Inpatient Quality Reporting Program

Support Contractor

SEP-1 Early Management Bundle, Severe Sepsis/Septic Shock Part II: Septic Shock

Presentation Transcript

Moderator:
Candace Jackson, RN
Inpatient Quality Reporting (IQR) Program Lead,
Hospital Inpatient Value, Incentives, and Quality Reporting (VIQR)
Outreach and Education Support Contractor (SC)

Speaker(s):
Bob Dickerson, MSHSA, RRT
Lead Health Informatics Solution Coordinator
Hospital Inpatient and Outpatient Process and Structural Measure
Development and Maintenance Contractor

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Matt McDonough: Good afternoon everyone and thank you for joining us for this afternoon's webinar. My name is Matt McDonough and I'm going to be your virtual training host for today's event. Now, before we start today's event, I'd like to cover some brief housekeeping items with all of you so that you know how today's event is going to work and how you can submit your questions to your subject-matter experts today.

As you see on this slide, audio for our event today is available over the internet over streaming audio. And that means that there's no phone line required but you do need to have computer speakers or headphones connected to listen to that streaming audio feed. Now, if you're not able to stream or if you're experiencing some audio difficulty with your stream throughout today's event, please send us a chat message. We do have a limited number of dial-in lines that we can provide to you, if they are needed. Also, this event, as always, is being recorded for archival purposes and to be published at a later date.

Now, if you are streaming audio over your computer speakers todays, you may encounter some common issues. So, we'd like to cover how to fix those here. If your audio is breaking up or it suddenly stops completely, you can address that yourself. Simply click the Pause button as illustrated here on this slide. Wait approximately five seconds or so, and then click the Play button in that spot. Your audio feed should resume. And, if your slides are lagging behind our presenter, you can do that, this procedure as well, to stop and resync your audio with our presenter's audio today.

Now, if you're hearing a very bad echo right now, it sounds like my voice is coming over multiple times, that's probably because you're connected multiple times to this event, and you're hearing more than one audio stream. So, how do you fix that? Close all but one of your browsers or tabs that are connected to this event and the audio or the echo in the audio will clear up. And, you can see on this slide what an example of what that might look like. So reduce the number of connections down to one. You'll hear only one audio feed, and that echo will clear up.

Now, our attendees that are connected today are in a listen-only mode. But, that doesn't mean that you can't send in your questions to our panelists today. On the left side of your screen, there is a chat with presenter box. Simply type your question into that chat box, and click the Send button. When you click Send, your questions will be seen by all of our presenters today. And, as time and resources and the availability of answers allow, we'll answer as many questions as we can. But do keep in mind that your questions are being recorded to be addressed in a future Q&A document.

That's going to do it from my introduction. 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 II: Septic Shock* 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 a

Q&A will be posted to our new in-patient website, www.qualityreportingcenter.com within two days, and will be posted to *QualityNet* at a later date. If you registered for this even, a reminder email as well as the slides was sent to you to your email about one hour ago. If you did not receive the email, you can download the slides at our inpatient website, again at www.qualityreportingcenter.com. And, now I'd like to introduce our guest speaker, Bob Dickerson. Bob is a lead Health Informatics Solution Coordinator for the Measures Development and Maintenance Team at Telligen. He is a Registered Respiratory Therapist, with a 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 & Medicaid Services with development and maintenance of Hospital Clinical Quality Measures. Bob has extensive healthcare 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. Hello everyone and welcome to our second call. Now, on the second part, we're going to work our way through the algorithm and associated data elements specific to the septic shock portion of the measure.

At the start of our last session, I shared with you an experience I had hiking from rim to rim of the Grand Canyon. For this session, I want to share with you a recent experience I had canoeing a 27-mile stretch of the Nishnabotna River in Southwest Iowa with a group of Boy Scouts. We had a mix of experienced with inexperienced canoers, which meant some canoes followed a rather random zigzag pattern down the river, while others were able to maintain a fairly straight path following the bends of the river. While we did have a number of very close calls, we really had only a couple of humorous mishaps involving canoes capsizing. But, we

all helped each other to ensure we reached our destination. And, we all relished our conquest of the river the last evening over a camp fire where we prepared chocolate, cherry and apple peach cobblers. Now, similar to my Grand Canyon experience, I drew some similarities between this canoeing adventure and the septic shock portion of the SEP-1 measure. On our canoe trip, we had a water trail to follow. And, despite that, we still had paddlers going every which direction you can imagine. Similarly, we have an algorithm to follow for the septic shock portion of SEP-1. Now, some of the cases you review may take a zigzag route through the abstraction process in the algorithm, depending on the complexity of the cases; while others will be much easier to abstract and follow the algorithm much more smoothly. Even though we were surrounded by water in the river, hydration was a very important part of the trip because of the physical activity of paddling and hot temperatures on that weekend. For septic shock, fluids are a very important element. And, we'll dive into those a little bit later in the presentation today. There were points that our canoes got grounded in the river due to hidden sandbars and rocks. And, to prevent from tipping we had to work with other canoers and our canoe partners. So, be sure to work with others and ask questions about septic shock, if you get stuck on something. We could evaluate our process, our progress. We had several takeout and checkpoint options along the river. In the septic shock portion of SEP-1, there are options for evaluating volume status and tissue perfusion, and different places along the algorithm to check your progress. So, let's together take on the septic shock path of the SEP-1 measure.

The purpose of today's presentation is to help abstractors and healthcare providers better understand the septic shock portion of the SEP-1 measure, the data elements, and the corresponding algorithm flow. As I mentioned, during the session, our discussion will be limited to the septic shock portion of the SEP-1 measure. Next month, we'll continue the discussion of this measure with more detailed review of some of the more challenging data elements with sample cases and scenarios to help better illustrate how to abstract the more complex parts of the SEP-1 measure.

Please be sure that you're using the most current version of the specifications manual. During the August session, focused on severe sepsis, a few questions reflected that people were a bit confused on the presentation. And, when I queried a little bit more, it turned out that they were actually referencing an old version of the manual.

During this presentation, we'll be discussing the numerator population criteria, the denominator population criteria, and populations excluded from the measure. Most of our time will be focusing on a review of the algorithm and the respective data elements for septic shock.

The objectives of today's presentation, noted on this slide, include being able to identify the denominator and numerator criteria, describing how to abstract septic shock specific data elements, and explaining the flow of the algorithm.

Now, a couple of points to keep in mind before we go further: As I've already mentioned, again, our focus and scope today is on the septic shock portion of the measure. As we work our way through the algorithm, you'll note that some data elements do not appear in the same sequence that they may be applied in a clinical setting. Now, the algorithm needs to take into account how the data elements interact, and uses a number of calculations to identify whether or not the data elements and the measure are met. For purposes of the presentation, some algorithm images have been edited for content and to fit the screen. To get a view of the complete algorithm, unedited, please refer to the actual SEP-1 algorithm in the specifications manual. One of the points to keep in mind is that SEP-1 is a measure based upon evidence-based clinical guidelines and published studies relevant to severe sepsis and septic shock. A measure cannot exactly replicate guidelines and guidance because they often lack the specificity that a measure requires. In order to make a measure work, there have to be specific start and endpoints for abstraction, as well as abstraction guidance that may not be specified in a set of guidelines. Additionally, there will be some patients that may be excluded from the measure that you would treat for severe sepsis and septic shock and actual clinical practice. The fact they're excluded does not mean they should not be treated accordingly. It

simply means, for purposes of the measure, they've been excluded for – from the measure results. SEP-1 is an evidence-based measure of clinical practice designed to help identify where gaps in care may exist. It is not a mandate for how care should be provided. There may be some situations, or special circumstances may exist, that the measure and the guidelines upon which it is based do not or are not able to take into account. Physician judgment should be used in these special circumstances and may differ from the guidelines and the measure.

The patient population for SEP-1 includes acute care in patients who have been discharged from the hospital, are 18 years or older, and have an ICD-10 principal or other diagnosis code of sepsis, severe sepsis, or septic shocks. Now, these codes are identified in Appendix A, Table 4.01 of the *Inpatient Quality Reporting Program Specifications Manual*, version 5.0a. I've received a number of questions asking why patients with codes for sepsis were included when only those with severe sepsis or septic shock are actually in the measure. The reason for this is because historically coding for severe sepsis and septic shock has been inconsistent. The intent is, therefore, to cast a wide net and then through abstraction, narrow the field down to those cases that actually have severe sepsis or septic shock.

The following populations are excluded from the measure. The presence of the first three: patients with a directive for Comfort Care within three hours of severe sepsis presentation, or within six hours of septic shock presentation, and patients who have an administrative contraindication to care; may not have had an opportunity for appropriate care to be implemented, so they're excluded. A length of stay of greater than 120 days is a standard exclusion. Patients who transfer in from another acute care facility may have already had care initiated at the other facility that would not be reflective of care provided at the receiving facility, so they're excluded also. The next two, patients who expire within three hours of severe sepsis presentation or who expire within six hours of septic shock presentation, again, may not have had the opportunity for appropriate care to be implemented. And, patients receiving IV antibiotics for more than 24 hours prior to severe sepsis may be reflective of previous

care and not necessarily care for a new case of sepsis. Now, we discussed this exclusion in detail during last month's presentation. So, I will not be discussing this exclusion further today. In the last presentation, when I referred to excluding cases and during the discussion of points in the algorithm where cases are excluded, I did not clarify that these cases are excluded by the algorithm. They still need to be abstracted to the point of being excluded. And, these cases still need to be submitted. Being excluded, they are removed by the algorithm from the denominator population. So, they do not count against you as cases that fail the measure. They also do not count as cases that pass the measure.

As I mentioned in the August SEP-1 presentation, while this is a bundled composite measure, I'm breaking it down into sections based on severe sepsis and septic shock. For one, this makes it a little easier to take it all in because it is a rather large complex measure; but, additionally, because while all patients in the measure will have severe sepsis, not all of them will have septic shock. In the August presentation, we discussed the numerator criteria for severe sepsis prior – for the severe sepsis portion of the measure, as you see displayed on this slide. For today's presentation, we'll be focusing on the septic shock portion of the measure and the respective numerator criteria, which are on this slide.

So, these are only relevant, the numerator criteria in the slide are only relevant, for those cases that have septic shock. If septic shock is present, the measure will be looking for fluid resuscitation administered with 30 milliliters per kilogram of crystalloid fluids within three hours of septic shock presentation; and, for only those cases with persistent hypotension in the administration of vasopressors within six hours of septic shock presentation; and, only for those cases where hypotension persists after fluid administration or the initial lactate is greater than or equal to 4. The measure is looking for a repeat volume status and tissue perfusion assessment being completed within six hours of septic shock presentation.

From the last presentation, there were several questions asking for clarification of the symbols and letter designations. And, while we talked about this during the discussion, the definitions were not clearly

represented in a single slide, and I do apologize for this. So, for clarity purposes, I want to touch on what the symbols and letter designations mean. There are five cited boxes, which are also referred to as off-page connectors, and they are labelled with a letter. They show a link to another section of the algorithm on a different page. Some of these off-page connectors will link to an outcome box, which is a double-sided rectangle. The letter B indicates the cases are excluded and not in the measure population. This neither accounts for or against your facility. This typically occurs when something happens, for which the case is not evaluated further in the algorithm. The letter D indicates the cases still in the measure population but did not meet the intent of the data element for the measure. These cases are in the denominator but not in the numerator and they fail the measure. The letter W is a link that takes the case directly to the last page of the algorithm for evaluation of the counters. This is not an indication of whether the cases pass or fail the measure. When the case is assigned a W, all subsequent data elements are bypassed and they go directly to the last page. The letter X indicates data is missing or is not in a correct format. This will result in a case being rejected. The cause of the rejection must be resolved to continue. Any other letter designation or five-sided box in the SEP-1 algorithm will take the case to the next page or step in the algorithm. As I mentioned, the double-sided rectangles are outcome boxes. These are located at the end of the algorithm on that last page. There's an outcome box for the letter B, for the letter D, the letter X, and the letter E. Now, E indicates the cases in the numerator population and the intent of the measure was met. So, these cases pass the measure.

For purposes or today's discussion, again we're working with the data on this for septic shock and interventions that will contribute to the shock counters. As you may recall from the last session, the counters are really boxes in the algorithm where a point is earned for each care intervention element is completed according to specifications and within the appropriate timeframe. So, the counters are the algorithm's way of keeping track of whether or not the bundles of care will perform as indicated. It's nothing the abstractor needs to keep track of. For septic shock, there are four counters we will touch on. There's a shock three-

hour counter, a shock vasopressor counter, a shock six-hour counter, and a shock physical assessment counter.

The first data element we encounter in today's session is septic shock present. Selecting allowable value 2, or no, will result in the case being directed to W, which is the last page of the algorithm, and it will bypass all remaining data elements for septic shock. So, I can value 1, yes, or result in a case continuing.

Now, this data element is looking for documentation in the medical records supporting the presence of septic shock. If there are multiple episodes documented, you abstract only the first episode. The allowable values are either a Yes or a No.

There are a few things to look for with this. As I mentioned, abstract the earliest documentation reflecting the presence of septic shock. Septic shock can be identified three different ways for purposes of the measure. There are two ways that will involve clinical criteria and one way that relies on either physician, advanced practice nurse, or physician assistant documentation of septic shock or suspected septic shock. So, if the presence is based on clinical criteria, the septic shock can manifest as either severe sepsis with tissue hypoperfusion demonstrated by persistent hypotension, or it can be demonstrated by severe sepsis with tissue hypoperfusion demonstrated by initial lactate greater than/equal to 4. On the subsequent slides, we're going to explore each of these in a little more detail.

First off, the clinical – for the clinical criteria, it's important to note that septic shock cannot exist without severe sepsis. Now, as we discussed in the previous session, which focused on 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. The data element in the case that severe sepsis is not present you would select value 2, which is no. I would like to point out, however, that you should never have reached the point that severe sepsis was not present because the case should have been excluded from the measure at the point

you determine the presence of severe sepsis. Now, the ways septic shock progresses and manifest itself clinically, there could be cases where criteria for severe sepsis or documentation of severe sepsis is not in the medical record, but there is documentation indicating septic shock is present. Now, the severe sepsis present data element indicates that if this is the case, and there's only documentation of septic shock, that you would indicate that severe sepsis is present. So, now that we've established the presence of severe sepsis, let's look at the other clinical criteria for septic shock.

As alluded to earlier, there are two ways tissue hypoperfusion can be demonstrated. One way is persistent hypotension. If severe sepsis is present with persistent hypotension, the patient has septic shock. Now, this would be seen if the patient had severe sepsis, was hypotensive, received 30 milliliters per kilogram of crystalloid fluids, and within one hour following completion of the fluids, still demonstrated hypotension. In our last session, we reviewed in detail some examples of hypotension and how to identify the last sign of hypotension displayed on this slide. So, I'll not be covering that in further detail today. Signs of persistent hypotension would typically be found in nursing vital signs documentation of blood pressure following administration of the crystalloid fluids. I'm sure you may have some questions regarding persistent hypotension. And, we will talk about it in more detail when we reach that data element in the algorithm review. In this situation, the crystalloid fluids have to be given before the presentation of septic shock because the lack of response to the fluid is what defines the presence of septic shock.

When the 30 milliliter per kilogram crystalloid infusion ends, it may not be obvious in the medical record. If the time of infusion is completed as documented, you should use that. But, more often than not, the time the infusion is completed will not be documented. You can estimate this time for purposes of the measure based upon the time the infusion has started and the duration of the infusion in the physician's order. For example, let's assume you have 100 kilogram patient, and the order is for 3000 mls, which is close 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. So, in this example, the concluded time would be 0900. I'll go over some examples when we discuss the crystalloid fluid administration and persistent hypotension data elements.

Now, the other way tissue hypoperfusion could be demonstrated is by a lactate greater than or equal to 4. If septic shock is present with an initial lactate greater than or equal to 4, 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 the response to the crystalloid fluids, rather it's based upon the lactate level. Crystalloid fluids should still be given to treat the tissue hypoperfusion. Documentation to support the presence of septic shock in this case will most likely come from laboratory report results.

Now if the clinical criteria for septic shock are not present or met, but a physician, APN, or PA has documented that septic shock as present, possible, suspected, or being ruled out, this is acceptable as indicating septic shock is present. Please note in the septic shock present data element, there is the bullet point in the note for abstraction indicating that if the crystalloid fluids are not administered after severe sepsis presentation date and time, to select allowable value 2 for septic shock present, which is equivalent to no. Now, this will allow for exclusion from the septic shock portion of the measure, cases where the physician may have documented septic shock, but did not order any crystalloid fluids. The reason for excluding is if crystalloid fluids are not given, the patient likely did not truly have septic shock. If we didn't exclude these cases, they would fail the measure. Let's now move on to the next set of data elements.

The next data elements are septic shock presentation date and septic shock presentation time. If either is entered as unable to determine, the case will be assigned category D and fail the measure. If a valid date and time were entered, the case will continue.

Similar to [the] discussion of severe sepsis presentation date and time last month, there are a couple of points I want to make regarding septic shock presentation date and time. Triage date and time are used only for patients who are arrived to the ED with septic shock or it is identified as present or suspected during triage. Being identified in triage means that all of the clinical criteria defining the presence of septic shock must be present before or during triage. If even one of those occurs after triage, you will not use triage time. For all cases where septic shock presents after triage, whether or not the patient is still in the ED or admitted to the hospital, use the earlier of either when the last of the clinical criteria are met or physician/APN/PA documentation. Now, after date and time are entered, the algorithm performs the calculation.

That calculation is called shock presentation time. Depending on the results of this calculation, the case may be directed to W, on the last page of the algorithm or may continue on the algorithm.

The shock presentation time is a calculation of minutes of the septic shock presentation date and time minus the severe sepsis presentation date and time. And, there are two time references for the results, 360 minutes, which is equivalent to six hours after severe sepsis presentation and 0 minutes, which is the same time as severe sepsis presentation.

So, if the result of the calculation is greater than 360 minutes, meaning that septic shock presented more than six hours after severe sepsis presentation, then the case is assigned category W and goes directly to the last page of the algorithm. If the results are greater than or equal to 0 minutes and less than or equal to 360 minutes, meaning septic shock presented at the same time as, or within six hours of, severe sepsis, the case continues on to the next data element.

The next data element is directive for comfort care, septic shock, which has two allowable values. Selecting 1, which is yes, results in a case being assigned to a category B and being excluded from the measure population, and you're done. If 2, no, is selected, the case will continue.

This data element is looking for documentation in the medical record from a physician, APN, or PA of comfort measures only that is present prior to or within the six hours following the presentation of the first episode of septic shock. And, allowable values, as I mentioned, are yes or a no.

As previously mentioned, this timeframe is prior to or within six hours after septic shock presentation, and the only acceptable documentation is that from a physician, APN, or PA. The data element includes the only terms that are acceptable in the inclusion guidelines for abstraction. Note that if any of the acceptable terms is used in the negative or stated as conditional, you should select allowable value 2, which is no. And, a couple of examples of that might be comfort care refused by the patient, not appropriate for hospice care, or comfort measures only if the patient arrests. So, let's take a look at our next data element in the algorithm.

The next data element is the discharge disposition. Now, this was previously abstracted when you were working on a severe sepsis portion of the measure. At this point, the algorithm is reevaluating it. You don't have to re-abstract it or re-enter it. There are several possible allowable values. If allowable value is 6, expired, is selected, the discharge time is evaluated and a shock expired time is calculated. Essentially, this will result in any patient who dies within six hours of septic shock presentation being assigned category B and being excluded from the measure. You wouldn't need to abstract any further. Selection of any other allowable value will result in a case continuing.

For discharge disposition, there are a total of 8 allowable values, including one for not documented or unable to be determined. And, if the patient dies, the discharge time is the time documented that they died. As I mentioned, a couple of slides ago, there is a time calculation that results in excluded patient – in excluding patients who died within six hours after septic shock presentation. From here, we move on to the next data element.

Our next data element is crystalloid fluid administration. There are three allowable values. Selecting 2 or 3, which are both equivalent to no, will

result in a case being assigned category D and failing the measure. Selecting 1, which is equivalent to yes, will result in the case continuing to the crystalloid fluid administration date and time data elements.

Now, this data is looking for documentation supporting crystalloid fluids were administered at the time of or after presentation of septic shock. Some of the wording in this data element may seem to be in conflict with wording of some other data elements. We recognized that and have proposed revisions for the next version of the manual to better clarify and synchronize the wording with that in the septic shock present, persistent hypotension, and crystalloid fluid administration date and time data elements. And, because of this, I do want to spend a little more time walking through the allowable values and abstraction for crystalloid fluid administration data elements. The first thing you'll notice is the definition and suggested data collection question reference only crystalloid fluids administered after the presentation of septic shock, and the allowable values reference crystalloid fluids given at the time of an after presentation. The crystalloid fluid administration date and time data elements indicate that in some cases the crystalloid fluids will be infusing prior to the time of presentation of septic shock. And, if we look at the relationship between this data element and the septic shock present data element, which we've already discussed, we see that crystalloid fluids may be given before or after presentation of septic shock. So, the intent is to capture crystalloid fluids ordered and given in relation to the treatment of septic shock or determination of septic shock presence. So, taking all of this together, we're looking for crystalloid fluids that may have been started prior to, or running at the time of, or given after the presentation of septic shock. Additionally, the volume ordered must be equivalent to 30 ml per kilogram. So, allowable value 1, yes, would be selected if the crystalloid fluids were started before, at the time of, or after septic shock presentation and the volume ordered is equivalent to 30 ml per kilogram. You would select the allowable value 2, no, if the crystalloid fluids were started before at the time of, or after septic shock presentation, and the volume ordered was not equivalent to 30 ml per kilogram, or you're unable to determine the volume ordered. And, you would select allowable

value 3, no, if crystalloid fluids were not started before, at the time of, or after septic shock presentation, or you're unable to determine that they were started.

The only acceptable crystalloid fluids are Normal Saline and Lactated Ringers solution. We've received a number of questions regarding the use of colloids for specific patient populations. The purpose of this presentation is not to debate the merits of each fluid but rather to help with abstraction of clinical data for the SEP-1 measure. As such, I'm going to provide just a brief overview of why the measured limits with resuscitation of crystalloid fluids. Now, while colloids can be given in addition to the crystalloid fluids for purposes of the measure they are not an acceptable substitute for crystalloid fluids. The use of crystalloid fluids is supported by the Surviving Sepsis International Guidelines, and studies comparing the use of crystalloid fluids and colloids have not found one to be superior to the other. Because of this and other factors noted in the guidelines, crystalloid fluids are the only acceptable fluids for the SEP-1 measure. To determine the total volume of crystalloid fluids, the patient should receive, you can take the patient's weight in pounds, divide it by 2.2 to find the weight in kilograms (obviously, if you already have the weight in kilograms, you don't need to do this), then, you take the weight in kilograms and multiply that by 30 to identify the total volume. The documentation in the medical record must be clear that the crystalloid fluids were actually administered. And, there are two parts to this data element. First, there must be evidence the crystalloid fluids were given. And second, the order or orders for crystalloid fluids must be equivalent to 30 ml per kilogram.

Now, I've received a number of questions regarding which weight to use. And, while there may be different opinions on whether to use ideal or actual weight, severe sepsis and septic shock trials have, for the most part, used actual weight. For purposes 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 in any shape or condition to 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 received 30 ml per kilogram, and to help identify whether or not the physician order is for 30 ml per kilogram. If there are multiple weights entered, use the actual or estimated actual weight closest to the order of crystalloid fluids; that's the weight that would most likely be the weight upon which the physician, APN, or PA based the volume they ordered. The order must include a rate or a timeframe over which to infuse the crystalloid fluids. And, we've received a number of questions inquiring whether this is the rate at which the fluids were actually – back up just a moment, we received a number of questions inquiring whether there is a specific rate at which the fluids must be infused. Now, this measure does not specify a rate or duration over which the fluids must be infused. However, the data element does specify a minimum rate of 1000 ml over eight hours, which is equivalent to 125 ml per hour. Below that, the infusion represents a maintenance IV and not an infusion for septic shock. Many times, the crystalloid fluids will be ordered over a series of infusions instead of a single infusion. This is acceptable as long as the total volume is equivalent to 30 ml per kilogram. I'm going to go over some examples shortly to help illustrate this. Crystalloid fluids that are going to use to flush IV lines or for administering medications do not account towards the total volume of 30 ml per kilogram. The intent of the data element is to include crystalloid fluids ordered and given for the treatment of hypotension or septic shock. So, let's take a look at some examples.

In our first example, there's a physician order for 2500 ml of normal saline to be given over one hour. The target volume on normal saline [that] the patient should receive, based upon their weight, is 2236 ml. The order was written and [an] infusion was started one hour before septic shock was identified. In this case, you would select allowable value 1, yes, because the volume ordered was 30 ml per kilogram, and the order included the duration over which to infuse the normal saline.

In our second example, there is a physician order for 2000 ml of normal saline to be given over one hour. The target volume of normal saline [that]

this patient should receive, based on their weight, is 2508 ml. The order was written and the infusion was started 15 minutes before septic shock was identified. In this case, you would select allowable value 2, no, because, even though the duration was ordered, the volume ordered was less than 30 ml per kilogram.

In our third example, there is a physician order for 2000 ml of normal saline to be given STAT. The target volume of normal saline [that] the patient should receive, based on their weight, is 1936 ml. The order was written and the infusion was started 45 minutes before septic shock was identified. In this case, you would select allowable value 2, no, because, even though the volume is 30 ml per kilogram, there is no infusion duration over which to – administered infusion, and there is no rate order.

In our fourth example, there is a physician order for 1500 ml of normal saline to be given at a rate of 120 ml per hour. The target volume of normal saline the patient should receive based on their weight is 1500 ml. The order was written and infusion was started 20 minutes after septic shock was identified. In this case, you would select allowable value 2, no, because, even though the volume is 30 ml per kilogram, the infusion rate is less than 125 ml per hour. For purposes of the measure, this represents a maintenance infusion and not an infusion for fluid resuscitation.

In our fifth example, there is a physician order for 30 ml per kilogram of normal saline to be given over two hours. The target total volume of normal saline the patient should receive, based on their weight, is 2700 ml. The order was written and infusion was started 45 minutes before septic shock was identified. The IV flow sheet indicates the patient received 3000 ml. In this case, you would select allowable value 1, yes, because the volume ordered is 30 ml per kilogram, and the 30 ml per kilogram were given. Additionally, there is a duration over which to give the infusion in the order.

And, our sixth example, there are three separate orders for 1000 ml of normal saline, each to be given over one hour. The target total volume of normal saline the patient should receive based on their weight is 3000 ml.

All three orders were written and all three infusions were started before septic shock was identified. Now, in this case, you would select allowable value 1, yes, because the total volume, when you add up all three infusions, is 30 ml per kilogram. And, there is a duration in each of the orders over which to give the infusion. So, now let's take a look at the next two data elements, which are crystalloid fluids administration date and time.

If either the crystalloid fluid administration date or time is introduced or unable to determine, the case will be assigned category D and fail the measure. If a valid date and time entered, the case will continue.

These 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 about 1000 ml or more. Do not use the date and time the crystalloid fluids were ordered, when IV access was established, or when crystalloid fluid used to dilute medication or to flush IV lines.

After valid date and time are entered, the algorithm performs a calculation, the result of which is called crystalloid fluid admin time. There are two outcomes for this calculation. One of which will assign the case to category D and it will fail the measure. And the other, which will add one to the shock three-hour counter and allow the case to continue.

The crystalloid fluid admin time is the calculation in minutes of the crystalloid fluid administration date and time minus the septic shock presentation date and time. There's a one-time reference to the results that is 180 minutes, which is equivalent to three hours after septic shock presentation.

If the result of the calculation is greater than 180 minutes, which means the crystalloid fluids were started more than three hours after septic shock presentation, the case is assigned category D and fails the measure. If the result is less than or equal to 180 minutes, which means the crystalloid fluids were started before or within three hours of septic shock

presentation, the algorithm adds 1 to the shock three-hour counter and the case continues on to the next page of the algorithm. Now, in relation to what I talked about a few slides ago about whether our crystalloid fluids given prior to septic shock presentation are acceptable, you can see by this, that the algorithm accepts fluids started before septic shock presentation, and up to and including three hours after septic shock presentation. As I mentioned, we're looking at wording revisions to the crystalloid fluid administration data elements to make it more clear that crystalloid fluids given prior to septic shock presentation are acceptable.

Now, in one of the previous examples where there were three separate orders for 1000 ml of normal saline, which taken together are equivalent to 30 ml per kilogram, we've reached – we've received a number of questions regarding the multiple infusions. The calculations and data element require the total volume ordered be equivalent to 30 ml per kilogram. And, this is usually pretty easy to determine based on the volume's order. They also require that 30 ml per kilogram be started within three hours of septic shock presentation. This presents a bit of a quandary. And, if when there are multiple infusions started to reach the total volume of 30 ml per kilogram, what should be entered for the crystalloid fluid administration date and time? So, if there are multiple infusions ordered to reach the equivalent total volume of 30 ml per kilogram, the total volume ordered and given will not be apparent until the order for the last infusion is written and that last infusion is actually started. As such, the date and time the last infusion is started would be the time entered. The date and time of any infusion started prior to that would not reflect that 30 ml per kilogram was given; it would reflect that the volume less than 30 ml per kilogram was given. So, let's take a look at some examples to better illustrate this and how the algorithm handles these situations.

Now, on our first example, septic shock presentation time is 1330. Base on their weight, the total volume the patient should receive is 3000 ml. And, we have three orders for 1000 ml of normal saline each to be given over one hour. The first was started at 1000, and the second has started 1115.

Now, based on these first two orders, it's not apparent the physician is ordering the target volume of 3000 mL and it's not clear the patient will be receiving 3000 ml. When that third order is written, we now know the physician has ordered 3000 ml. And, when that last infusion started, we now know this patient would be receiving 3000 ml. In this case, the time to enter for crystalloid fluid administration time is 1230 when the last infusion was started. Now, because this is before septic shock presentation time of 1330, the algorithm will add 1 to the septic shock three-counter and the case will continue.

In the second example, septic shock presentation time is 1000. Based on their weight, the total volume the patient should be given is 2700 ml. We have three orders for 1000 ml or normal saline, each to be given over one hour. The first has started at 1020, and the second has started 1130. Again, based on the first two orders, it's not apparent the physician is going to be ordering the target volume of 2700 ml, and it's not clear the patient will actually be receiving 2700 ml. When that third order is written, we now know the physician ordered 2700 ml, and when the last infusion has actually started, we know the patient will be given 2700 ml. In this case, the time to enter the crystalloid fluid administration time is 1240 when the last infusion was started. Because this is within three hours after the septic shock presentation of 1000, the algorithm will add 1 to the shock three-hour counter and this case will continue.

And our third example, septic shock presentation time if 0900. Based on the weight, the total volume the patient should be given is 2250 ml. There are two orders of 1000 ml of normal saline, each to be given over two hours, and one order for 500 ml to be given over one hour. The first was started at 0915, and the second was started 1130. Based on the first two orders, again, it's not apparent the physician is going to be ordering the target volume and it's not apparent the patient will be receiving the target volume. When that third order is written, we now know the physician has ordered 2250 ml. And, when that last infusion started, we now know the patient will be given 2250 ml. In this case, the time to enter for the crystalloid fluid administration time is 1345 when the last infusion was

started. Now, because this is more than three hours after [the] septic shock presentation time of 0900, the algorithm will assign the case to category D and this case will fail the measure. So, let's now move on to the next data element in the algorithm.

Persistent hypotension has four possible allowable values. If 2, 3, or 4 were selected, reflecting no, unable to determine, or not applicable, the case is directed to the initial lactate level result data element. If allowable value 1, yes, is selected, the case will continue along the algorithm to the vasopressor administration data elements.

The data element is looking within the hour immediately following the completion of the 30 ml per kilogram of crystalloid fluids for the presence of persistent hypotension. Value 1 indicates that hypotension persisted in the hour after the 30 ml per kilogram were given. Value 2 indicates the hypotension was not present in the hour after 30 ml per kilogram were given. Value 3 indicates the patient was not assessed for persistent hypotension in that hour. And, Value 4 indicates that either the crystalloid fluids were not given or the volume was less than 30 ml per kilogram.

The hour within which to look for persistent hypotension starts when the 30 ml per kilogram of crystalloid fluids is completed. Presence of persistent hypotension is identified by one single blood pressure reading of either a systolic blood pressure less than 90, mean arterial pressure less than 65, or decrease in systolic blood pressure greater than 40 from the last recorded systolic blood pressure considered normal. I received a number of questions and comments reflecting concerns that a single reading may not always be truly reflective of persistent hypotension. As such, we are looking more closely at a definition that would be more reflective of persistent hypotension for purposes of the measure. Revisions of this will be in the next version of the manual. We've also received questions inquiring about persistent hypotension that manifests after the one-hour following conclusion of the 30 ml per kilogram. Clinically, it is appropriate to treat these cases as persistent hypotension, septic shock. For purposes of the measure however, there is a cut-off of one hour following administration to crystalloid fluids. So, cases where persistent hypotension

manifest more than one hour after fluid administration are not included in the measure. Now, if there's not a systolic blood pressure or mean arterial pressure recorded an hour following conclusion of the crystalloid fluid infusion, you would select allowable value 3.

In many cases, determining when the crystalloid fluid infusion is completed will not be as easy as finding an infusion end time entered in the medical record. Because the measure requires the order for the crystalloid fluids to also include the duration over which to infuse it, or an infusion rate, the time the infusion is complete could be estimated based on this information. This slide includes two examples to illustrate this. In example one, there is an order of 2500 ml of normal saline to be given over two hours. The medical record indicates the infusion was started at 0900. So, if the order is to infuse 2500 ml over two hours, add two hours to the start time to estimate the infusion end time. In this example, infusion end time would be 1100. In example two, there is an order for 3000 ml infused at a rate of 1000 ml per hour. The medical record indicates the infusion was started at 1000. To determine how long it will take to infuse 3000 ml, divide the total volume to be infused by the rate, And, in this example, end up with infusion duration of three hours. Add that to the start time estimate the infusion end time. In this example, infusion end time would be 1300.

The next data element we'll take a look at is the initial lactate level result. As mentioned previously, if allowable value 2, 3 or 4 is selected for persistent hypotension, the algorithm directs the case to initial lactate level result. For this data element, there are three allowable values corresponding to ranges for the lactate level results. If 1 or 2 is selected the case is assigned category W and goes to the last page of the algorithm. If value 3 is selected, the case is assigned O and skips to the repeat volume status and tissue perfusion assessment in the algorithm.

For this data element, you select the appropriate allowable value based upon the results of the initial lactate level. If the results are less than or equal to 2, you select 1. If the results are greater than 2 and less than 4, you select 2. And, if they're greater than or equal to 4, you select 3.

The most important thing with this data element is to be sure that you're using the result for the lactate that is designated as the initial lactate level collected.

As I mentioned a few slides ago, if persistent hypotension was present, meaning the patient was hypotensive, received 30 ml per kilogram of crystalloid fluids and remained hypotensive, the case will proceed to the vasopressor administration data element. This data element has two allowable values. Selecting 2, no, will result in the algorithm assigning the case to Category D, failing the measure, and you're done with abstraction. Selecting 1, yes, results in the case continuing on to the vasopressor administration date and time data elements.

This data element is looking for documentation indicating an IV vasopressor was administered or given either after the presentation of septic shock or at the time septic shock was identified.

The only acceptable vasopressors are listed in Table 5.2 located in Appendix C of the Specifications Manual Version 5.0a. Documentation must indicate the vasopressor was actually administered and IV is currently the only acceptable route. Vasopressors started before septic shock presentation and running at the time of presentation are acceptable.

Assuming a vasopressor was administered, you will next enter the vasopressor administration date and time. If the date or time cannot be determined and UTD is entered, the case is assigned category D and fails the measure. Assuming a valid and time were entered, the case will continue.

As we've already discussed, you will abstract the date and time that vasopressor was started. If the vasopressor is infusing at the time of septic shock, regardless as to whether subsequent doses were given, you'll abstract the date and time the vasopressor was started that was running at the time of septic shock presentation. Now, if multiple doses were given or multiple infusions were started after septic shock presentation and no

vasopressors are infusing at the time of septic shock presentation, abstract those given closest to septic shock presentation.

After the date and time are entered, the algorithm will perform the vasopressor time calculation. Depending on the results of this calculation, the case will either be assigned category D and fail the measure or have 1 added to the shock vasopressor six-hour counter and continued through the algorithm.

The vasopressor time is a calculation in minutes of the vasopressor administration date and time minus the septic shock presentation date and time. There is one time reference for the result, 360 minutes, which is equivalent to six hours after severe sepsis presentation.

If the vasopressor time is greater than 360 minutes, meaning the vasopressor is given more than six hours after septic shock presentation, then the case is assigned category D and fails the measure. If the time is less than or equal to 360 minutes, meaning that vasopressor was given within six hours after severe sepsis presentation or before presentation, then 1 is added to the shock vasopressor six-hour counter, and the case continues to the next page of the algorithm.

The next step in the algorithm is the repeat volume status and tissue perfusion assessment. There are two options performing the repeat volume status and tissue perfusion assessment that consist of completing all five elements of a focused exam or completing two of the other four listed on this slide. Note this is only necessary for purposes of the measure, if the patient have persistent hypotension or received a vasopressor, or the patient did not have persistent hypotension but had an initial lactate greater than or equal to 4. Now, there are a few other note-worthy points. Consistent with more recent literature indicating assessing volume status and tissue perfusion following usual care was not inferior in terms of outcomes to assessing using central venous pressure and central venous oxygen measurement, a central line is no longer required for this assessment. Now, since usual care was not clearly defined in all these studies, the measure stewards using input from various stakeholders across

the country, and the National Quality Forum developed a focused exam to represent usual care. And, this is what you see on this slide under focused exam. Now, while everyone may not totally agree with the elements of the focused exam, the expectation based on the literature is that a repeat volume status and tissue perfusion assessment is warranted within six hours of presentation of septic shock. For purposes of this presentation, we're not going to debate the validity of the data elements for the repeat volume status and tissue perfusion assessment. Dr. Townsend did a very nice job of discussing the rationale for this during a webinar on September 10th. Rather working – we're going to discuss how to abstract these data elements. These data elements in actuality are pretty straightforward and there's not a lot of ambiguity about them. For time's sake I'm going to highlight the key points associated with each of them.

First let's take a closer look at the focused exam. The time period for completing all of the elements of the focused exam begins with the date and time crystalloid fluid were started and ends six hours after septic shock presentation date and time. Each element in the focused exam has three data elements. There's a data element for indicating whether or not it was completed. Allowable values were either 1, yes, or 2, no. And, if performed, there was a data element for the date it was performed and one for the time it was performed. If any given data element is performed multiple times within the time period, you'll abstract the latest time it was performed.

There are two time calculations associated with each of the five elements of the focused exam. The first calculation is the date and time the focused exam element was performed minus septic shock presentation date and time. If the result of this calculation, or of any focused exam element, is greater than 360 minutes, meaning it was more than six hours after septic shock presentation, the case skips the rest of the focused exam element and goes directly to the central venous pressure measurement data element. If the result is less than or equal or 360 minutes, meaning it is within six hours after septic shock presentation, the case will continue to the next calculation.

The second time calculation is the date and time of the focused exam data element minus crystalloid fluid administration date and time. If the result of this calculation for any focused exam element is less than 0 minutes, meaning the element was completed before the crystalloid fluid were started, the case skips the rest of the focused exam elements and goes directly to the CVP measurement data element. If the result is greater than or equal to 0 minutes, meaning the element was performed after, or at the same time as, the crystalloid fluids were started, the case will continue to the next focused exam element until all are completed.

Now, this slide is pretty much a summary of the points we just covered. For the performed data element, if 1 is selected, the case continues to the next focused exam data element. If 2 is selected for any focused exam data element, the case goes directly to CVP measurement for evaluation of the other four data elements that can be used to fulfill the repeat volume status and tissue perfusion assessment. For the date and time data elements, a valid date and time results in the case continuing. If UTD is entered, the case goes directly to the CVP measurement. If all five focused exam data elements are completed, one is added to the shock six-hour counter and the case is assigned to category W, which should take it to the last page in the algorithm. This will result in bypassing the other four elements that can be used to fulfill the repeat volume status and tissue perfusion assessment, reflecting they are not required if the focused exam is completed. Now let's take a little more – let's look a little bit more closely at each element of the focused exam.

The first one is vital signs review. This requires physician, APN or PA documentation that vital signs were reviewed. A vital signs review consists of documentation within a single provider note of the temperature, pulse, respiratory rate, and blood pressure, with results for each one. For abstraction purposes, you cannot combine more than one incomplete vital signs review note. It must be in a single note specifying the required vital signs and values for each. Now, the content of the single provider note can be taken from more than one source. So, for example, in their note, they could take vital signs that were reviewed by the physician

that came from a nursing vital signs report or bedside monitors. The provider does not need to be the one taking the temperature, pulse, respiratory rate, and blood pressure. Also, the vital signs review can be part of a larger note. It doesn't need to be its own unique single note focused only on vital signs. If there are multiple vital signs reviews performed, abstract the latest one completed in the time window.

The next focused exam data element is cardiopulmonary evaluation. This data element requires documentation indicating a cardiopulmonary exam was performed by the physician, APN, or PA. The cardiopulmonary evaluation must include documentation reflecting assessment of both the heart and the lungs with associated findings and must indicate it was performed by a physician, APN, or PA. For abstraction purposes, you cannot comply – you cannot combine more than one incomplete cardiopulmonary evaluation. It must be a single note specifying the documentation required by data element. Now, it can be part of a larger note. It does not need to be a single note only focused on the cardiopulmonary evaluation. And, if there are multiple cardiopulmonary evaluations performed, abstract the latest one completed in the time window.

The next focused exam data element is capillary refill examination. This data element requires that there be documentation and that a capillary refill exam was performed by a physician, APN, or PA. The capillary refill must be performed and documented by a physician, APN, or PA and make reference to capillary or nail bed refill. Again, it can be part of a larger note. It doesn't need to be in a single note focused only on capillary refill exam. And, if there are multiple capillary refill exams performed, abstract the latest one completed in the time window.

The next focused exam data element is peripheral pulse evaluation. This data element requires there be documentation indicating a peripheral pulse evaluation is performed by physician, APN, or PA. The peripheral pulse evaluation must be performed by a physician, APN, or PA and include reference to either peripheral pulses, radial pulses, dorsalis pedis pulses, or posterior tibialis pulses. It can be part of a larger note. It does not need to

be a single note focused only on the peripheral pulse evaluation. And, if there are multiple peripheral pulse evaluations performed in the time window, abstract the latest one completed in that time window.

The last focused exam element is skin examination. This data element requires that there be documentation indicating the skin exam was performed by a physician, APN, or PA. The documentation must be included in the physician, APN, or PA note, and the note needs to make reference to the patient's skin color. Again, the skin exam can be part of a larger note. It doesn't need to be a single note focused only on the skin exam. And, as with the others, if there are multiple skin exams performed, abstract the latest one completed in the time window. Now, as I mentioned, if all five of these elements of the focused exam are completed, the algorithm adds 1 to the shock six-hour counter, and the case is directed to category W, on the last page of the algorithm for evaluation of the counters.

If the focused exam is not completed, the algorithm then directs the case to the remaining data elements to comprise the repeat volume status and tissue perfusion assessment. And, this requires completing any two of the four elements found on this slide in any combination. Now, more than two can be completed but only two are required for purposes of the measure, if the focused exam is not completed. Now, from this part forward, I will refer to this group of data elements as Any Two, just to make it a little bit easier to say.

There is a time period for the Any Two group that is the same as the focused exam, which starts when the crystalloid fluids are started and six hours after septic shock presentation. Each element of the Any Two group has three data elements. There's a data element for indicating whether or not it was completed. Allowable values are either 1 or 2, meaning yes or no. If performed, there is a data element for the date it was performed and one for the time it was performed.

This slide is pretty much a summary of what I just covered in relation to the algorithm flow of the Any Two group data elements. Selecting 1 and

entering valid dates and times will allow the case to continue. Selecting 2, for any of the Any Two data – Any Two elements or UTD for the date or time they're performed, will result in bypassing the shock physical assessment six-hour counter. And, if this happens for three of the Any Two data element, the case will fail the measure because it does require two to be completed.

There are two time calculations associated with each element of the Any Two group. The first calculation is the date and time the Any Two group element was performed minus septic shock presentation date and time. If the result of this calculation for any of the Any Two group elements is greater than 360 minutes, meaning it was more than six hours after septic shock presentation, the case bypasses the shock physical assessment six-hour counter and continues. If the result is less than or equal to 360 minutes, meaning it was within six hours after septic shock presentation, the case will continue to the next time calculation.

And, that next time calculation is the date and time that Any Two group element was performed minus crystalloid fluid administration date and time. Now, if the result of this calculation for Any Two group element is less than 0 minutes, meaning the element was completed before the crystalloid fluids were started, the case bypasses the shock physical assessment six-hour counter and continues. If the result is greater than or equal to 0 minutes, meaning the element was performed after or at the same time as the crystalloid fluid were started, 1 is added to shock physical assessment six-hour counter, and the case continues.

As I've alluded to, there are two counters used for the Any Two group data elements to keep track of when two of the four are completed. The first time we come to the bottom of the shock physical assessment six-hour counter is after the CVP measurement is completed. If the two calculations, element time and element fluid time, are within the appropriate timeframes, 1 is added to the shock physical assessment six-hour counter. For all subsequent Any Two group elements that are completed as specified, 1 is added to the shock physical assessment six-hour counter. This counter is evaluated after every Any Two group data

almost completed to determine how many points are in the counter. If it is less than – if it is equal to 2, then 1 is added to the shock six-hour counter and the case is directed as category W, the last page of the algorithm. If it is less than 2, the case continues to the next Any Two group data element. Now, let's talk in more detail of requirements of each of the Any Two group data elements. And, just to remind everybody, all of the work of the counters and the calculations is done by the algorithm. You don't need to do that. I'm describing it so you understand what happens if data elements are not completed appropriately.

The first data element is the central venous pressure measurement or CVP. This data element is looking for documentation of a CVP measurement or reading. The measurement must indicate it was from a central venous catheter. This could be a reading recorded in the vital signs flow sheet or a progress note. It's not limited to physician, APN, or PA documentation. And, if there are multiple CVP measurements, abstract the first one documented after septic shock presentation. Now, I've received multiple questions regarding PICC lines. The line can be a PICC line as long as it is for CVP monitoring properly placed for CVP measurement.

The second is a central venous oxygen measurement. This data element is looking for documentation of a central venous oxygen measurement or reading. The measurement must indicate it was from a central venous catheter. This could be a measure recorded in vital sign flow sheet or progress notes. Again, it's not limited to physician, APN, or PA documentation. If there are multiple central venous oxygen measurements, abstract the first one documented after septic shock presentation. And again, similar to the CVP measurement data element, the line can be PICC line as long as it is for CVP monitoring and properly placed for central venous oxygen measurement.

The third is a bedside cardiovascular ultrasound. This data element is looking for documentation indicating cardiovascular ultrasounds performed. The documentation must indicate the ultrasound was actually performed. It is not limited to physician, APN, or PA documentation. And, documentation of cardiovascular ultrasound report or nurse's note is

acceptable. The data element contains a list of acceptable terms by which a cardiovascular ultrasound could be referred to. If there are multiple cardiovascular ultrasounds performed, abstract the latest one documented within the time window. And, the ultrasound does not have to be performed bedside. If it was performed in an imaging department or ultrasound department and not at the bedside, that is also acceptable.

The fourth Any Two group element is assessing whether or not cardiac output will increase with an increasing volume or cardiac preload. And, this can be determined by two different methods. Only one would need to be performed. Those methods are either passive leg raise, in which no additional IV fluids were given to determine the heart's response, and the other is a fluid challenge in which additional IV fluids are given to assess the heart's response. As I mentioned, either method is acceptable. So, let's look a little more closely at the requirements for each of these.

The passive leg raise is looking for documentation that a passive leg raise was performed by a physician, APN, or PA. The documentation does not need to be from the physician, APN, or PA but the documentation must indicate the passive leg raise was performed by a physician, APN or PA. If multiple passive leg raises were performed, abstract the one performed latest in the time window. Now, we received a number of questions relating to situations for the critical care physician services provided via telemedicine or eICU. And, in this type of situation, the physician is not physically present to perform a passive leg raise; however, they can examine the patient and all the information in a virtual environment. The data element as currently ordered, does not take these situations into account. We've discussed this with measure stewards and developers and come to the conclusion that in this specific situation, having a passive leg raise performed with nursing assistance under the supervision of the physician is acceptable. And, we are looking into wording revisions to take this type of situation into account in a future version of the specifications.

The fluid challenge is looking for documentation that a fluid challenge was performed. A fluid challenge usually consists of the rapid infusion of

550 ml of crystalloid fluids over 15 minutes or 1000 ml of crystalloid fluids over 30 minutes. Now, this is different in the initial fluid resuscitation demonstrated by the crystalloid fluid administration and is performed after the initial fluid resuscitation. There are a couple of specific documentation requirements. There must be an order for a fluid challenge, fluid bolus, rapid fluid infusion, or something along those lines. And, the order must include the type of IV fluid, the volume to be given, and the timeframe over which to infuse it. Documentation of the IV fluid administration record, or documentation in other sources demonstrating that the fluid challenges was performed, is acceptable. And, if there's a multiple fluid challenges performed, abstract the one performed earliest in the time window.

For purpose of our discussion today, we are assuming all requirements for severe sepsis have been completed accurately. So, we'll pick up on the last page of the algorithm where septic shock present is evaluated. So, assuming septic shock is present, the shock three-hour counter is evaluated. This counter will either be equal to 1 or less than 1.

If the shock three-hour counter is less than 1, meaning the crystalloid fluids were not given within three hours of septic shock presentation, then the case is assigned category D and fails the measure. If the shock three-hour counter is equal to 1, meaning the crystalloid fluids were given within three hours of septic shock presentation, then the case is evaluated for presence of persistent hypotension.

Persistent hypotension has already been abstracted and the algorithm is simply looking at the value you've already entered. There are three different routes the case can be directed, depending on the value entered.

If allowable value 3 or 4 was entered, meaning the patient was not assessed for persistent hypotension or crystalloid fluids were not given or the volume was less than 30 ml per kilogram, the case is assigned category D and fails the measure.

If allowable value 2 was selected, meaning persistent hypotension was not present; the case is evaluated for initial lactate level result. And, if allowable value 1 was selected, meaning persistent hypotension was present, and then the shock six-hour counters are evaluated.

Let's next take a look at what happens for cases for persistent hypotension was present. There are two shock six-hour counters. At this point, we're only going to talk about the first one. The first shock six-hour counter evaluates for cases with persistent hypotension as the shock vasopressor six-hour counter.

If the shock vasopressor six-hour counter is less than 1, meaning vasopressors were not given, the case is assigned category D and fails the measure. If the counter is equal to 1, meaning vasopressors were given, the case proceeds to the shock six-hour counter. Now, before I move on to the last shock six-hour counter, let's take a look at what happens with cases that do not have persistent hypotension. Those cases are evaluated for the initial lactate level results. As with persistent hypotension, you've already entered an allowable value for this data element and do not need to enter it again. The algorithm is simply making a decision based on the value you entered previously.

If allowable value 1 or 2 was selected, which would mean initial lactate level was less than 4, the case is assigned to category E outcome box and passes the measure. If allowable value 3 was selected, indicating the case initial lactate level was greater than or equal to 4, the shock six-hour counter is evaluated.

Based on the outcomes we've just covered related to shock vasopressor six-hour counter and initial lactate level result, we are now at the point of evaluating the shock six-hour counter. For this counter, there are only two possible outcomes.

If the shock six-hour counter is less than 1, which would mean the repeat volume status and tissue perfusion assessment was not completed according to specifications, the case is assigned to category D outcome

box and fails the measure. If the counter is equal to 1, which would mean the repeat volume status and tissue perfusion assessment was completed for specification, the case is assigned to category E outcome box and passes the measure.

And this brings us to the end. Once category D or E is assigned, you're done as designated by the End algorithm stop box. And again, congratulations, you have successfully navigated the flowing path of the septic shock portion of the SEP-1 algorithm. Next month, we're going to view some of the measure revisions in the Version 5.0b and dive a little deeper into the data elements, based on your feedback that continues to present abstraction challenges.

Some resources that are available include a SEP Fact Sheet and frequently asked question sheet posted on *QualityNet*, as well as the hospital inpatient questions and answers tools on *QualityNet*, which now has some Q&A for SEP-1 posted.

And, I do want to sincerely thank everyone who submitted questions to us via *QualityNet*. Your questions and comments have helped identify areas of improvement for this measure that have resulted in some important revisions. These revisions will post on *QualityNet* on May 29th. There's version 5.0a of the manual. Additional revisions are forthcoming. We are continuing to look up ways to improve this measure and simplify data collection based on your comments and questions. And that concludes my portion of the presentation. Thank you very much.

Deb Price: Well, thank you Bob.

In lieu of time constraint, I'm going to go through the continuing education slides very quickly.

Please review these slides for your certificates. This slide shows you the different boards that we have licensing for. We are now a nationally accredited nursing provider, and as such, all nurses will report their credits to the board using the national provider number 16578, which is shown on this slide.

After the ReadyTalk closes out, a survey will pop up. If you're in a room where only one of you is registered for the survey, please note that you will be given – you will be sent another survey within the next 48 hours. You can pass that one around to the other people in the room.

Please note that when you're done with the survey, you will click on...

... a Done box that you can see on the bottom lower right-hand corner here. Click Done...

... and then this page will pop up. On this page, you'll see that there is two links, a new user link and existing user link. If you have never received a certificate from us, please click the new user link.

This is what will open up. You put your first and last name. The email that you want the mail to come to, please use a personal email account not a hospital account because the hospitals have firewalls that keeps changing.

This is what will show up if you're an existing user. You put in your username which is your entire email, your entire personal email, and of course, the password that you registered with.

And now, I'll pass the ball back to your host, Candace Jackson, who will finish out the webinar with a couple of questions. Thank you. Candace?

Candace Jackson: Thank you, Deb. We do have time for a few questions. The first question that I have is: if the crystalloid fluid volumes required to determine persistent hypotension and the shock is 30 ml per kilogram, that will have to be administered before shock presentation and not at or after – excuse me – and not at or after presentation. How should the fluid volume question be answered if the entire 30 milliliters per kilogram of crystalloid [is] infused prior to the shock presentation?

Bob Dickerson: So, if the entire 30 ml per kilogram is infused prior to shock presentation that is acceptable. In that case, without having more information I'm making some assumptions, but in that case, it sounds as though the presence of septic shock is being based upon hypotension that is not

responding to the 30 ml per kilogram, so septic shock cannot truly be identified until after the 30 ml per kilogram of fluid were infused. And, as such, the persistent hypotension, you couldn't identify that until after the 30 ml per kilogram were infused also. I hope that addresses that question adequately.

Candace Jackson: OK. Thank you, Bob. Our next question: what is an administrative contraindication of care? Please explain.

Bob Dickerson: OK. So, the administrative contraindication of care is identified within that data element. And, it is an indication that either the patient has refused administration of fluids or has refused administration of antibiotics, or has refused to have any blood drawn. Those are the only three things that constitute administrative contraindication of care. And, if they occur at any time during the patient's hospital stay, you would select yes to that data and that the case would be excluded from the measure.

Candace Jackson: Thank you, Bob. Next question: what can we use for infection? Does it have to say infection or can we go by a known infection such pneumonia? Can we take from the active problem list?

Bob Dickerson: So, you can take from any source provided it is physician, advanced practice nurse, or PA documentation. So, that could actually be from an x-ray result, or it could be from the problem list, it could be from a note, H&P. The sources, you are not really limited to, as long as it comes from a physician. What constitutes an infection is if it is a condition that is an infection, for example pneumonia is an infection, so, if that were documented, you'd select yes. Or, if the condition is not clearly known the term infection is used. So, for example, if the physician were document suspect infection source unknown, that would be acceptable as an infection because they've identified, they suspected, there is an infection.

Candace Jackson: Thank you, Bob. Next question: can you please define time 0 and when does it start?

Bob Dickerson: OK. So time 0, there are different ways that time 0 can be identified. And, you want to take the earliest time that represents that. So, time 0 is in

reference to when presentation of severe – or septic shock is noted, the date and time of that represents is time 0. So, it's going to be either when the clinical signs and symptoms are documented, and it would be the last of those, which, as I mentioned in the presentation, could be either severe sepsis with documentation that there is persistent hypotension after the 30 ml per kilogram of crystalloid fluids are given or severe sepsis documented with initial lactate of greater than or equal to 4, those would be the clinical criteria by which time 0 could be identified. Or, if there is physician, APN, or PA documentation stating severe sepsis that could also be used as time 0. If you have both documentation of clinical criteria and physician documentation of septic shock, you will use whichever time is earliest. Because the goal here is to identify the earliest point in time that septic shock is present. And, then we're looking at the care interventions and the timing of those in relationship to the earliest point in time the septic shock is identified.

Candace Jackson: Thank you, Bob. Next question: Will refusal of vasopressors be an exclusion for septic shock?

Bob Dickerson: You know that's a great question. It's something that is not really accounted for in the data elements. I think it's something that we need to look into further. At this point, refusal of vasopressors, there's nothing in the data elements that would indicate that that would exclude a case. But, it is something that we will look into further and for future revisions to the measure.

Candace Jackson: Thank you. Next question: if a patient refuses a vasopressor when hypotension is present, does that quality for a contraindication of care?

Bob Dickerson: It doesn't qualify for contraindication to care because the administrative contraindications to care are limited to refusal of fluids, refusal of blood draws, or refusal of antibiotic administration. Again, it's something – that's an excellent question. It's something we need to look into further.

Candace Jackson: OK. Thank you. And, the next question: please answer, does lactate over 4 mean automatic initiation of vasopressors?

Bob Dickerson: No. Vasopressors are only indicated if there is persistent hypotension. Vasopressors are not indicated if the patient has a lactate greater than or equal to 4 and they do not have persistent hypotension. And, this is demonstrated in how the algorithm flow works. I hope that answers that question.

Candace Jackson: And, we have time for one more question. If a passive leg raise and a fluid challenge was performed with this path for the Any Two group part of the SEP-1 measure?

Bob Dickerson: The passive leg raise and the fluid challenge are actually two different options for determining the heart's response to additional fluids. So doing both of those would not count as two of the Any Two of four, it would count as one.

Candace Jackson: And again, I'd like to thank Bob for presenting today for us. He has provided a lot of very useful and informative information. We thank you for participating in our webinar today and we hope that you learned a great deal from this presentation. And, we hope that you have a great rest of the day. Thank you very much.

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