal to 120 days. We use the CQL function called length in days, which calculates the difference between the start and end of a value. And third, the relative period end date, for example, the discharge date, must be during the measurement period. The measurement period reflects the time period of interest. So, now that we've defined all the criteria to meet the initial population, encounter with principle diagnosis of asthma with age between 2 and 17 years becomes the single definition for the initial population.

Turning to slide 33, once a patient qualifies for the initial population, we continue moving through the logic to the denominator. The denominator is looking for patients with a discharge disposition of home or home with police custody. Here is the logic for the denominator population. And you'll notice that we reuse the encounter with principal diagnosis of asthma with age between 2 and 17 years from the initial population that we just discussed. In this definition, we are using the alias of asthma age encounter to label this grouping of patients for future reference.

In the second piece of logic, we are looking for patients who have a discharge disposition and the value set entitled "discharge to home or police custody." We do this as patients being discharged to other locations, such as another acute care facility or skilled nursing facility would not be candidates to receive a home management plan of care for their asthma. Discharge disposition is an attribute of the encounter performed data type.

On slide 37 you will see our numerator. The numerator includes pediatric asthma inpatients with documentation that they or their caregivers were given a written home management plan of care document that addresses all of the following: One, arrangements for follow-up care; two, environmental control and control of other triggers; three, method and timing of rescue actions; four, use of controllers; and, five, use of relievers, or there must be documentation that the patient or their caregiver refused a written Home Management Plan of Care document. The Home Management Plan of Care document must be present in the form of an explicit and separate document specific to the patient rather than components or segments of the plan spread across discharge instruction sheet, discharge orders, education sheets, or other instruction sheets.

Here is the eCQM logic for our numerator statement. You see two clauses joined together with the union statement. Remember that union is a CQL operator used to combine two or more lists of patients together. On slide 39 you will see a familiar definition being reused from the denominator statement, "encounter with discharge disposition to home or police custody" highlighted in yellow here. Of the encounters with discharge disposition to home or police custody, we are looking for an asthma action plan to be third or documented during the encounter relevant period, or in other words, between the encounter's admission and discharge date for this measure.

Let's take a closer look at the definition Asthma Management Plan Completed. The Asthma Management Plan Completed definition uses the communication from provider to patient's data type. This data type represents the transmission, receipt, or acknowledgment of information from the provider to a patient. Asthma action plan, highlighted in yellow here, represents a single LOINC code, which translates to asthma action plan. Since we only have one LOINC code to represent this concept, we forgo creating a value set, and, instead, imbed the LOINC code directly into logic. So, while asthma action plan may look like a value set name, if you refer to the terminology section of the human readable, where all value sets are listed, you will see the actual LOINC code. And, remember, the asthma action plan must be authored during the encounter relevant period.

Turning to slide 44, let's turn our attention to the second clause of the union statement of a numerator. Again, the encounter with discharge disposition to home or police custody has been previously discussed. The definition, "no asthma management plan due to patient refusal" will be explored next. Here, you see we use the same data type, communication from provider to patient, but we add "not done" and use the negation rationale attribute to capture the concept of patient refusal. Negation rationale indicates the reason that an action was not performed. Only QDM data types that represent actions; for example, performed or recommended, allow the negation rationale attribute. The intent is to provide a justification as to why an expected action did not happen.

Patient refusal is a value set consisting of SNOMED codes representing the concept of patient refusal. The value set includes refusal by a patient or a caregiver. The caregiver is defined as the patient's family or any person who will be responsible for care of the patient after discharge. And, remember, the negation rationale must be authored through the encounter relevant period. And that takes us to the end of the CAC-3 measure review. Lisa, I'll hand it over to you.

Lisa Anderson: Thank you, Marilyn. We will now take a few minutes to open the session for questions related to the CAC-3 eCQM. To ask a question, please use the Questions pane to submit your question, along with the slide reference number, if possible. We will answer as many questions as time permits before moving on to the next measure presentation. We have a quiet group today. We'll give it just a little bit to make sure no questions come in before moving on, so bear with us.

Okay. Well, if you do have any questions pertaining to CAC-3, please remember the questions pane will stay open -- oh, here comes so questions. So, this question comes from, I think, Sharla [inaudible] from Health Land, and the question reads, "On the does must be authored during relevant period, does that mean before the discharge date and time?" Marilyn, can you answer that.

Marilyn Parenzan: Sure. Thank you for that question. It means it can be up to and including the discharge date and time; yes.

Lisa Anderson: Thank you. Our next question comes from Edgardo [Cosmae] from Infomedica. Author time, is it relate to? I think that question means what does the author time mean?

Marilyn Parenzan: Author time relates to when the home management plan of care was documented in the medical record.

Lisa Anderson: Correct. And just for reference, author time, author date/time is an attribute found in the quality data model, so for further information, you can go to the QDM to read the full definition of that attribute. We'll pause just another 30 seconds or so to see if more questions come in the queue. Thank you for the questions so far, and for your comments. Those are appreciated.

All right, this next question comes from Paulo Andre from MD Interactives. Are there plans to move out from a complex QRDA free format to a simpler format? So, thank you, Paulo, for your question. Currently, we are using QRDA files to report electronic clinical quality measures. But we are on the move to FHIR. If you haven't heard of that, it's the Fast Healthcare Interoperability Resources, and so that's the move that we're going to. And there's actually a lot of work getting done as we speak, looking for better ways to exchange quality data in the future. And just to clarify, QRDA-3 files are used by the physicians. For our hospital-based measures, we actually use a QRDA category 1 file format.

Okay. Well thank you. If you do have more questions, please go ahead and put those in the queue and we can get to them at the end if we have time. Sorry. We will also get to them in a Q&A document if they don't get answered on the live webinar today and will be posted on our Pioneers in Quality portal.

I would like to now turn it over to Xidong and Lynn to talk about the EHDI 1a measure. Take it away, ladies.

Xidong Deng: Thank you, Lisa. Hello everybody. This is Xidong Deng. I'm a health scientist at the Early Care and Detection and Intervention Program at the National Center on Birth Defects and Developmental Disabilities with the Centers for Disease Control and Prevention. Lynn and I are going to talk about the EHDI 1a measure, which is the hearing screening prior to hospital discharge.

Just a little bit of background about the EHDI program and the measure. The goal of the National and state based EHDI program is to maximize linguistic competence and the literacy development more children who are deaf or hard of hearing. The joint committee on infant hearing, or JCIH, is a joint committee consistent of hearing health professionals whose mission is to address issues that are important to the early identification intervention, and the full up care of children with hearing loss. We have supported the concept of regular measurements of performance and recommend through team monitoring of these measures and continuous quality improvement.

One of these measures that was recommended by JCIH in 2007, physician statement was hearing screening prior to hospital discharge. In 2012, CDC EHDI program developed the EHDI 1a based on this recommendation and was subsequently endorsed by the National Quality Forum and then adopted by CMS and the Joint Commission. CDC remains to be the steward of the original EHDI 1a measure and works with the Joint Commission on its implementation, which Lynn we'll talk about next in more detail. Lynn.

Lynn Perrine: Thank you, Xidong. So, now we're going to go over the population criteria for the EHDI 1a measure. And the initial population narrative reads, "Live birth

encounters at a hospital or birthing facility where the newborn was discharged with hospital stays less than or equal to 120 days that ends during the measurement period." The dark blue box on this screen shows that the initial population uses two blocks of logic, encounter with live birth diagnosis and diagnosis live birth newborn born in hospital. The two blocks of logic and value sets that are used to create the encounter with live birth diagnosis logic are shown below the dark blue box. So let's dig into each of these blocks of logic a bit further.

On Slide 51 here, you can see we have the in-patient encounters define statement that is used to build both definitions of the initial population, the encounter with live birth diagnosis, and the diagnosis live birth newborn born in hospital. Starting with the first line of logic, the encounter performed data type is used to define the inpatient encounter. For this measure, a patient must have one of the encounter codes listed in the encounter inpatient value set. Following in the brackets is the alias name encounter. The alias is used to reference elements or primary source in subsequent losses or pieces of logic.

Supplemental timing attributes, such as prevalence period and relevant period were added to most QDM data types to facilitate accurate retrieval of time-related information within the CQL logic. The relevant period attribute addresses the time between the start of an action to the end of an action. Each data type, using relevant period, is constraining or assessing the logic to the start and stop time for the event listed, in this case, the start and stop time of the inpatient encounter. You can see on the last line, we used the relevant period of the encounter to determine if the encounter occurred during the measurement period.

We're now on slide 52, and on the second line of logic you see that global precedes length and days, and this is because this function is located in the measure offering tool's global function library instead of the measure library and is referred to as a global function. Using the global common library helps maintain consistency across measure specifications when measures are assessing the same thing, like length and days of an encounter. The alias global is used to pull the logic from the measure offering tool global common functions library.

To determine if the encounter is within the 120-day parameter we use the CQL function length and days to calculate the difference in days between the start and end date of the encounter relevant period, also known as value. The global length and days expression is shown here in the gold-colored box. With this definition statement, the logic assesses if the patient had an inpatient encounter, and if so, was that encounter less than or equal to 120 days and did it end during the measurement period.

So, on slide 53, we move on to the encounter with live birth diagnosis define statement and we pull in the inpatient encounters definition statement that we just discussed and give it the alias "inpatient encounter," as highlighted here in yellow.

On slide 54, the second line of logic starts with "where exists." The where clause allows filtering of a result to only the information that meets the condition. For this measure, we only want the inpatient encounters that have a diagnosis of a live

birth newborn, born in a hospital. The exists operator or list of values and returns true if the list has any values or false if the list is empty. So, putting this line of logic together, the measure compiles a list of inpatient encounters and assesses diagnosis codes during those encounters using the alias encounter diagnosis, as shown here in yellow.

So, on slide 55, continuing down to the third line, the logic is looking for an encounter diagnosis within the live birth newborn born in hospital value set. The live birth newborn born in hospital group in value set includes ICD-10 CM and SNOMED CT codes that represent diagnoses that are commonly used in the inpatient settings for newborns born in the hospital facility who have an active diagnosis of live birth. The measure does not require an age calculation because the diagnosis codes refine the population to only those encounters with a live birth diagnosis.

The live birth newborn born in hospital value set was updated in version 6 of the measure for the 2018 reporting year to better capture the correct population, because encounters for the mother were inadvertently pulling into the population due to mapping issues. So, effective with version 6 and later, codes in this value set map only to the [inaudible].

So, we're now on slide 56, and, unfortunately, I put the value set on this slide instead of the diagnosis live birth newborn born in hospital definition statement. Please accept my apologies for that. But I'll do my best to walk you through that definition verbally. So, the definition for diagnosis live birth newborn born in hospital reads "Inpatient encounters with an alias of inpatient encounter," and then the next line reads, "With diagnosis, live birth newborn born in hospital" with an alias of qualifying diagnosis. The next line of logic in that definition reads, "Such that qualifying diagnosis .prevalence period starts during inpatient encounter that relevant period."

So, to build this definition, the inpatient encounter's logic is pulled in and given the alias inpatient encounter. The width keyword is used to describe cases should only be considered if a related data item is present. In this case, the diagnosis from the live birth newborn born in hospital value set, which we've given the alias qualifying diagnosis, and the prevalence period or the onset and abatement times for the qualifying diagnosis must start during the relevant period of the inpatient encounter.

So, looking at the dark blue box, the initial population logic is built with the two definition statements we just defined, the encounter with live birth diagnosis and the diagnosis live birth newborn born in hospital. The union operator between these two definition statements means four, so either definition will meet the initial population criteria. A common question we receive on the measures initial population is, if a baby is born at hospital A and then transfers to hospital B for a higher level of care, is that baby in the initial population for both hospitals? And the answer is that the intent of the measure is to assess the number of live births at a facility that have been screened for hearing loss before hospital discharge.

So, in this scenario, when the baby is born at hospital A and then transfers to hospital B for a higher level of care, the baby would be included in the initial population for hospital A but would not be included in the initial population for hospital B, since the baby was not born at hospital B. Hospital A could claim the

exclusion for the diagnostic hearing screening not done due to medical reasons or contraindications, and we'll cover that exclusion criteria later in the numerator logic.

On slide 57, once the patient qualifies for the initial population, the process moves to the denominator. For this measure, the denominator is equal to the initial population, as shown here in the dark blue box.

So, on slide 58 we effectively carry all the definitions used to build the initial population into the denominator. As you can see in the gold-colored box, the definition statements we just discussed for the initial population are reused here in the denominator. Those are encounter with [inaudible] diagnosis and patient encounters, and, again, I see here that I inadvertently put in the value set rather than the diagnosis live birth newborn born in hospital definition statement that we just discussed.

On slide 59, an exclusion to the denominator if a live birth encounter or the newborn expires prior to discharge and has not received a complete hearing screening. A complete hearing screening is defined as having both ears screened during the inpatient encounter.

So, here on slide 60, like with the denominator, we begin building the denominator exclusion project by pulling in the definitions from the initial population and give it the alias live birth encounter.

Here on slide 61, we look at the discharge disposition, specifically looking to see if there is a status of dead during the live birth encounter. You may notice in this version that we replaced the discharge status attribute with the discharge distribution attribute for the encounter perform data type to align with QDM version 5.3 changes. Here, we use a direct reference code, meaning that the logic reference is a single code. In this case, the logic is referencing SNOMEDCT code 371828006, which is described as a patient deceased during stay, discharge status equals dead and findings. The squiggly line is called a tilde, a tilde is the equivalent operator in CQL; meaning, if the live birth encounter discharge disposition is equivalent to the deceased code it returns true.

On slide 62 the final line of the denominator exclusions logic states, "And not exists, has complete hearing screening." The "has complete hearing screening block of logic" is shown here at the bottom of the screen, so let's break that down a bit further.

Here on slide 63, to build the has complete hearing screening definition, we begin by reusing the inpatient encounters definition. And on slide 64, from that pool of encounters, the logic assesses if the left hearing screen was performed, seen here in yellow highlighting. But before we go further, we need to define what left hearing screen performed means.

If you look just below the dark blue box you can see the left hearing screen performed definition statement. The diagnostic study performed data type is used to document completion of the diagnostic study indicated by the QDM category and its corresponding value set. Here, we're looking to see if a hearing screen of the left ear was performed by identifying LOINC codes from the newborn hearing screen left value set or the result of the left hearing screen was a code from the

path to refer value set. The path to refer value set is comprised of SNOMEDCT codes that represent findings to indicate either normal findings on the hearing examination or that a referral is needed.

So, going back to the has complete hearing screening definition statement, we pull in the left hearing screen performed definition statement and give it the alias "left hearing screen." The third line assesses those inpatient encounters where a left hearing screen was performed and the author, date, time for the hearing screen was during the inpatient encounter relevant period.

Online 65, we'll take a look at the right hearing screen performed. And the right hearing screen performed definition is built just like the left hearing screen perform definition and looks for a result within the path to refer value set and author, date, time, during the inpatient encounter relevant period. Note the use of the "and exists" operators here. That means that both the left and right hearing screens must be performed with a result of either pass or refer to meet the has complete hearing screening criteria. So, putting the denominator exclusion building blocks together, an exclusion would be met if there's a live birth encounter or the newborn expires prior to discharge and has not received a complete hearing screening.

Slide 66 will move on to the numerator, and the logic is looking for a live birth encounter where either a complete newborn hearing screening is performed prior to discharge or the newborn is not screened due to medical reasons. The numerator is built with two definition statements, has complete hearing screening, and hearing screening not done due to medical reasons.

The has complete hearing screening definition, shown here on slide 67, we discussed in the denominator exclusions and we reused it here in the numerator. Here on slide 68 the has complete hearing screening definition unions the hearing screen not done to medical reasons definition. To build a hearing screen not done due to medical reasons definition we start by pulling in the initial population definition and reusing the alias live birth encounter, as shown in the orange-colored box.

We're now on slide 69. And using the live birth encounter, we then determine if the hearing screen was not done in either the left or the right year. To do this, we use the diagnostic study data type with the negation rationale attribute. You might recall from Marilyn that the negation rationale indicates a reason that an action was not performed, and only QDM data types that represent actions, such as performed, allow the negation rationale attribute. The intent is to indicate a justification that such action did not happen as expected.

If this produces a result, meaning at least one ear was not screened, then the logic looks to see if there's a medical reason why it was not done, using codes from the medical reasons value set. The medical reasons value set includes CT codes to capture medical contraindications, surgical contraindications, and not indicated because there's a reason to withhold a certain medical procedure or treatment because it could harm a patient, or if the infant needs to transfer out because he or she is critically ill.

A comprehensive list codes for these conditions is not available because the judgment is often subjective. This value set is not intended to be used for other

reasons the screening was not performed, such as parent refusal, technical failure, or a missed procedure. We use the author, date, time attribute to capture the time the data element was entered into the clinical software because we've heard from implementers that it's difficult to know the start and stop times for hearing screenings. The reason for using author, date, time here rather than relevant period is because relevant period requires both a start and stop time, so, therefore, the author date, time attribute is used in this measure because the start and stop times for hearing screenings are not always known.

As previously stated, a union operator here means or, so either will meet the criteria. So, putting that altogether encounters at a hospital or birthing facility where the live born newborn was discharged within is 120 days or less and that ends during the measurement period and who received a complete hearing screen, meaning both ears were screened, or did not receive a complete hearing screen because of a valid medical reason.

So, some common questions that he we receive regarding medical reasons include does documentation of medical/surgical contraindication have to specify laterality, such as left ear or right ear to pass the measure, because numerator guidance suggests that both left and right are to be addressed. And the answer is that the intent of the measure is to capture complete instant hearing screens defined as having both ears screened during the inpatient encounter. The measure determines that the hearing screen was done for both the right ear and the left ear, and for each ear, it assessing a result of either pass or refer, or if the screen was not done due to medical reasons.

Another frequent question that we get on this measure is that in the event that a repeat hearing screen is performed, should only the initial screen result be submitted or would it be appropriate to include the most recent screening result. And the answer to that is that the measure does not specify initial or most recent for the hearing loss screening result, only that the screening is performed prior to hospital discharge.

On slide 70 you can see that this measure does not have numerator exclusions or denominator exceptions. And that concludes the EHDI 1a overview. Thank you for your attention, and I'll turn the discussion back to Lisa now.

Lisa Anderson: Great. Thank you, Lynn. Before we move into the Q&A portion, we'll do a quick review of some of the key resources. The eCQM Resource Center is a one-stop shop for eCQM-related information. It houses the various tools and resources, such as the measure specifications, the technical release notes, which describe all the changes made during annual updates, and the addendum. There are measure flows to help understand how the data is processed, links to the CQM and the quality data model and CQL standards, as well as previously-recorded webinars and slide presentations.

There is also an event calendar where you can find additional educational sessions. The Value Set Authority Center is where we store all the value sets and direct reference codes used in the measures. It does require a license but it is free to the public. Here in number three, we are frequently asked about how to implement CQL. There happens to be a presentation from HIMSS 2018 titled "Getting Started with CQL, Technical Implementation for Vendors" that provides an overview of the CQL architecture, building a CQL execution engine, and using

open source execution engines. A newer version presented at HIMSS this year will be available soon, so more details to come.

Items four and five are quick links that will take you to the JIRA site to submit questions or comments specific to CQL or the eCQM measures, and lastly. in six and seven are the links to the Pioneers in Quality portal where you can find all previously recorded presentations and slides and register for the upcoming educational sessions.

We will now move into the final Q&A segment of the session. To ask a question, please type your question in the slide reference for number in the questions pane. We will answer as many questions in the remaining time. All questions submitted will be addressed in a Q&A document and posted on the Pioneers in Quality portal.

And this first question comes from Laurie at EE Health. The initial population hearing screening, if a baby born is in hospital A and then transferred to hospital B, then the baby should only be included for hospital A and not included for hospital B; is that correct? Lynn, I heard you talk about this in your presentation, but can you answer that question for us?

Lynn Perrine: Happy to. Yes, that is correct, hospital A only.

Lisa Anderson: Great. Thank you. This next question comes from Patricia Fryer from Covenant Health. Why isn't either of these denominator exclusions, A, newborns who were admitted to the NICU, or B, transfer today an acute care facility? Lynn?

Lynn Perrine: Thank you, Lisa. So, for that, newborn admitted to the NICU, again, just recall that the intent of the measure is that the hearing screen be done before discharge. So we would assume that if they were transferred to a NICU, at some point, they would be discharged, so looking for a hearing screen done before that discharge. And in scenario B, they're transferred to an acute care facility, that's like the example that I gave during the presentation. If they're transferred to an acute care facility for higher level of care, you can use that medical reason exclusion.

Lisa Anderson: Thank you. Our next question comes from Maureen [Jizot] from St. Joseph Health. Who is qualified to do hearing screen in an acute care hospital? And that question is for Lynn.

Lynn Perrine: Hi, this is Lynn. The measure doesn't define who can perform a hearing screen, so we would leave that to the discretion of the facility. Xidong, do you have anything you want to add to that?

Xidong Deng: No. I think your answer is correct, because the measure doesn't define who does the hearing screening.

Lisa Anderson: Thank you. Our next question comes from Susan Spencer. The reasons for not performing the test are to be added into discreet fields, like nursing flowsheets, and is there a specific script that needs to be documented?

Lynn Perrine: Hi, this is Lynn. Can I research that question and respond to that in the Q&A document?

Lisa Anderson: Great. Thank you.

Thank you.

Our next question comes from Ivy Villanova, who is a student, and she's referencing slide 51. Is this only exclusive for a routine test? How about inpatient follow up for problems seen during the initial screen?

Lynn Perrine: So, this would be for hearing tests done at the encounter where the baby was born. So, inpatient follow up if those were subsequent encounters would not be included.

Lisa Anderson: Thank you. Our next question comes from Paulo Andres from MD Interactive. Can we expect a transition from QRDA format to FHIR, format in 2020 or 2021? Thank you, Paulo. So, I can definitively answer you that we will not be seeing a replacement for QRDA for the 2020 reporting period. I don't want to assume about 2021. But, again, that work is getting done in the HL-7 community, so if you're interested in that, reach out to us and we can help connect you with those stakeholder groups so you can be informed and be an informer to all that work.

And that wraps up the questions that are in our queue. I will give another few seconds if anyone has any final questions for either the CAC-3 or the EHDI measure.

Lynn Perrine: Lisa, this is Lynn. So, for that question that I had asked be deferred, we would use the discrete -- discrete field should be used, and, no, there is no specific script.

Lisa Anderson: Great. Thank you. I think that was referring back to the negation rationale for the reason why the test wasn't performed, so thank you for clarifying that.

Lynn Perrine: Yeah, thank you.

Lisa Anderson: Okay, I don't see any more questions coming into the queue. A few closing remarks before we end this session: As a reminder, the slides are available for download now. Please visit the Expert to Expert series landing page, which includes the registration links for future sessions, presentation replays, slide deck, and Q&As. Our next session addresses PCO-1 and PCO-5. Please register and join us on March 26.

On February 25th, the Joint Commission launched the 2019 Proven Practices Submission tool. This is your chance to receive Joint Commission recognition for your eCQM proven practices. Submitters that earn expert contributor distinction are invited to present on webinars and are featured within the proven practices collection. This is a link on this slide for additional information and to access the link to the online submission tool.

If you qualify for CE credits, please complete the survey. You can access via the link in an automated -- I'm sorry, I'm going to start over on that. If you qualify for CE credits, please complete the survey that you can access via the link in an automated e-mail you will receive tomorrow. The evaluation closes two weeks from today. Once the survey closes, all those that complete the survey and are

eligible for CEs will receive an e-mail with a PDF certificate. Thank you to everyone who took the time to present at today's webinar, and thanks to all of you who listened in. Have a good day.