Inpatient Quality Reporting Program

Support Contractor

SEP-1 Early Management Bundle, Severe Sepsis/Septic Shock Part III: Measure updates and Abstraction Guidance

Presentation Transcript

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Matt McDonough: All right, good afternoon, everyone, and thank you for joining us for this afternoon's webinar. My name is Matt McDonough, and I am going to be your virtual training host for today's event. And, as always, before we start today's event, I would like to cover some basic housekeeping items with you so that you know how's today event is going to work and how you can interact with our presenters throughout the course of today's event. First and foremost, let's talk about audio. Audio for this event is available over the Internet streaming through ReadyTalk. If you're hearing my voice over your computer speakers, then you know that. What that means is you don't need a telephone line to connect to our audio today, but you do need to have those speakers or your headphones connected to hear our streaming audio feed. Now, of course, we may encounter some difficulties with our computer speakers or headphones at some times. So, if you do need a telephone number, we do have a limited number of dial-in lines available. Please send a chat message if you need one of those, and our group online here will get an answer out to you as soon as possible.

Please do be aware, we do have a large crowd today, so we will get to your message as soon as we possibly can. Also as a matter of standard practice, today's event is being recorded to be archived and published at a later date.

All right, we talked a little bit about troubleshooting audio before, so let's talk about what we can do if we do encounter some problems there. If your speakers start breaking up, or your audio feed suddenly stops, there's a couple ways that you can try to resolve that. One is to click the refresh icon, and that is on the graphic at the bottom of the slide. You can see it's highlighted. The arrow that says refresh is pointing towards the refresh icon. Or, the other thing you can do is click the F5 key, it's on the top row of your keyboard usually. What this will do is refresh your browser. It will reconnect you to the event, and it should restart your audio feed. And, it will also re-sync your audio feed with the current slide. If you start to notice that your audio is falling slightly behind the slides, you can also do this to kind of get caught up on the audio. So, at any time if you do encounter those issues, please try one of these solutions.

Now, if you're hearing my voice and it sounds like I am in an echo chamber, it's usually caused by you being connected to this event more than once. And, you can see here on this slide, it looks like you might be connected to the event more than once. We have two tabs here, you're connected twice, you're hearing two audio feeds that will cause the echo. So, how do you resolve this? Very simply, close all but one of your browsers or tabs that are connected to today's event and that echo will clear up. When you're only connected once, you'll only hear the audio feed once, and that will eliminate the echo that you're hearing.

All right, let's talk about submitting questions today. And, again before we get into submitting questions, I do want to remind you that we do have a very large number of people on today's call. And we're going to do our very best to get to all questions that are submitted today. But, of course, with this many people on the line that may not be possible. So, we ask for your patience as we handle questions today. But, we do invite those questions at the same time. So, how do you send those in? On this slide,

at the bottom left side of your screen, you'll see that there is a chat with presenter box. You'll simply type your question in that box and click Send. Once you click Send, your question will be visible by all of our panelists today. And, as time and as resources allow today, we will do our best to answer as many questions as we can. Again, keep in mind that your questions are being archived to be catalogued and addressed in a future Q&A document. And, we do actually have a couple of those Q&A documents still in the works. Because these events are still popular and they're so much – so many people attending these, it is taking a little bit longer than anticipated to get those done, but we are actively working on those Q&A documents for you to review. And, as soon as they're done, you will be notified via the ListServe.

All right, that's going to do it for my brief introduction today. So without further ado, I would like to hand this over to our first speaker of the day.

Candace Jackson: Thank you, Matt, hello everyone and welcome to our *Sepsis I Early Management Bundle, Severe Sepsis/Septic Shock Part III* Webinar. My name is Candace Jackson, and I will be your host for today's event. Before we begin, I'd like to make a few announcements. This program is being recorded. A transcript of the presentation, along with the Q&As, will be posted to our inpatient website at www.qualityreportingcenter.com, and will be posted to *QualityNet* at a later date. If you registered for this event, a reminder e-mail, as well as the slides, was sent to you to your e-mail prior to the presentation. If you did not receive the e-mail, you can download the slides again at our inpatient website at www.qualityreportingcenter.com. And now, I'd like to introduce our guest speaker, Bob Dickerson. Bob is our Lead Health Informatics Solution Coordinator for the Measures Development and Maintenance team at Telligen. He is a registered respiratory therapist, with the masters of Science degree in health services administration from the University of St. Francis in Joliet, Illinois. Most recently, Bob has been supporting the Centers for Medicare and Medicaid Services with development and maintenance of hospital clinical quality measures. Bob has extensive health care process and quality improvement experience, including

development and implementation of interventions, processes, and systems in the hospital setting to support national quality measures. His experience includes facilitation and intervention implementation, data collection, and process improvements related to severe sepsis and septic shock in the hospital setting for the Surviving Sepsis Campaign. I would now like to turn the floor over to Bob. Bob the floor is yours.

Bob Dickerson: Thank you, Candace, and hello everyone, welcome to our third in a three-part education series on the SEP-1 measure.

For our journey with today's webinar, I want to share with you an experience with the recent boy scouting event. Every year, our Boy Scout troops hosts a weekend event for a Cub Scout pack that we work with. We have an afternoon of fun activities designed to meet some of the requirements for the Cub Scouts to advance in their program. After that, we feast on turkey roasted in cardboard boxes and all the side dishes that go along with traditional turkey dinner. We top it off with a U.S. flag retirement ceremony and a camp fire program. The activities are all based on requirements for advancement, identified in the Cub Scout handbooks. Well, it just so happens those requirements changed in late August, and I became aware of the changes in September, about a week before the event. My first reaction was, "Oh crud," this means I'll have to make changes to the program and how we measure our success of the program. And, I have less than a week of everything ready for about 20 rambunctious boys, ranging from ages six to 10 years old. What I discovered, however, was the program didn't really need to change much at all, because it was based on foundational scouting guidelines and principles. While the requirements for advancement had changed, most everything we did in the program could either remain intact or only require minor modifications and still count towards Cub Scout advancement. In the end, our greatest measure of success is the smile on the faces of the boys and knowing they learned something while having a great time. And, you may be asking what does this have to do with severe sepsis and septic shock? Well, a revised version to the IQR Specifications Manual has recently released as the 5.0b addendum. In it, there are changes to several of the SEP-1 data

elements. The changes are designed to clarify abstraction and how success is measured. These revisions, however, do not change fundamentally how patients with severe sepsis and septic shock should be cared for. Today, we will be discussing those changes, as well as walking through some sample cases to help illustrate abstraction of some of those data elements.

So, again the purpose of today's webinar is to let you know about the recent updates, and provides some additional abstraction guidance for those data elements that are accepted by the revisions. We'll be discussing the update specifically in the manual related to SEP-1, and provide that additional abstraction guidance for the data elements that are listed on this slide. The objectives are listed on this slide and include being able to identify and understand the updates and describe how to abstract the data elements that are affected by the revisions.

Now, as we review the data element revisions, I'll be focusing on the key changes. I will not be discussing the majority of edits to the suggested data sources, the inclusion guidelines for abstraction, and exclusion guidelines for abstraction. These have been updated in several data elements to make them more consistent. Please be sure to reference the revised version of the manual posted on *QualityNet* and the associated release notes for complete listing of all the revisions. On the following slides that outline the revisions, where new text has been added or edited, I've used these red underlined texts. I will go through the data elements in alphabetical order and only [be] talking about ones where key changes have been made.

The first data element is Broad Spectrum or Other Antibiotic Administration. And, we've made edits to the notes for abstraction section to the first and second bullet points. The goal is for the antibiotics to be started, not totally infused, within the time frame of 24 hours to or three hours following severe sepsis presentation. For this data element, it doesn't matter what antibiotic was given in the time frame. What matters is the patient received any antibiotic. So, we've made edits to the second bullet point to make it more clear that if any IV antibiotic was given in the time frame to, select allowable value 1, which is Yes.

Again, because the data element is only interested in whether or not the patient received an IV antibiotic within the time frame, we removed all references to Appendix C, tables 5.0 and 5.1 that were in the second and third bullet points for this data element. The tables actually come into play later. Now, additionally, this data element is not concerned with timing of the antibiotics given at the time frame, so the fourth bullet point was removed.

For the Broad Spectrum or Other Antibiotic Administration time data element, we made some edits to the first bullet point in the notes for abstraction to help clarify that for any antibiotic that was given within the 24 hours prior to presentation, you need to abstract the earliest time that a dose of antibiotic was given. Now, this could be more than 24 hours prior to presentation, and we'll touch on this in a bit more detail later in the presentation.

In the first bullet point, under the Broad Spectrum or Other Antibiotic Administration selection data element, the notes for abstraction, we again want to clarify the IV antibiotics need to be started, but not necessarily totally infused.

This data element is only looking at the antibiotics given within three hours following presentation, if those are the only antibiotics the patient received. And, making use of Table 5.1 in Appendix C and the combination of antibiotic therapy table to determine whether or not the correct combination of antibiotics were started, continues to be a bit of a challenge. So, we've made some edits to the second bullet point that should help clarify this for you.

As mentioned in a previous webinar, the algorithm and septic shock present data elements made reference to fluids given prior to septic shock presentation, but this was not readily apparent in the crystalloid fluid administration data element. We've addressed this in the revision in the data element definition and suggested data collection questions.

We've also revised the descriptors for the allowable values to include fluids administered prior to septic shock.

We've also added a new second bullet point to the crystalloid fluid administration notes for abstraction to make it more clear the fluids being abstracted must be those given for the presence of severe sepsis with hypotension or for the presence of severe sepsis with a lactate greater than or equal to four.

And, we have received feedback and concerns regarding relying on a single blood pressure reading in the hour following administration of crystalloid fluids for making the determination of whether or not persistent hypotension was present. In response to those concerns, we have changed that to two or more consecutive blood pressure readings.

We noted some inconsistencies within the allowable values for 30 ml per kilogram was referred to as a rate. In reality, it is a volume not a rate. So, we have addressed that inconsistency.

Since the time that crystalloid infusion has completed, it is rarely documented in the medical record. We added two new second and third bullet points to reference using the completion time, if it is documented. And, if it is not documented, you can use the following criteria to determine the conclusion time.

The criteria under the new third bullet point includes one for cases where the order includes a time frame over which to infuse the crystalloid fluids with an example. And, a bullet point example was also added for cases where the order includes an infusion rate.

Edits to the ninth bullet point are related to requirements for two or more consecutive blood pressure readings in the hour following conclusion of the crystalloid fluids to determine the presence of persistent hypotension.

We added a new 10th bullet point providing instruction to not use blood pressure readings in the determination of persistent hypotension that have

been identified as being erroneous or of questionable validity by physician, APN, or PA nursing documentation.

As I had mentioned in previous SEP-1 webinars, many of the data elements for the SEP-1 measure have interdependencies. In other words, accurate abstraction of one data element may rely upon information you identified in the abstraction of another data element. Septic shock present is one of those. To help clarify this association of the notes for abstraction, we have added to item B, under the first bullet point, the 30 ml per kilogram volume of the crystalloid fluids. There was some confusion regarding the clinical criteria for septic shock. So, we made some edits to the format of item B under the first bullet point to make it more clear that septic shock is identified by the presence of severe sepsis and hypotension that persist in the hour after 30 ml per kilogram of crystalloid fluids, or severe sepsis and tissue hypoperfusion evidenced by initial lactate greater than or equal to four.

We added two more examples to help illustrate the blood pressure response to crystalloid fluids and provide guidance for which allowable value to select.

Again, to better help illustrate the interdependence of data elements, we have added text referencing abstractors to the persistent hypotension data element for help determining the crystalloid fluid administration conclusion time.

We have added two new bullet points to the septic shock present notes for abstraction to help better address two potential issues. For purposes of SEP-1 measure, cases of septic shock that present more than six hours after severe sepsis presentation are to be excluded from the septic shock portion of the measure. The addition of the new fourth bullet point instructs abstractors to select allowable value 2, which is No, for cases where the septic shock presentation time is more than six hours after severe sepsis presentation. Based on feedback and comments from abstractors who identified the situation where if the only documentation, the medical record of the presence of septic shock, occurred after the

discharge time, such as an addendum or discharge summary, cases would be rejected without a way to remedy the rejection. To address this, we added the new fifth bullet point, which instructs abstractors to select allowable value 2, which is no, for cases where the septic shock presentation time is after the discharge time.

We have revised the clinical criteria in the septic shock presentation, date and time elements consistent with the clinical criteria revisions in the septic shock present data element. To the severe sepsis present notes for abstraction, in the first bullet point criteria A, we added specific language clarifying that nursing documentation referencing an infection, suspected infection or current treatment of infection is acceptable. Because the SEP-1 measure does not include treatment options for viral or fungal infections; we've added language to exclude documentation of viral or fungal infections.

In the previous version of the manual, acute respiratory failure was inadvertently left out of the organ dysfunction criteria C. We've added that to the list of organ dysfunction. The International Surviving Sepsis Guidelines, including the diagnostic criteria for sepsis, organ dysfunction, a variable for arterial hypoxemia defined as a PAO_2 divided by the FIO_2 of less than 300. And, the measure stewards felt a more clinically appropriate variable for respiratory failure, based on feedback from clinicians, was to have it based on a new need for invasive or noninvasive mechanical ventilation.

Example number two is revised to better reflect the intent of the data element. In this example, the reason for choosing allowable value 2 is because there is only one SIRS criteria met. The example actually does include reference to a possible infection as rule out infection.

Also, inadvertently left out of this data element was reference to not using signs of organ dysfunction that are due to chronic conditions or medications. We have added the statement on this slide immediately after the list of organ dysfunction variables.

Similar to the septic shock present data element, we found in a situation where the only documentation in the medical record of the presence of severe sepsis occurred after the discharge time, cases would be rejected without a way to remedy the rejection. To address this, we added a new sixth bullet point.

And, we're receiving numerous questions from abstractors wanting to know whether or not a specific condition is considered an infection. To provide more guidance to abstractors and making this determination, we've added to the severe sepsis present inclusion guidelines for abstraction a list of infections frequently associated with severe sepsis. This includes a note indicating this list is not all inclusive. The note also indicates if a condition not on the list is documented but not identified as an infection, it is acceptable to consult other resources to identify whether or not the condition is an infection. Now, other resources may include a medical dictionary or reputable online resources, such as Medline Plus, online medical dictionaries, or professional associations. We are not providing a list of resources because they're far too many to list, and we want to avoid endorsing one site or reference over another. Now, do try to avoid resources, such as blogs or ListServes because these may have questionable validity.

Exclusion guidelines for abstraction have been revised to reflect that the term sepsis alone is not sufficient and that fungal and viral infection should not be used.

For severe sepsis presentation date, ED physician notes in the electronic health records present a unique problem. The notes have a start or open date and time, and an end or closed date and time, which can be hours apart. In most cases, when the ED physician documents presence of a suspected infection or presence of severe sepsis, they do not also enter in the note a date and time associated with this. So, abstractors are then left making the decision whether use of the date and time that it was started or the date and time the note was closed as the time of infection is documented as being present or suspected. Now, there are potential issues associated with using either the start note time or the engine note time.

And, the actual date and time the infections noted may vary considerably from either. Since, the goal is to identify the earliest point in time the criteria met for severe sepsis, a new fourth bullet point was added indicating to use the date the note was opened. We also added a new eighth bullet point to better clarify in situations where the severe sepsis criteria are met after the physician document septic shock, to enter the date of the physician documentation of septic shock as the date and time of presentation for severe sepsis. Now, this is because septic shock cannot be present without severe sepsis also being present. So, if the physician documents the septic shock is present, then severe sepsis must also be present.

When to use triage date and time continues to cause some confusion, we've made some revisions to help clarify this. Feedback from abstractors has revealed that in some medical records there maybe more than one date and time associated with triage. For example, there may be a triage started and a triage completed date entry. For purposes of the measure, use the date reflecting triage is completed.

Similar to the new fourth and eighth bullet points in the severe sepsis presentation date notice for abstraction, a new fourth bullet point regarding physician, ED physician notes, and a new eighth bullet point regarding time of severe sepsis criteria and physician documentation of septic shock were added to the severe sepsis presentation time notes for abstraction.

And, similar to those in the septic shock presentation date were made to the fifth bullet point regarding triage time.

And at this point, we're going to be reviewing the revised data elements and approaches to abstracting them. Now, some of this will include a few case examples. For this review, I am going to take them more in the order in which you would need to review the data elements rather than the alphabetical order that we just did when looking at the specific changes.

The severe sepsis present data element is looking for documentation in the medical record, supporting the presence of severe sepsis. If there are multiple episodes documented, you will abstract only the first episode.

There are two ways in which severe sepsis can be identified based on documentation. Severe sepsis is present if the three criteria outlined in the data element, which include documentation of a suspected infection, two or more SIRS criteria, any sign of organ dysfunction are met, or if there's physician, advanced practice nurse, or physician assistant documentation of confirmed, suspected, or possible severe sepsis. The goal is early identification of severe sepsis to assess whether or not treatment is timely inappropriate. So, if both the criteria are met and there is documentation of severe sepsis, you will use the earliest of the two. So, let's take a closer look at some of the requirements associated with this.

Now, documentation of a suspected source of infection can be a confirmed infection or one that is suspected or considered possible. The data element is not looking for a diagnosis of infection, rather that one is possible or suspected. It can be physician, APN, PA, or nursing documentation. Now, the documentation does not need to specifically state the word source or specifically state source of infection or infection source.

As was noted earlier in the presentation, the data element now contains a list of infections most frequently associated with severe sepsis. As I pointed out, this list is not all inclusive, so conditions not on the list that are infections are acceptable. Now, if you run across documentation of a condition and it is not clear whether or not it is infection, it is acceptable to consult other resources, such as medical dictionaries or online resources. And as I pointed out earlier, be cautious when you are referencing other resources, and make sure it's a reputable source.

Note that viral and fungal infections are not acceptable and should not be used as an indication of the presence of an infection; neither should sepsis, bacteremia, or septicemia. If there is documentation of signs or symptoms or positive cultures, these should not be taken as documentation of an infection without supporting documentation from a physician, APN, PA or

nurse that an infection is present or suspected. Signs and symptoms typically associated with infection can also be caused by non-infectious conditions. Culture results could represent colonization or sample contamination neither of which is an infection.

The SIRS criteria listed in the severe sepsis present data element consist of a temperature greater than 38.3 or less than 36, heart rate that is greater than 90, respiratory rate greater than 20, and white cell count that is greater than 12,000 or less than 4,000 or greater than 10 percent bands. Now, if any two or more are present, the SIRS criteria part of the severe sepsis clinical criteria is met. You'll typically find temperature, heart rate, and respiratory rate in nursing documentation, such as vital signs. And white cell count will typically be found in laboratory results reports.

The organ dysfunction part of the severe sepsis clinical criteria requires that one of the findings in this slide be present. Now, most of these like the lactate, INR, aPTT, platelet count, bilirubin, and creatinine will be found in lab result reports. Urine output and blood pressure parameters will most likely be found in nursing documentation. And documentation of a new need for invasive or noninvasive mechanical ventilation may be in provider progress notes, nurse's notes, or respiratory therapy notes.

As mentioned earlier, if any of the signs of organ dysfunctions due to a chronic condition or medication, it should not be used for determining the presence of organ dysfunction. For organ dysfunction based on the systolic blood pressure specifications, most cases of hypotension for severe sepsis are identified based on the systolic blood pressure being less than 90. And, if there is a drop in systolic blood pressure greater than 40 and you want to determine whether or not this represents a true decrease of 40 from the patient's normal blood pressure, there needs to be some documentation indicating what the patient's normal systolic blood pressure is, or documentation confirming a decrease is greater than 40 from what the patients normal pressure is. Now, in the previous webinar, we discussed methods to try and establish the patient's normal systolic blood pressure based upon previous values. While this can serve to establish a baseline systolic blood pressure for the patient during the

hospital stay, it may not truly represent the patient's normal. We have since learned the strategy is a bit problematic for a variety of reasons and do not recommend it.

Once you've identified the presence of the clinical criteria, you will still want to look prior to that for any physician, APN, or PA documentation indicating the presence or suspicion or possibility of severe sepsis. As you may recall, you will use the early review of the clinical criteria being met or physician APN or PA documentation. Now, if the clinical criteria is not met or not documented, then physician, AP, or PA documentation indicating the presence or suspicion of severe sepsis is acceptable to establish the presence of severe sepsis. If the criteria are not met and there is also not physician, APN or PA documentation of severe sepsis, but you do find physician, APN, or PA documentation of septic shock, this is acceptable to use to establish the presence of severe sepsis. This is because septic shock cannot be present without severe sepsis being present. And, the way septic shock progresses and manifest itself, there could be cases or criteria for severe sepsis or documentation of severe sepsis being present or suspected is not in the medical record but there is documentation indicating septic shock is present. In this case, you'd use the septic shock presentation date and time also for the severe sepsis presentation date and time.

Now, a couple of points I want to make regarding severe sepsis presentation date and time, and the triage date and time is that triage date and time are used only for patients who arrive to the ED with severe sepsis or it is identified as present or suspected during triage. To use triage time, all three criteria must be met before triage ends. So, if a patient meets the suspected infection criteria and SIRS criteria during triage, labs are drawn during triage, but the results demonstrating organ dysfunction do not come back until after triage, you will not be using triage time. You will use the time at which the lab results came back that identifies a sign of organ dysfunction.

For all cases where severe sepsis presents after triage, this is regardless of whether the patient is still in the ED or admitted to the hospital, you'll use

the earlier of either when the last of the clinical criteria are met or physician/APN/PA documentation. As I mentioned, if some but not all criteria met prior to or during triage and the remaining criteria made after triage, you'll use the date and time of the last clinical criteria for severe sepsis. And, as we've discussed, because septic shock cannot exist without severe sepsis, if the only documentation that exists is that indicating septic shock is present, then this can be used for severe sepsis presentation.

And, as was mentioned during the revision review for ED physician notes, if there is a specific date and time associated with the infection documentation, it should be used. If the documentation is an ED physician note, but a specific date and time is not associated with it, use the time the note was opened or started.

The timing of the three severe sepsis clinical criteria, where to start looking, and determining if they're all within six hours of each other can be a bit of a challenge. Now, there are some strategies you can employ to make this a little bit easier, since we're looking for the earliest episode of severe sepsis, the starting point should be the time of arrival. Some of the criteria are easier to locate in a medical record than others. I recommend starting by looking for something that is flagged or easily identified in the medical record, such as an abnormal lab value or abnormal vital signs. Then use that as an anchor point around which to look for the other criteria. The clinical criteria do not need to be met in any specific sequence. But, all three must be met within six hours of each other. So, at this point, let's walk through some examples of severe sepsis.

For the first case, we have a patient who arrives in the ED at 0900, and the triage time is noted as 0915. The triage notes indicate the patient is currently on antibiotics for pneumonia, the vitals in triage are heart rate of 100, respiratory at 18, temperature 38.4, and blood pressure 88 over 40. The ED physician documented severe sepsis in the ED physician note, which was started at 0920, and there is not a specific time within the note associated with the severe sepsis documentation. So, suspected infection criteria were met at 0915, based on the triage note, the patient is on antibiotics for pneumonia. SIRS criteria were also met at 0915 based on

the vitals recorded during triage with the heart rate of 100 and a temperature of 38.4. Sign of organ dysfunction was met at 0915 also, based on the systolic blood pressure equal to 88 as documented in the triage vitals. Then, we have the physician documentation of severe sepsis at 0920, based on the ED physician note. And again, because there's not a specific time associated with the documentation of severe sepsis, the time of the note was started would be used. Now, because the clinical criteria all met during triage and triage time is earlier than the physician documentation of severe sepsis, the severe sepsis presentation time would be 0915 the same time as triage.

For case number two, the patient arrives to ED at 1300. The triage time is noted as 1305. Triage documentation reveals vitals, the heart rate of 95, respiratory rate equal to 22, temp 37, blood pressure 85 over 40. The physician documents rule out infectious source at 1400. In this case, the SIRS criteria are met during triage at 1305, based on the heart rate of 95 and the respiratory rate of 22. The sign of organ dysfunction is also met during triage at 1305, based on the systolic blood pressure of 85. The suspected infection criteria is met at 1400 with the physician documentation of rule out infectious source. All the criteria are met within about an hour of each other. Since the last of the three clinical criteria were met at 1400, this is the severe sepsis presentation time.

For case number three, the patient arrives to the ED at 2130. Triage time is noted at 2135. Triage vitals reveal a heart rate of 102, respiratory rate of 22, temp of 38.6, blood pressure of 100 over 60, and note by the triage nurse indicates the patient was seen in the ED in the morning for pneumonia and sent home with antibiotics. A lactate was drawn in triage and the results came back after triage at 2215, revealing an initial lactate level of 2.3 The suspected infection criteria was met during triage at 2135, based on the note from the nurse indicating seen in the ED in a.m. for pneumonia. SIRS criteria were also met during triage at 2135, based on the triage vitals, heart rate of 102, respiratory rate of 22, and temp of 38.6. A sign of organ dysfunction was noted when the initial lactate result of 2.3 came back after triage at 2215. All the criteria were met within about 45

minutes of each other. In this case, the severe sepsis presentation time is 2215, when the last of the clinical criteria is met with the lactate equal to 2.3.

For case number four, the patient arrives to ED at 1000. Triage time is noted at 1005, and triage vitals reveal a heart rate of 88, respiratory rate of 18, temperature of 38.6, and a blood pressure of 100 over 60. Labs are drawn at 1020 and the results came back at 1050 revealing an initial lactate of 2.5. Vitals are repeated at 1200 and reveal a heart rate of equal to 95. And, at 1415, the physician documents UTI. The sign of organ dysfunction was met at 1050, when the lactate result came back as 2.5. SIRS criteria were met at noon based on the earlier temperature of 38.6 and the heart rate of 95 at noon. The suspected infection criteria is met at 1415 when the physician documented UTI. In this case, all criteria were met within about three-and-a-half hours of each other, and the severe sepsis presentation time is 1415, when the last of the criteria were met with the physician documentation of UTI.

In our fifth case, the patient arrives at ED at 0815 and triage time is noted as 820. Triage vitals reveal a heart rate of 88, respiratory rate of 18, temperature of 38.4, blood pressure 100 over 60. Home medication lists include warfarin. Labs are drawn at 0830, and results came back at 0850 revealing an INR of 2.2, lactate equal to 2, and creatinine of 2.5. Repeat vitals at 1400 showed the heart rate has increased to 95. And at 1500, the physician documents possible pneumonia. Now, in this case, the sign of organ dysfunction is met at 0830 with the creatinine result at 2.5. The INR of 2.2 is likely due to the warfarin and would be ignored. The lactate must be greater than 2 to be a sign of organ dysfunction. SIRS criteria were met at 1400 based on the temperature of 38.4 during triage and the repeat vitals heart rate of 95 at 1400. The last of the criteria is met at 1500 when the physician documents possible pneumonia. Now, because the first criteria is met at 0830 and the last criteria is met at 1500, which is about six-and-a-half hours apart, for purposes of the SEP-1 measure, this patient does not have severe sepsis, and you would select allowable value 2, No, for severe sepsis present. Clinically, they should be treated as deemed appropriate.

Now let's take a look at the Broad Spectrum or Other Antibiotic Administration data elements. The Broad Spectrum or Other Antibiotic Administration is looking for whether or not an IV antibiotic was administered in the time window of 24 hours prior to or three hours following severe sepsis presentation.

The data element is only interested in IV antibiotics. Other routes do not count. If there is at least one dose of an IV antibiotic given in the time frame, you would select Yes. For purposes of the data element, it does not matter what antibiotics were given, only if at least one was given and documentation must reflect actual administration of the IV antibiotic.

The Broad Spectrum data ~~het~~Broad Spectrum or Other Antibiotic Administration Date and Time or Other Antibiotic Administration Date and Time are looking for the earliest date and time that an IV antibiotic was given during the time window of 24 hours prior to two or three hours after severe sepsis presentation. If an IV antibiotic was given within the 24 hours prior to presentation, regardless of what was given at the three hours following, abstract the date and time of the earliest dose. And note, this could be more than 24 hours prior to presentation. If the only IV antibiotics the patient received in the time window were within the three hours following presentation, you would abstract the date and time of the earliest dose given within that three hours following presentation. Because this can be a little bit confusing conceptually, we're going to walk through a series of antibiotic timing examples that will hopefully help make the concepts more concrete.

When abstracting antibiotics, the first thing you'll do is look in the time periods that starts 24 hours prior to and ends three hours after severe sepsis presentation. This should always be your starting time reference for antibiotic administration– data elements in reference to the SEP-1 measure. Now, in our first example we can see the patient received four doses of antibiotic A all within the 24 hours prior to presentation. None were given in the three hours following. Next, we look in the time period earlier than 24 hours prior to presentation to see if any of the antibiotics

given in that 24 hours prior were also given earlier than 24 hours prior. In this case, none were given.

So, you'll select 1, which is Yes, for Broad Spectrum or Other Antibiotic Administration and enter the date and time of the earliest antibiotic dose given within 24 hours prior to presentation.

In our second example, we can see the patient received three doses of antibiotics given within the 24 hours prior to presentation, one dose of B and two doses of C. None were given in the three hours following. Next, we look earlier than 24 hours prior to presentation to see if a dose of either B or C were given more than 24 hours prior, and we see none were given.

You will select one for Broad Spectrum or Other Antibiotic Administration, and enter the date and time of the earliest antibiotic dose given within the 24 hours prior to presentation. In this case, you'll enter the date and time antibiotic B was given because it is the earliest dose.

In our third example, we can see that patient received four doses of the same antibiotic within the 24 hours prior to presentation. None were given in the three hours following. Next, we look in the time period earlier than 24 hours prior to presentation to see if any dose of the same antibiotic was given. We find the dose of a different antibiotic G was given more than 24 hours prior to presentation.

You will select one for Broad Spectrum or Other Antibiotic Administration and enter the date and time of the earliest antibiotic dose given within the 24 hours prior to presentation. In this case, you'll enter the date and time of the earliest dose of antibiotic A. Antibiotic G was only given in the period more than 24 hours prior to presentation. Because the dose of G was not also given within 24 hours prior, you essentially ignore the dose of G.

In our fourth example, we can see the patient receive two doses of the same antibiotic given within the 24 hours prior to presentation. None were given at three hours following. Next, we look in the time period earlier

than 24 hours prior, and we find the dose of antibiotic B was also given more than 24 hours prior to presentation.

You'll select 1 for this Broad Spectrum or Other Antibiotic Administration for the date and time. You'll enter the earliest dose of any antibiotic that was given within the 24 hours prior to presentation. And, in this case, because the earliest dose of B was given more than 24 hours prior, you will enter the date and time of that dose. Because this dose is more than 24 hours prior to presentation, the broad spectrum antibiotic time calculation performed by the algorithm will exclude this case from the measure.

In example B, we can see within the 24 hours prior to presentation, the patient received one dose of antibiotic D and two doses of antibiotic C. None were given in the three hours following. Next, we look in the time period earlier than 24 hours prior to see if any of the same antibiotics given within five hours prior to presentation were given. We find the dose of antibiotic C was also given more than 24 hours prior to presentation.

You will select 1 for Broad Spectrum or Other Antibiotic Administration. For the date and time, you'll enter the earliest dose of any antibiotic that was given within the 24 hours prior to presentation. In this case because the earliest dose of C was given more than 24 hours prior you will enter the date and time of that dose. And, since this dose is more than 24 hours prior to presentation, the algorithm will exclude this case from the measure.

In example six, we see that no antibiotics were given within 24 hours prior to or three hours following presentation of severe sepsis. You can stop at this point. If you do happen to notice an antibiotic was given more than 24 hours prior to presentation, you can ignore it. In order to move past the Broad Spectrum or Other Antibiotic Administration element, there must have been at least one antibiotic given within 24 hours prior two or three hours following presentation. So, in this case, you will select 2, which is equivalent to No, for Broad Spectrum or Other Antibiotic Administration. Further data collection is not necessary, and this case will ultimately fail the measure.

In example seven, we see that two doses of antibiotic D were given within 24 hours prior to presentation and one dose of the same antibiotic D was given within three hours following presentation of severe sepsis. Because there were antibiotics given 24 hours prior, we also look to see if any doses of that same antibiotic were given earlier. In this case, none were.

You will select 1, first Broad Spectrum or Other Antibiotic Administration. For date and time, you'll enter the earliest dose of any antibiotic that was given within the 24 hours prior to presentation. The time of the dose given after presentation is not relevant.

In example eight, we see that one dose of antibiotic E was given within 24 hours prior to presentation, and one dose of a different antibiotic F was given within three hours following presentation. Because there was an antibiotic given in the 24 hours prior, we also look to see if any doses of the same antibiotic were given earlier. And, in this case, none were.

You'll select 1 for Broad Spectrum or Other Antibiotic Administration, and for date and time, you'll enter the earliest dose of antibiotic that was given in that 24-hour period prior to presentation. In this case, it will be antibiotic E. Again, the time of the dose given after presentation is not relevant, if an antibiotic was given in the 24 hours prior to presentation.

And, in our ninth example, we see that two doses of antibiotic E were given within 24 hours prior to presentation, and one dose of a different antibiotic L was given within three hours following presentation. Because there was an antibiotic given within 24 hours prior, we'll also look to see if any doses of the same antibiotic were given earlier. In this case, the dose of antibiotic E was given earlier than 24 hours prior to presentation.

You'll select 1 for Broad Spectrum or Other Antibiotic Administration. And, for the date and time, you'll enter the earliest dose of the antibiotic that was given in the 24 hours prior to presentation, which would happen to be the dose of antibiotic E that was given earlier than 24 hours presentation. And, the algorithm will exclude this case from the measure.

In our 10th example, we see that no antibiotics were given within 24 hours prior to presentation, and one dose of antibiotic L was given within three hours following presentation. Because there was not an antibiotic given in the 24 hours prior, we do not need to look to see if antibiotics were given earlier. Now, in this case, we do notice a dose of antibiotic E was given earlier than 24 hours prior to presentation.

You will select 1 for Broad Spectrum or Other Antibiotic Administration. For date and time, you'll enter the earliest dose of antibiotic that was given within three hours prior to presentation. Because there was not an antibiotic given earlier than 24 hours prior to presentation, we ignore the antibiotics that were given prior to that. Because the only antibiotic given was in the three hours following presentation, this case will proceed to the Broad Spectrum or Other Antibiotic Administration selection data element. There, the antibiotics the patient received will be compared to the options and tables 5.0 and 5.1 of Appendix C.

In example 11, we see that no antibiotics were given in the 24 hours prior to presentation and one dose of antibiotic K was given within three hours following presentation with severe sepsis. Because there was not an antibiotic given in 24 hours prior to presentation, we do not need to look to see if antibiotics were given earlier. In this case, however we do notice the dose of antibiotic K was also given earlier than 24 hours prior to presentation.

This will be abstracted the same as the previous example. You'll select 1 for Broad Spectrum or Other Antibiotic Administration, and for date and time, you'll enter the earliest dose of an antibiotic that was given in the three hours following presentation. You don't abstract that dose that was given earlier than 24 hours because there were no antibiotics given in the 24 hours prior. The only antibiotic given in the time period was in the three hours following presentation, so the case will proceed to the Broad Spectrum or Other Antibiotic Administration selection data element.

And in our last example, number 12, we see that no antibiotics were given within 24 hours prior to presentation. In the three hours following one

dose of antibiotic G and one dose of another antibiotic H were given. Because there was not an antibiotic given in the 24 hours prior, we don't need to look to see if any were given earlier, and it just so happens that none were.

And, you'll select 1 for Broad Spectrum or Other Antibiotic Administration. For the date and time, you'll enter the earliest dose of antibiotic that was given within the three hours following presentation. And, in this case of the two antibiotics given, G is the earliest. This case will then proceed to the Broad Spectrum or Other Antibiotic Administration selection.

And next then, let's take a closer look at the Broad Spectrum or Other Antibiotic Administration selection. Now, this data element is looking in the consistency of the antibiotics given to the patient within the three hours following severe sepsis presentation. And, it's comparing those with the broad spectrum IV antibiotic options identified in the data element and tables 5.0 antibiotic monotherapy Sepsis and 5.1 antibiotic generic trade name Crosswalk Sepsis in Appendix C.

The International Guidelines for Management of Severe Sepsis and Septic Shock, upon which the SEP-1 measure is based, recommend initial antimicrobial treatment with broad spectrum antibiotics until the causative organisms and antimicrobial susceptibilities are known, at which time antibiotic de-escalation is recommended. Now, as noted, the only cases that proceed to this data element are those where the only antibiotics given were within the three hours following presentation. If the only antibiotics the patient receives are within that three hours after presentation of severe sepsis, this would represent initial antibiotic treatment for severe sepsis.

Now, in most cases [of] severe sepsis, the causative organism susceptibilities are not known initially. As such, broad spectrum antibiotics, given within three hours following presentation, is consistent with the guidelines for severe sepsis and septic shock. Because the measure does not look at antibiotics given more than three hours after presentation of severe sepsis, de-escalation of antibiotics (based upon blood culture results and reported antimicrobial susceptibilities) is not part

of the measure. So, the first thing we want to do is to identify all of the antibiotics in the medical record that were given or started within three hours following presentation. We are then going to compare those to the antibiotics listed on table 5.0. If at least one was given that is on table 5.0, you will select Yes for this data element. It doesn't matter for purpose of the measure how many antibiotics were started or given in the three hours following, as long as at least one is from table 5.0.

Now, let's see you're abstracting a case where the patient did not receive any of the antibiotics listed on table 5.0. Then you'll compare all the antibiotics that the patient was given within that three-hour period following presentation to the antibiotics listed on table 5.1. When you find antibiotics that were given on table 5.1, note the shaded row immediately above that antibiotic name to identify the antibiotic class. When you have identified the classes of all the antibiotics that were given from the table 5.1, we'll then refer to the combination antibiotic therapy table located in the Broad Spectrum or Other Antibiotic Administration selection data element.

This table has two columns, column A and column B, under which different classes of antibiotics are listed. So you match up the classes for the antibiotics that were given table 5.1 to the columns and the combination of antibiotic therapy table. At least two antibiotics must be given to be considered appropriate combination. There must be one from a class in column A, and there must be one from a class in column B. As with monotherapy, for purpose of the measure, it doesn't really matter how many other antibiotics were given, as long as at least two were given from the appropriate classes. I think the combination of therapy match up maybe a little bit easier if we walk through an example using the tables themselves.

So, let's say we have a patient who is given both Gentamicin and Vancomycin in the three hours following presentation and they did not receive any other antibiotics. Based on the shaded row immediately above Gentamicin in table 5.1, the class it is in is Aminoglycosides.

Next, we look at the table for Vancomycin. Based on the shaded row immediately above it in table 5.1, Vancomycin is in the class of Glycopeptides.

Now, let's see where these two classes of antibiotics are listed in the combination antibiotic therapy table. Gentamicin, an Aminoglycoside, is listed in Column A; and Vancomycin, a Glycopeptides, is listed in column B. So, as the patient received at least one antibiotic from column A and at least one antibiotic from column B, it meets the intent of the data element as selecting Yes for Broad Spectrum or Other Antibiotic Administration selection is appropriate.

Next, let's look at the septic shock present data element, which is looking for the documentation in the medical records supporting the presence of septic shock. Now, if there are multiple episodes documented you'll abstract only the first episode.

You'll abstract the earliest documentation reflecting the presence of septic shock. And, septic shock can be identified three different ways. There are two ways that involve clinical criteria and one way that relies on physician, APN, or PA documentation of septic shock or suspected septic shock. If based on clinical criteria, septic shock can manifest as either severe sepsis with tissue hypoperfusion demonstrated by persistent hypotension or severe sepsis with tissue hypoperfusion demonstrated by an initial lactate greater than or equal to four. Now, in the subsequent slides will explore each of these in a little bit more detail.

As previously noted, septic shock cannot exist without severe sepsis. This can be confirmed, suspected, or possible severe sepsis, and can be based upon the severe sepsis clinical criteria or physician, APN, or PA documentation of severe sepsis. The data element indicates that [if] severe sepsis is not present, you would select a value 2. In order to get to this point allowable value 1, which is Yes, would have had to have been selected for the severe sepsis present data element.

As alluded to earlier, there are two ways tissue hypoperfusion can be demonstrated. One way is by persistent hypotension. This would be seen if the patient has severe sepsis, was hypotensive, received 30 ml per kilogram of crystalloid fluids, and within one-hour following completion of the fluids still demonstrated hypotension. In this situation, the crystalloid fluids would have to have been given before the presentation of septic shock because the lack of response to the fluids is what defines the presence of septic shock. Now, because of the dependency some data elements have with others, to identify whether or not persistent hypotension was present, you will need to review the criteria in crystalloid fluid administration and persistent hypotension data elements.

To determine the presence of persistent hypotension, you'll be looking in the time frame of one hour following the completion of the 30 ml per kilogram of crystalloid fluids for systolic blood pressure less than 90, mean arterial pressure less than 65, or a decrease in systolic blood pressure of greater than 40 from normal. Signs of persistent hypotension will typically be found in nursing vital signs documentation of the blood pressure following administration of the crystalloid fluids.

When the 30 ml per kilogram of crystalloid fluid infusion ends may not be obvious in the medical record. If the time of infusion completed is documented, you should use that. In the absence of documentation stating when the infusion was completed, the time when the infusion is completed can be estimated based upon the time the infusion is started and the duration of the infusion in the physician order. For example, let's assume we have a 100-kg patient and the order is for 3000 mls. This is equivalent to 30 ml per kilogram, and the order indicates to infuse the 3000 ml over one hour. If the infusion was started at 0800, you would add the duration of one hour that is in the order to the start time to determine the time the crystalloid infusion concluded. And, in this example, the conclusion time would be 0900.

The other way tissue hypoperfusion can be demonstrated is by a lactate greater than equal to four. If severe sepsis is present with an initial lactate greater or equal to four, the patient has septic shock. In this situation the

crystalloid fluids may not have been given yet because determination of septic shock is not based on a response to crystalloid fluids rather than just based upon the lactate level. The crystalloid fluid should still be given however to treat the tissue hypoperfusion. Documentation to support presence of septic shock in this case will most likely come from laboratory report results for the initial lactate level.

Now, for the clinical criteria for septic shock are not present or met, but a physician, APN, or PA has documented the septic shock is present, possible, or suspected are being ruled out, this is acceptable as indicating septic shock is present.

Now please note, in the septic shock present data element, there is a bullet point in the note for abstraction indicating that if crystalloid fluids were not administered after severe sepsis presentation date and time, that you would select allowable value 2 for septic shock present, which is equivalent to No. For purposes of SEP-1 measure, at this point in time, regardless of how septic shock is identified, if no crystalloid fluids were given after severe sepsis presentation, you will select allowable value 2, which is No, for septic shock present.

Similar to what was presented earlier for severe sepsis presentation date and time, triage date and time are used only for patients who arrived at the ED with septic shock, orders identified as present or suspected during triage.

Now, the crystalloid fluid administration is looking for documentation supporting 30 ml per kilogram of crystalloid fluids were administered prior to, at the time of, or after presentation of septic shock. There are three allowable values. You would select 1, if the crystalloid fluids were started and the volume ordered was equivalent to 30 ml per kilogram. You would select allowable value 2, which is No, if the crystalloid fluids were started and the volume ordered less than 30 ml per kilogram or if you're unable to determine the volume order. And, you would select allowable value 3, which is No, if the crystalloid fluids were not started, or you're unable to determine whether or not they were started.

The only acceptable crystalloid fluids are normal saline and Lactated Ringer's solution. As has been discussed in previous webinars, colloids can be given in addition to crystalloid fluids, but for purposes of the measure, they are not an acceptable substitute for crystalloid fluids. To determine the total volume of crystalloid fluids, the patient received you can take the patient's weight in pounds divided by 2.2 to find the weight in kilograms, then take the weight in kilograms and multiply that by 30 to identify the total target volume. Documentation of medical record must be clear that crystalloid fluids were actually administered, and there are two parts to this. First, there must be evidence to crystalloid fluids were given or started, and second, the orders for crystalloid fluids must be equivalent to 30 ml per kilogram.

Now, the data element does not specify currently whether or not to use ideal or actual weight. While there may be different opinions on whether to use ideal or actual weight, the severe sepsis and septic shock trials have used actual weight. For purpose of the measure you should also use actual weight. At the time the patient presents with septic shock, there may not be a weight recorded in the medical record, and the patient may not be able to tell you their weight. The purpose of using the weight is to determine the total volume the patient should receive to help identify whether or not they actually receive 30 ml per kilogram. If there is a weight recorded prior to the crystalloid fluid order, use that weight. That would most likely be the weight upon which the volume ordered was based. If there is not a weight recorded before the crystalloid fluid order, use the actual or estimated weight recorded after and closest to the order for crystalloid fluids. Now, the order must include a rate or time frame over which to infuse the crystalloid fluids. The measure itself does not specify a rate or duration of which the fluids must be infused, but it does specify a minimum of 1000 ml over eight hours, which is equivalent to 125 ml per hour. Now, below this rate, the infusion represents a maintenance IV infusion and not an infusion for treatment of septic shock. The total volume ordered must be equivalent to 30 ml per kilogram, and crystalloid fluids used to flush IV lines or for administering medications do not count toward the total volume of 30 ml per kilogram. The intent of

the data almost includes crystalloid fluids ordered and given for the treatment of hypotension or septic shock.

The date and time data elements are looking for the date and time the crystalloid fluids were started. In reviewing the medical record look for crystalloid fluid administration that is in large volumes, typically 1000 ml or more. Do not use the date and time the crystalloid fluids were ordered, when IV access was established, or when crystalloid fluids used to dilute medications or flush IV lines were given.

Persistent hypotension is looking within the hour immediately following the completion of the 30 ml per kilogram of crystalloid fluids for the presence of persistent hypotension. Allowable value 1 would indicate that hypotension persists in the hour after the 30 ml per kilogram were given. Value 2 would indicate that hypotension was not present in the hour after the 30 ml per kilo were given. Value 3 would indicate the patient was not assessed for persistent hypotension in that hour after the 30 ml per kilo were given. And, value 4 would indicate either crystalloid fluids were not given or the volume was less than 30 ml per kilogram.

The hours in which to look for persistent hypotension starts when the 30 ml per kilogram of crystalloid fluid is completed. Presence of persistent hypotension is identified by two or more blood pressure readings of either systolic blood pressure less than 90, mean arterial less than 65, or a decrease in systolic blood pressure by greater than 40 from normal. If persistent hypotension manifest after the hour following conclusion of the 30 ml per kilogram it is clinically appropriate to treat these cases as persistent hypotension and septic shock, but for purposes of the measure the cut off is one hour following administration of the crystalloid fluids. Cases where the persistent hypotension manifests more than one after – more than one hour after fluid administration are not included in the measure, and you would select allowable value 2, No. If there is not a systolic blood pressure or mean arterial pressure recorded in the hour following conclusion of the crystalloid fluid infusion, you would select allowable value 3.

Now, this particular slide includes two additional examples to illustrate determining if the crystalloid fluid was complete. In example one we have an order for 2500 ml of normal saline to be given over two hours. The medical record indicates the infusion was started at 9. Since the order is to infuse the 2500 ml over two hours, you would add two hours to the start time to estimate the infusion end time. So, in this example infusion end time would be 11. In example number two, there is an order for 3000 ml to be infused at a rate of 1000 ml per hour. The medical record indicates the infusion was started at 10. To determine how long it would take to infuse 3000 ml, divide the total volume to be infused by the rate, so in this example we end up with infusion duration of three hours. You would add that to the start time to estimate the infusion end time. In this example, the infusion end time would be 1300.

Now, in some cases the total volume ordered maybe greater than 30 ml per kilogram. Because the data element requires assessing for persistent hypotension following the infusion of 30 ml per kilogram, if the target volume is significantly less than the ordered volume, the 30 ml per kilogram may be completely infused prior to completion of the ordered volume. For illustrative purposes, if the ordered volume is 2500 ml and the target volume, based on the patient's weight, is 2250 ml one can easily ascertain that 30 ml per kilogram were given. To determine when the target volume of 2250 was actually infused, you'd take the ordered volume and divide that by the duration identified in the order. In this example, that's 2500 divided by 120 minutes, which is equal to a rate of 20.83 ml per minute. Now, if you take the target volume and divide that by the rate of infusion, that would tell you how long it will take to infuse the target volume. In this case, since the ordered volume of 2500 ml is running at a rate of 20.83 ml per minute, and would be infusing about two hours, 2250 ml would infuse in about 108 minutes or one hour and 48 minutes. You would add the time it takes to infuse the target volume one hour and 48 minutes to the time the infusion started 0900, and you will know approximately when the target volume of 30 ml per kilogram has been infused, in this example, it would be 1048. So, next we're going to step through some septic shock case examples.

For our first septic shock case, the patient presented with severe sepsis at 0900. Lab results reported at 0830 revealed an initial lactate level of 4.2. There is an order for 2500 ml of normal saline over two hours, and the IV flow sheet indicates the normal saline was started at 0900. The patient weighs 165 pounds. Blood pressure prior to the normal saline is running right around 130 over 80 and at 1115 it was 136 over 82. So, for this case you select 1, Yes, for septic shock present. The septic shock presentation date and time is the same as the severe sepsis presentation date and time because the lactate level result at 0830 was the sign of organ dysfunction for severe sepsis, and severe sepsis was identified as present at 0900. Severe sepsis with an initial lactate greater or equal to four is septic shock. You would select 1 for crystalloid fluid administration because the total target volume based on 30 ml per kilogram was 2250 mls and 2500 ml were ordered with the duration of over two hours, and it was started. The crystalloid fluid administration time was 0915 according to the IV flow sheet. You would select 2, which is no for persistent hypotension. Now, the infusion of volume equivalent to 30 ml per kilogram, which was 2250, was completed at approximately 1103. Now, in the previous slide we established that if 2500 ml are infused over two hours, that at about one hour and 48 minutes, 2250 would be infused. Adding this to the crystalloid fluid start time of 0915 reveals that 2250 ml would be infused by approximately 1103. Within the hour of following that time, the only systolic blood pressure reading we have at 1115 does not show that hypotension was present.

For our second septic shock case, the patient presented with severe sepsis at 1620. Blood pressure at 1620 was 85 over 30. There was an order for 3000 ml of normal saline over one-and-a-half hours, and the IV flow sheet indicates the normal saline started at 1630. The patient weighs 220 pounds. Blood pressure at 1805 was 88 over 32 and then repeated at 1807 was 87 over 33. Now, in this case, you'll select 1 for septic shock present. The septic shock presentation date and time is 1807 because this is when persistent hypotension was identified as being present. And in this case, septic shock is being identified as severe sepsis with persistent hypotension. You'll select 1 for crystalloid fluid administration because

the total target volume based on 30 ml per kilogram was 3000 ml, and 3000 ml was ordered with the duration of over 1.5 hours, and it was started. The crystalloid fluid administration time was 1630, according to the IV flow sheet. You'll select 1 for persistent hypotension, which is equivalent to Yes. The infusion of volume equivalent to 30 ml per kilogram, which was 3000 ml, was completed at approximately 1800. This is because the infusion was started at 1630, and the volume was given over one and a half hours. In the hour following the infusion conclusion, there were two systolic blood pressure readings, which demonstrated hypotension, the last being at 1807.

For our third septic shock case, the patient presented with severe sepsis at 1015. Blood pressure at 1430 was 88 over 40. There is an order for 2000 ml of normal saline over two hours, and the IV flow sheet indicates the normal saline was started at 1630. The patient weight was 146 pounds. Blood pressure at 1845 was 86 over 38 and measured again at 1850 was 88 over 37 and in this case you select two, No, for septic shock present. This is because septic shock identified based on persistent hypotension within the hour following conclusion of the crystalloid fluids at 1850 occurred more than six hours after sepsis presentation time of 1015. While clinically this patient has septic shock and should be treated accordingly, for purposes of the measure you'd select No for septic shock present.

For case number four the patient presents with severe sepsis of 1300. At 1230, we find a normal saline IV was started with a 1000 ml bag hung and running at 50 ml per hour. At 1420, the blood pressure drops to 88 to 80 over 35, and the physician orders the normal saline IV rate increased to 1000 ml per hour, followed by an additional 2000 ml of normal saline over two hours. The rate was increased at 1430, and the 2000 ml of normal saline was started at 1530. The patient weight was 213 pounds. The blood pressure at 1735 was 88 over 38 and measured again at 1740 was 87 over 36. Now, in this case, you'd select 1 for septic shock present. The septic shock presentation date and time is 1740 because this is when the second blood pressure demonstrating a systolic blood pressure less than 90 was measured in the hour following the conclusion of the 30 ml per kilogram

of crystalloid fluids. And in this case, septic shock is being identified as severe sepsis with persistent hypotension. You'll select 1 for the crystalloid fluid administration. The total target volume based on 30 ml per kilogram was 2890 ml at the point the rate of the 1000 ml bag was increased to 1000 ml per hour, about 100 ml of the 1000 ml bag had been infused, and this was at the maintenance rate of 50 ml per hour over two hours, which is equivalent to 100. So, at the time the rate was increased, there is about 900 ml left. Based on the order for 2000 ml, plus the 900 ml left in the bag at the time the order to increase the rate was written, means that 2900 ml total volume were ordered. Now, at the 30 ml target volume being 2890 ml and the order being for a total of 2900 ml, 30 ml per kilogram were ordered and started. The crystalloid fluid administration was 1430 according to the IV flow sheet because this is the time the rate was increased from 50 ml per hour, a maintenance rate, to 1000 ml per hour. You would select 1 for persistent hypotension. The infusion of volume equivalent to 30 ml per kilogram, which was 2890, was completed at approximately 1730. Now, this is based on the order for the 2000 ml over two hours, which was completed, which would have completed the 2890 volume and there were two consecutive systolic blood pressure readings of less than 90 in the hour following completion of the infusion, the last being at 1740.

For the fifth and last septic shock case, the patient presents with severe sepsis at 0700. The blood pressure drops to 82 over 36 at 0815 and order for 1500 ml of normal saline over two hours is written and is started according to IV flow sheet at 0830. The patient weighs 165 pounds. The blood pressure at 1035 is 87 over 35 and repeated at 1045 was 88 over 30. In this case, you're going to select No for septic shock present. While hypotension was still present after the normal saline was infused, the volume ordered infused was 1500 ml, and the target volume based on the patient's weight is 2259 ml. Since the volume ordered infused was less than 30 ml per kilogram, for purposes of the SEP-1 measure, you cannot say the patient had septic shock, and no further data entry is required.

This concludes the SEP-1 Part III presentation. Now, this slide contains resources for you. The first is a link to the SEP-1 fact sheet posted on *QualityNet*. The second link takes you to Q&A tool on *QualityNet*, where you can search for responses to existing questions or submit your own. And, the third link takes you to Version 5.0b manual addendum and release notes posted on *QualityNet*. This is the version of the manual you should be using for abstraction of all SEP-1 cases discharged effective October 1, 2015.

The next three slides are just a brief summary for your reference of the changes to the SEP-1 respective data elements that are in Version 5.0b of the specifications manual posted on *QualityNet*.

And, I want to thank everyone who had submitted questions to us via *QualityNet*. Your questions and comments have helped identify areas of improvement for the measure that have resulted in some important revisions that we covered in this presentation and that are represented in Version 5.0b of the manual. We're continuing to look at ways to improve this measure and simplify data collection based on your comments and questions. And with that, Candace, back over to you.

Deb Price: Hi, thank you, Bob. This is Deb Price and I am going to go over a few slides on the continuing education process. The slide in front of you indicates that this presentation is approved for one credit. However, we have increased the length of time for this presentation. So, it will be 1.5 credits. And, the boards that you see in front of you are the boards that will accept the 1.5 credit.

We now have an online CE certificate process. You can get your certificate two different ways. If you registered for this webinar through ReadyTalk, as soon as the slides close out, a survey will open. Please take the survey, and then at the end you're going to click Done and then you will proceed with the directions on that slide. The second way to get a certificate will be, if you are in a room with other people and only one of you registered, within 48 hours, another survey will be sent out. Please send that survey to the other people in your room. After completion of the

survey, you will click the Done button at the bottom of the screen, and the second page opens up for everybody. That is a separate registration link. Please fill out that registration as either a new user or an existing user.

If you have any problems with your certificate, please read this slide. You should be getting a link sent directly to your e-mail immediately. If you don't, that means that you have some kind of a firewall up, and you'll need to go back and register as a new user using a personal e-mail account.

This is what the survey will look like as soon as we close this webinar out. At the bottom, you'll see a little gray Done button. You will click that. And then, this page you have two links, one is a new user link and one is existing user.

The new user takes you to this page where you register your first and last name and your personal e-mails and the phone.

This is what the existing user link looks like. You use for your user name that is your entire e-mail including the prior after the @ sign and then of course your password.

OK. And now, I am going to pass the webinar back to our IQR lead, Candace Jackson to finish out the rest of the webinar. Candace, take it away.

Candace Jackson: Thank you, Deb. We do have time for just a couple of questions. As Matt indicated in the beginning of the webinar, there are lots of questions being submitted in the chat, so we will not have time to get to the majority of those questions today but we will try to present a couple of them. The first question, please clarify lab results time versus lab draw times to use, you presented two different ways in the scenario. Bob, are you able to provide a response to that question?

Bob Dickerson: Yes, the – you will enter the date and times that the labs were drawn. But, that is used to identify whether or not you meet the three-hour bundle, which is having your lactate collected within three hours of severe sepsis

presentation or antibiotic start in your blood cultures. In order to identify the presence of severe sepsis, you have to know the results of the lab values. So, to determine the presence of severe sepsis, you would use the results – the time that those results come back or when those results are available, not the time collected.

Candace Jackson: Thank you, Bob. The next question: for the fluids, can we use the fluids given in the field for severe sepsis / septic shock?

Bob Dickerson: Yes, that is possible. And, to what extent you can use those will depend upon documentation that's in the medical record.

Candace Jackson: Thank you, Bob. Next question: why would I look prior to 24 hours before presentation for antibiotics, if the question is within 24 hours before or three hours after.

Bob Dickerson: So, you would look in the 24 hours prior, if there were any antibiotics given, or you'd look earlier than the 24 hours prior, if any antibiotics were given in the 24 hours prior to see if any of those antibiotics were also given earlier than 24 hours prior. You know, that's a lot of 24 hours prior in there. The reason for that is: if the patient was on an antibiotic in that 24 hours prior and also on the same antibiotic earlier, the algorithm will exclude the case.

Candace Jackson: Thank you. The next question: we may know that an antibiotic was given prior to presentation, but we'll never know the time, as this won't be documented in our medical records. Please advise.

Bob Dickerson: If there is documentation that an antibiotic was given in the 24 hours prior, you would select Yes for an antibiotic given. But, if you don't have the time, you would– of any antibiotic given at 24 hours to three hours after, you'd have to enter unable to determine for the time. If you don't have a time, you can't enter a time.

Candace Jackson: Thank you, Bob. And our next question: what is meant by the total volume does not need to be completely infused? If this is the case, then what is the minimum needed to be actually infused to count for this measure?

Bob Dickerson: So for – there are two different data elements that look at the crystalloid, actually more than two, but two that I'll talk about in reference to the crystalloid fluid administration. There is the data element called crystalloid fluid administration. To select Yes for that, there has to be an order for 30 ml per kilogram or equivalent to that, and it has to be started. For the persistent hypotension, you are looking at whether or not 30 ml per kilogram were actually given. So, the SEP-1 measure does require that 30 ml per kilogram be ordered, be started, and be given; it's just that individual data elements divided that process up for purposes of abstraction.

Candace Jackson: OK. And, we have time for one more question. Can we accept nurse documentation of infection suspected source of infection, slide 56 referenced during triage, the patient currently on antibiotics for pneumonia?

Bob Dickerson: So, yes, the revisions to the data element do indicate that nursing documentation indicating there is an infection, a suspected infection, or the patient is being treated for an infection is acceptable. Most commonly, you will see this in notes during triage when a patient would be coming in. Facilities that have been working with severe sepsis and septic shock for some time now have instituted triage tools or sepsis screening tools within triage that nurses will review and identify, if there is a suspected infection. So, nursing documentation is acceptable and has been added to that severe sepsis present data element.

Candace Jackson: Thank you, Bob. And I'd like to thank Bob Dickerson for presenting this valuable information today for us, and I'd like to thank you all for joining the sepsis part three webinar. We hope that you found this information valuable and beneficial for your organization. And, we hope that you have a rest of your – a good day for the rest of your day. Thank you very much for joining.

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