



Hospital Inpatient Quality Reporting IQR Program

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Sepsis Efforts at Bellevue Hospital and SEP-1 Early Management Bundle, Severe Sepsis/Septic Shock v5.0b through v5.2a Analysis Results

Presentation Transcript

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Candace Jackson: Hello, and welcome to the Hospital IQR Program *Sepsis Efforts at Bellevue Hospital and SEP-1 Early Management Bundle, Severe Sepsis/Septic Shock: Version 5.0b Through Version 5.2a Analysis Results* webinar. My name is Candace Jackson and I am the Hospital Inpatient Quality Reporting Program Support Contractor Lead from the Hospital Inpatient Values, Incentives, and Quality Reporting Outreach and Education Support Contractor. I will be hosting today's event.

Before we begin, I would like to make a few announcements. This program is being recorded. A transcript of the presentation and the questions and answers will be posted to the inpatient website, www.qualityreportingcenter.com, in the future. If you have registered for this event, a reminder email and the slides were sent out to your email address about two hours ago. If you did not receive that email, you can download the slides at the inpatient website. Again, that's www.qualityreportingcenter.com. If you have a question as we move through the webinar, please type your question into the chat window with the slide number associated to your question at the beginning. As time allows, we will have a short question and answer session at the conclusion of the webinar. Applicable questions that are not answered during that question and answer session will be posted to the qualityreportingcenter.com website in the upcoming weeks.

I would now like to welcome and introduce our guest speakers for today: Dr. Amit Uppal and Bob Dickerson. Dr. Uppal is currently an associate professor in the Division of Pulmonary, Critical Care, and Sleep Medicine at the New York University School of Medicine. He works primarily at Bellevue Hospital Center, which is the flagship of New York City's public hospital system. Dr. Uppal currently serves as the Director of the Medical Intensive Care Unit and the Associate Chief of Medicine at Bellevue. With regard to sepsis, he is the chair of the hospital sepsis committee and acts as one of the clinical leads, along with colleagues from emergency medicine and internal medicine. Today, he will be discussing Bellevue's efforts with regard to sepsis, starting in 2012 and leading up to their current successes and challenges, both in clinical care and in complying with the SEP-1

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regulations. Bob is the Lead Program Analyst at Mathematica Policy Research. He is a registered respiratory therapist with a Master's 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. He has been involved with the development and maintenance of the SEP-1 measure since its inception. Bob has extensive healthcare process and quality improvement experience, including the development and implementation of interventions, processes, and systems in the hospital setting to support multiple national quality measures. His experience includes facilitation of interventions, implementation of process improvements, data collection, and measurements associated with clinical care processes for severe sepsis and septic shock in the hospital setting for the Surviving Sepsis Campaign.

At the end of today's presentation, participants will be able to understand sepsis efforts at Bellevue Hospital and understand trends in performance and mortality rates for SEP-1 from version 5.0b to version 5.2a of the specifications manual.

And now, I would like to turn the presentation over to Dr. Uppal. Dr. Uppal, the floor is yours.

Dr. Amit Uppal: I want to thank you so much for this opportunity to discuss our efforts on severe sepsis and septic shock at Bellevue Hospital and the chance to discuss both our successes and some of the challenges we continue to face. I'd like to start by giving you an overview of how we have approached sepsis from the onset of our efforts, which was actually back in 2012. We initially formed a small working group, which I'll describe in more detail. We gathered baseline data to understand what our current performance was in patients with severe sepsis and septic shock. We developed our initial protocol, then formed a more formal sepsis committee, disseminated our protocol, and provided education throughout the hospital. Thereafter, we monitored trends that we saw in the data that we collected, and our system and processes evolved in response to those trends, as well as changes in regulations.

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Our initial group was intentionally small so that it could be agile in responding to changes. It consisted of physicians and nurses from the emergency department, inpatient medicine, and from critical care.

We began with manual physician collection of real-time case data. Admittedly, at that point, case-finding was quite difficult. We started by looking at all ICU admissions and evaluating any cases that appeared to be for sepsis, as well as any other cases of sepsis that we might know about, either from M&M conferences or from our own clinical work. At that point in our process, our focus was very much on the clinical care being provided and not what was necessarily being documented in a way that could be abstracted for regulatory purposes. We really wanted to understand—were the patients getting the care that we expected them to get with this condition—and from there, we developed our baseline data to really understand what our strengths and weaknesses are.

This is a small snippet of the data collection we were doing at the time. These data show just our performance on fluids and I wanted to make the point that we broke fluid compliance down into its component parts so that we could understand where our weaknesses lay. For example, we looked at what percentage of patients got an adequate-sized fluid bolus of 30 cc per kilogram, but also looked at what percentage of patients received that bolus within the time frame that we found acceptable, which was 180 minutes, and then from there looked at our overall bolus compliance. And this allowed us to target our efforts, both on education and system improvement.

To give you a sense of some of our early data, on the Y axis is minutes, and on the X axis is time. Each different color represents a different element of the three-hour bundle, and the solid black line represents 180 minutes, so our goal was to have all of the elements completed under that line. As you can see in the early several months of our process, our time to fluid, time to antibiotics, and time to lactate often was several hours after our goal. And with several months of effort, we brought many of these elements down below the three-hour mark.

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This is similar data displayed in a different way, to make the specific point about our challenges with the amount of time it took to administer fluids to patients. It's worth noting that this is only among patients who did get an adequate-sized fluid bolus, and gives a measure of how long it took us to deliver that fluid bolus. And you can see that, at the onset of our efforts, the median time to deliver that bolus was in the six-hour range, and with several months of work, we were able to bring that well under three hours.

Our next step was to develop our formal protocol, which we based on the existing Surviving Sepsis Campaign bundles at the time, which were based on the 2008 iteration of the guideline document. We chose internally to expand our indication for providing a 30 cc per kilogram fluid bolus. The guidelines at the time—and currently—restricted this fluid bolus to patients with a lactate greater than 4 for hypotension. We chose to deliver this bolus to any patient presenting with severe sepsis, be it altered mental status, middle-range lactates between 2 and 4, or hypotension, or lactates greater than 4. At the onset of our protocol, we developed a sepsis response team, and that I'll discuss in more detail later, and it occupied a relatively central place in our process.

This is a screenshot of our initial protocol. As you can see, it begins with screening for sepsis at ED triage. From there, an alert is placed on the ED whiteboard, and the expectation is that the sepsis panel will be ordered. These are the labs and imaging that may be needed to evaluate a patient, both for the cause of sepsis, as well as for any organ dysfunction that may define severe sepsis. From that step, the patient can either be deactivated because an alternative cause is found, or no organ dysfunction was discovered, and therefore, the patient does not have severe sepsis. Or, if the patient is recognized as having severe sepsis, the expectation was that the providers would evaluate the patient and start the initial management, begin the initial resuscitation, including the fluid bolus, and notify the sepsis team. The remainder of our protocol delineated what happens to the patient, based on how they respond to that initial fluid bolus.

And, we made the decision early on that any patient who has severe sepsis and whose organ dysfunction does not improve with that initial fluid bolus

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should be considered for ICU admission. The only patients who would be excluded from this were patients who had other contraindication to ICU admission, for example, advanced directives that precluded their admission to the ICU. Short of this, we wanted these patients in the ICU.

I wanted to provide some more detail on our sepsis response team. This team was envisioned as similar to other overhead alerts that may be called in the hospital, such as STEMI teams, stroke teams, or rapid response teams. An overhead alert was created, and the pagers of the appropriate providers were activated when this was called. The team consisted of an ICU nurse, an ICU fellow, and the medical-consult resident. In our hospital system, there is a third-year resident who acts as medical consult, but also plays a central role in triaging patients among the different medicine services. This person has a good sense of where there are open beds, including in the ICU. When this team responded, they had three main functions. One was to ensure that the bundle elements had been completed, so it was important that every member of this team was well aware of our protocol and aware of the evidence of sepsis management in general. And so, they provided both a management role in real time and also to educate the providers on the bedside on what needed to be done for a patient with severe sepsis or septic shock. At the time, we did not have an easy way to get emergent antibiotics to the bedside. The existing workflow was to place a stat order for antibiotics that would have to be reviewed by a pharmacist and then released. And then, those antibiotics would have to somehow make it from pharmacy to the bedside, which often required a person to act as a runner to bring the antibiotics. To deal with patients with severe sepsis and to ensure early antibiotics, we equipped the sepsis response team with what we called a go-bag of broad spectrum antibiotics that they could carry with them to the bedside to start immediate administration, and orders still had to be placed in the computer for those antibiotics. And, the third role of the sepsis response team was to assist with triage. So the expectation was that they would evaluate the patient status after the fluid bolus had been delivered and decide if this patient was a candidate for ICU admission or not. If they deemed it, if they

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did need to move to the ICU, it was their job to facilitate that movement as quickly as possible.

With these steps in place, we then formed a much more formal sepsis committee. This consisted of physicians, nurses, pharmacists, laboratory staff, quality management specialists, IT staff, and administrative leadership. And, we began having weekly meetings with review of real-time cases and providing feedback to the providers involved in those cases. This proved itself to be a very crucial step in our efforts. At this point, quality management took over data collection, as I had mentioned. Up until this point, it was being manually collected by physicians, and case-finding had been challenging. Our quality management department designed their own method of case-finding to provide a much larger sample of patients, and they were able to provide these cases for review on a weekly basis. With review of real-time cases, we were able to target our improvement efforts on the trends that we were seeing and also send email feedback to any providers who were involved in those cases. This feedback was provided in a templated way so as not to be seen as a criticism. Whether the case had any fallouts or not, the data were provided in the same way, and any feedback on our process was invited from the providers.

With our protocol developed and our sepsis committee in place, we focused on disseminating that protocol and educating the entire hospital on sepsis management and our specific protocol. Much of this education came in structured form. We ensured that sepsis was on the core conference schedule for any trainees in multiple specialties. It was presented at faculty meetings and conferences for well over a year. We ensured that every M&M conference included at least one of our sepsis fallouts so that this could be an active discussion on a monthly basis. And, some background on sepsis and our specific protocol was included in orientations for trainees and faculty in appropriate specialties. In addition to this structured form of education, we had two main forms of ad hoc, or in-the-moment, education, both of which I mentioned previously. One was via the sepsis team who might come to the bedside of a patient with sepsis and provide teaching on either the evidence behind sepsis and why certain

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elements are indicated, or perhaps even provide teaching on more practical aspects, such as using a pressure bag instead of an infusion pump to deliver a fluid bolus. In addition, from our weekly meetings, we provided consistent case feedback to providers. Often, this served as education. Other times, it started conversations in that the providers may disagree. And, no matter how that conversation went, it was always productive because it had people talking about sepsis and discussing it back and forth.

With all those measures in place, we started to evaluate patterns that we saw in the fallouts, and to target our efforts on those fallouts. One of the first patterns that we saw was that with our education efforts, once a case was recognized as severe sepsis or septic shock, the management was happening relatively quickly. However, we were noticing long delays between the onset of potential sepsis and recognition. So for example, in many of the cases, we would see that the fever, or the white count, or the mental status changed, sometimes several hours, sometimes several days before the case was recognized as a severe sepsis case. Once that recognition occurred, we saw rapid management. To address this delayed recognition, we developed proactive screening for potential cases of sepsis. This occurred both in the emergency department and on inpatient units. And our expectation was that there would be a physician to any positive screen. Not necessarily to manage the patient for sepsis, but to evaluate the patient and determine if there was an alternative explanation for these findings. Or, if they could not find an alternative explanation, to evaluate the patient fully for severe sepsis and manage them as appropriate.

This is a screenshot of the proactive screening that was done in the emergency department. Upon arrival in triage, the triage nurse would enter the vitals. The computer would screen those vitals for changes that could be consistent with sepsis, including hypotension, tachycardia, tachypnea, hypothermia, or fever. In addition, the triage nurse now answers questions on every patient who comes through triage on whether they have a suspected infection or alteration in their mental status. Between vital signs and these two questions, if any three factors are positive, the patient is labeled as “suspected sepsis.”

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When that occurs, a special indicator is placed by their name on our ED whiteboard. This is the whiteboard that's used in our emergency department to give the providers a visual display of all the patients in the emergency department, and this indicator was intended to bring these patients to their attention more quickly. When they become aware of a patient with suspected sepsis, the expectation was that they go to the bedside immediately and determine if there's an alternative explanation or if this patient needs to be formally evaluated and/or managed for severe sepsis.

We had a very similar process on our inpatient units in that any time vitals are entered on a patient, the computer will screen them for changes that could be consistent with sepsis. If any two of the vital signs are abnormal in a way that could suggest sepsis, the nurse is prompted to answer three questions: suspected infection, alteration in mental status, or immunocompromised state. If any one of those questions is abnormal in addition to the two abnormal vital signs, the nurse is required to notify a physician that this is a potential sepsis case and to document the physician that they notified. One of the key things that we saw from this was that calls from nurses to physicians that had previously been that "a patient has a fever," are now being called as "this patient has potential sepsis," and the latter was much more likely to get a physician to the bedside. With proactive screening, both in the ED and inpatient units, we saw a significant reduction in recognition time, and we started to see cases picked up earlier when changes, such as tachycardia or hypotension, initially started.

The next pattern of fallouts that we saw were issues with fluid bolus administration and fell into three main categories. Either the volume of fluid that was bolused was inadequate, meaning it was not 30 cc per kilogram; that the rate in which the bolus was inadequate, meaning it was not delivered as quickly as it could have been; or that the fluid bolus was given appropriately, but there was no documentation that could be abstracted from the chart to confirm this. In addition, we noticed that we were having frequent fallouts with blood cultures being drawn before antibiotics. Some of these cases were true fallouts, meaning that the

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patient truly did not have blood cultures drawn before antibiotics were given, but we saw a significant number represented a disconnect between the clinical care provided and the documentation. We saw several examples of toxic-appearing patients, many of whom were hypotensive, coming into the ED. Based on their appearance and their hemodynamic status, the ED nurse would appropriately begin obtaining IV access, and in doing so, because they were accessing a vein, they would often draw labs at the direction of the physician, and this would often include blood cultures. The physician recognizing the toxic appearance of the patient may order stat antibiotics, and the nurse may initiate them, and when the dust had settled and the patient had been stabilized, the nurse may ask for orders for the labs that had been drawn. In this way, the blood culture would be labeled as “collected after the antibiotic had been administered,” even though in reality, the blood culture had been drawn before antibiotics had been administered.

In an attempt to address these fallouts, we developed a sepsis order set, and that was easily accessible both to inpatient and to emergency medicine providers. We developed a specific saline fluid order. When this order was selected, it provided a notation that the recommended initial bolus is 30 cc per kilogram of crystalloid delivered via pressure bag. The order itself would actually auto-calculate the volume needed, based on the weight that was documented in the chart, and would direct the nurse to deliver this bolus over 30 minutes. One thing that we did that was unique with this order was we tried to treat the entire fluid bolus as an IV push. And the difference in the way that fluids and IV pushes are documented in the chart is that for a fluid administration, the nurse is required to document an initiation time and then a completion time. And so, in many of our fallouts, we saw that the initiation of the fluids was documented, but that the nurse would not go back to document the completion of the fluids until the dust had settled, and maybe as the patient was leaving the emergency department, even though the fluids had been administered very quickly. By forming this order to be more like an IV push, we asked the nurses to only have to do one click when they completed the fluid, the entire

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fluid bolus, and we had hoped that this would provide us with adequate documentation of the fluid completion time.

In an attempt to address issues with blood cultures, particularly the false fallouts that we were seeing, we hoped that we could direct all of our providers to use this order set, which would allow them to order their blood cultures and other labs, as well as antibiotics at the same time. Our hope was that if blood cultures were ordered at the same time as antibiotics, then the order for the blood culture would have to be before the antibiotic administration time, and that we could capture some of these fallouts in which the clinical care did not match the documentation. Admittedly, neither of these interventions was entirely successful. We found that the sepsis-fluid order caused confusion both for nursing and for pharmacy on how to document, and oftentimes it was ordered and then cancelled by the nurses. In addition, the order set still did not fit into the standard workflow that many ED providers were following, and it required additional clicks that cost them time. Therefore, people were not as keen to go to the order set for their patients with severe sepsis.

Another pattern fallout that we saw in our patients was that some of the middle-range lactates, particularly those between 2 and 2.5, were not being treated as severe sepsis and were not being repeated later in the patient's course. This was actually a relatively simple fix. We found that the reason this was happening was because the normal range of lactate in our computer system went up to 2.5; therefore, lactates between 2 and 2.5 were not even being documented as abnormal and certainly weren't being labeled as "critical values." We worked to change our normal range to make the upper limit of normal 1.9, and that anything above this would be an abnormal and would be documented as a critical value. We saw a significant change in practice after making that change, and providers were much more likely to react to these middle-range lactates.

As our process continued, we noted that there was still a delay between clinical care and documentation, particularly in the ED, and we noted that this was because the providers in the ED were doing what everyone's instinct is to do, meaning they were providing care at the bedside of an ill

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patient and staying at the bedside until they felt that patient had been stabilized, and then going back later to provide the documentation in the chart of what all they had done. No one on our committee felt that it was appropriate to ask providers to deviate from that workflow because it is appropriate to take care of the patient first and worry about chart documentation, and particularly regulations, later. Through several weeks and perhaps even months of conversation, the committee, and particularly nursing representation, our committee felt that these sepsis cases should be treated similar to other emergency situations in the emergency department, such as trauma, stroke, or STEMI.

And, although it was counterintuitive to go backwards from electronic charting to paper charting, the ED staff actually felt this was the most appropriate way to capture documentation of the care we're providing for severe sepsis patients in real time. So we designed this paper sepsis flow sheet to be used in the emergency department. It served two purposes. First, it acted as a checklist. As you can see on the left side, it lists all the elements that need to be completed for every patient with severe sepsis and septic shock and asks the providers to document the time some of these things were done. Most notably were to calculate 30 cc per kilo, based on the documented patient weight, and then document when that bolus was started and when it was completed, as well as providing a space where the provider could document when blood cultures were actually drawn. With use of this flow sheet, we saw two things. In cases where the flow sheet was appropriately triggered, accurately completed, and scanned into the chart, we started catching many of the fallouts that we'd been missing. Where the electronic chart did not have a clear documentation of fluid end time, we were capturing it from this flow sheet. And, similarly, where the blood cultures in the electronic chart appeared to be after antibiotics, we were catching the true collection time on this flow sheet. However, the challenge we faced was the multiple steps it took to initiate this flow sheet, get it filled out, have it set aside for scanning, and then have it physically scanned into the chart. When we did check how often this entire workflow was working successfully, it was in the range of 50 percent. So in one sense, this flow sheet was quite successful. However, it

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still caused a deviation in workflow in the sense that providers still were taking care of a sick patient, and sometimes the process to get this sheet scanned into the chart was missed.

More recently the pattern of fallouts that we've seen is a failure to document our reassessment of a patient after fluid bolus. In some cases, we found that an exam was documented, but was missing certain required elements. In other cases, we saw that the full exam was documented, but not within the six-hour window.

To address this, we developed a templated sepsis reassessment note. This note auto-populated the vital signs, and then allowed providers to document the results of the required exam elements as either normal or abnormal. The exam elements were mandatory fields. They were also optional fields to document their interpretation of the CVP, bedside cardiovascular ultrasound, or passive leg raise, and then to affirm that they had assessed the patient via this evaluation. Similarly to our flow sheet, we saw that when this note template was used, it was capturing cases that previously would not have captured the reassessment documentation. However, also similarly, this flow sheet, it was difficult for providers to leave the bedside of an unstable patient to document this exam as it was not their regular workflow. We saw much more often they would take care of the patient until the patient was stabilized, and then go and document their notes later. So we saw some success with this, but we did not completely solve the problem.

Over time, we saw an evolution of our sepsis response team, and actually it gradually became obsolete for two main reasons. One was that we saw the hospital-wide understanding of sepsis management had significantly improved, and this team was finding that they were coming to the bedside and having less and less to add to the management. In addition, we obtained Pyxis machines nearly house-wide in our hospital, and this meant we could put emergent antibiotics with an override function into our Pyxis machines and replace the antibiotic delivery function of the sepsis response team. At that point, the committee felt that because we were pulling an ICU nurse, and an ICU fellow, and a consult resident away

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from what they were doing, and they weren't providing much benefit to the patient, it was no longer appropriate to have this overhead alert. And our sepsis response team was disbanded at that time. We had to do a lot of education to let people know that this was not a team that would be responding anymore, and that if they needed extra hands to care for a patient, or if a patient was truly unstable, they could of course still call a medical response team.

This is our current data on our compliance with the SEP-1 measure. As you can see from the end of 2015 up until the end of 2016, we had a steady improvement in our performance from a baseline of about 40 percent to a peak of a little over 60 percent. In the first two quarters of 2017, we saw a decline in our compliance, and to be honest, it wasn't until the end of quarter two that we had realized we'd seen such a decline in quarter one. And so, we're currently in a phase of understanding that. Our current understanding is that we had let up on some of our educational efforts around initiating the flow sheet using the order sets and how patients should be appropriately triaged, and that we saw this reflected in performance.

Some of our current challenges, we still have issues with documentation of blood cultures as being drawn before antibiotics. We still find it challenging to have the fluid bolus accurately documented in the chart in a way that can be abstracted. And, we still struggle with documenting the reassessment after the fluid bolus has been given, particularly on ED cases.

We have some future plans in place to address some of these areas. First, to address our follow-ups with blood cultures, we are currently developing computer logic that will evaluate every antibiotic order and prompt a reminder to providers whenever an antibiotic order meets the following criteria: it's a broad spectrum antibiotic that we pre-specified; it's placed as a stat order; it has not been ordered in the last 24 hours; and it's ordered on a patient who has no recent blood cultures. If a new antibiotic order meets these criteria, it will generate a prompt to the provider to consider an order for blood cultures at that time. And again, if blood cultures are ordered at the same time that antibiotics are ordered, we expect that the

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antibiotic administration time will be at least several minutes after that. And we will capture some of these false fallouts.

Our future plans to address the fluid bolus: we are revamping our sepsis fluid order in a way that won't be confusing to pharmacy and nursing. It will still be auto-calculated volume, based on the patient's weight. It will allow the entire volume to be delivered in one order. And, it will have a default rate set of 3000 cc per hour.

In an attempt to address some of our fallouts around documentation of the reassessment, we're designing new computer logic. In our emergency department, every patient who leaves the ED to be admitted to an inpatient unit has an ED disposition note written. This is actually what designates the patient as no longer on the ED team and now belonging to a different primary team. The computer logic we are designing will utilize any positive sepsis screen at triage to prompt questions on ED disposition. So any patient who screened positive for sepsis at triage will have this prompt appear when that ED disposition note is written. The first question asked of the provider will be, "Was this patient treated for severe sepsis or septic shock?" If their answer is no, it will provide them the opportunity to document that this was not sepsis and provide an alternative explanation. If the answer was yes, it will ask, "Was a fluid bolus given?" If the answer is no, it will allow them to either document that a fluid bolus was not indicated or to list a contraindication. And the contraindications that will be listed will be those in the regulations that are required to exempt a patient from the fluid bolus measure. If the answer is yes, a fluid bolus was given, it will remind them to perform the sepsis exam and document this in their ED disposition note.

So we're hoping that this single piece of computer logic will allow us to prompt documentation of not sepsis, and we have had fallouts in cases where it was clear to clinical providers that the team was managing cardiogenic shock knowingly. However, they did not use the right language to exempt this patient from being managed for sepsis. We hope we can correct some of those fallouts. This logic will prompt documentation of the allowed contraindications to the fluid bolus. We've

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also had cases where providers use language, such as, “being cautious with fluids, given heart failure,” and doesn’t quite meet the criteria to exempt that patient from the fluid bolus. We’re hoping that this will now prompt them to use the right language when they are intentionally not providing the sepsis fluid bolus to a patient, and will also prompt them to document their reassessment of a patient who did get a fluid bolus.

Some of the other challenges we are facing: one is sepsis fatigue. Because of our persistent and longstanding efforts to educate people on sepsis, there is some pushback on including it in so many conferences and M&Ms. In the past, our instinct has been to back off and to reduce our education efforts. And, it’s noteworthy that every time we have done that, we have seen a fall in our performance. So we’ve learned that we have to continue education regardless of the sepsis fatigue that might be occurring. We’ve also been faced with evolving and sometimes conflicting evidence, be it how sepsis is defined or what the benefit and harms of aggressive fluids are. Of course, we want our providers to be staying up to date with current evidence and reading the primary literature, but our committee has taken on the role of interpreting that literature, making decisions on how it impacts or does not impact our current protocol, and then spreading that information to ensure that providers are aware of how this new evidence may or may not impact how our protocol works in our hospital. Evolving regulations themselves have been a challenge. Our hospital is in New York State, so we’ve been submitting data not only to CMS, but also to the New York State Department of Health. Early in that process, the data required were actually quite different between the two entities. There’s been significant efforts to align those two, but that, as the different regulations change, it’s been an effort on the part of our quality management department to stay on top of what the regulations are and make sure that we are meeting those as best we can. And being a training program, we have new residents who start every July. And, we’ve learned now over the past several years that that means we have to repeat any education we’ve done from scratch with each new batch of residents, as we don’t know how their individual hospitals approach sepsis and what they come in knowing.

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Some of the lessons that we've learned is that education is absolutely central to this quality improvement effort. There's nothing that's more powerful than a provider in the moment knowing what they're supposed to do for this patient, that IT changes can supplement that education and make it easier for those providers to do what they need to do, but it does not supplant a provider who knows how to manage the patient. The other lesson we've learned is the importance of real-time data and feedback, and I can't overemphasize this point. Our quality management department has been the essential driving force in our improvement efforts by providing us with real cases in real time in a way that we can be agile in responding to trends and also provide feedback to providers who took care of a recent case. And lastly, we've learned the importance of teamwork, in that many different disciplines have played essential roles in our quality improvement efforts with severe sepsis and septic shock.

I'd like to thank you again for the opportunity to discuss some of our successes and challenges. And, at this point, I'll be turning it over to Bob Dickerson to discuss the analysis of the SEP-1 measure from version 5.0b through 5.2a. Thank you very much.

Bob Dickerson: Thank you very much. Next, I'll share with you some of the updated performance data from our preliminary analysis.

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First, I want to acknowledge that SEP-1 is the most challenging CMS national quality measure from an implementation and data-collection standpoint. Now, that does not diminish the importance of the measure, nor does it lessen the impact that sepsis has on patient mortality and healthcare costs. This negative impact sepsis has on mortality and cost of care are the driving forces behind including this measure in the Inpatient

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Quality Reporting Program. Now, many of the challenges come from the fact that recognizing sepsis is difficult in many patients, and the timeliness of recognition and initiating early treatment is crucial to outcomes.

Measures based upon the recommendations from the Surviving Sepsis Campaign International Guidelines for Management of Sepsis and Septic Shock, while specific components of the SEP-1 measure have changed over time and continue to evolve with changing evidence, it fundamentally consists of four bundles of care:

- Sepsis three-hour bundle, which includes the collection of serum lactate, obtaining a blood culture, and starting antibiotics within three hours of severe sepsis identification;
- The severe sepsis six-hour bundle, which includes a repeat lactate within six hours of severe sepsis identification if the initial lactate is greater than 2 milliliters per liter;
- The septic shock three-hour bundle, which includes starting a 30 mL/kg bolus of crystalloid fluids within three hours of the presence of hypotension and/or septic shock identification; and
- The Septic shock six-hour bundle, which includes the initiation of vasopressors for patients with persistent hypotension and a repeat volume status assessment within six hours of septic shock identification.

So with all this in mind, let's take a look at some of the sepsis data. The graph on this slide represents the number of cases in the SEP-1 initial population, based on presence of an ICD-10 sepsis code for each quarter in the current analysis, which includes the fourth quarter of 2015 through the first quarter of 2017, which is the most recent quarter for which data are available. Each bar represents the initial patient population split into two groups. The blue lower half of each bar represents patients who are eligible for the measure, based on clinical criteria or clinician documentation. And the orange upper half represents patients who are not eligible and are therefore excluded, based on a lack of clinical criteria or clinician documentation supporting severe sepsis or septic shock was not present. Now, it's very important to note that a very high percentage of IQR-

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participating hospitals are able to successfully submit SEP-1 data. In the fourth quarter of 2015, which was the first quarter of reporting, 99.9 percent of participating hospitals were able to submit data. And only three out of 2,863 hospitals were not able to successfully submit data. In the fourth quarter 2014, 99.97 percent were able to successfully submit data with only one out of 2,867 not able to, and all other quarters had 100 percent submission of data.

In a breakdown of the group of patients excluded from the measure, we can see that the majority, which is about 72 percent, were excluded due to not meeting criteria for severe sepsis. Now, all these cases had a sepsis, severe sepsis, or septic shock ICD-10 code. The medical record documentation did not meet the SEP-1 clinical criteria for inclusion in the measure. Or, there was documentation from a clinician, indicating the patient did not have severe sepsis or septic shock. Now, because CMS understands that many signs of sepsis could also be signs of other conditions, the measure is specifically designed to allow for clinician documentation, indicating sepsis is not present or not suspected as the cause of the abnormal vital signs or organ dysfunction, to affirmatively exclude cases. We can see about 18 percent were received in transfer from another hospital, and the remaining exclusions altogether represented less than 10 percent of the total cases excluded. Now, this specific slide has a breakdown of exclusions, based on version 5.0b of the manual.

A breakdown of the exclusion reasons for the next version of the manual, 5.1, reveals a very similar distribution with the majority of cases not meeting severe sepsis criteria, based on the measure definitions for clinical criteria or clinician documentation.

And we can see the exclusion reasons in version 5.2a, which is the most recent manual for which we have data, shows a very similar distribution as with the two previous versions.

Now, it's important to keep in mind that the total eligible cases noted at the bottom of this table refers to the population of patients who are eligible for the entire measure, and that's after all the interventions and their

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associated exclusions are accounted for. The number of cases eligible for each bundle refers to those patients who were eligible for only that given bundle. And, you can see as you look at the table that for each quarter, the number of patients eligible for each subsequent bundle progressively grows smaller, and this is due to the exclusions that occur and the cases that did not pass prior to reaching the latter bundles. Now, therefore, those cases are not eligible for the subsequent bundles. Now, with all of this in mind, let's now take a look at the SEP-1 performance.

Now, this slide shows the overall performance of the SEP-1 measure over the six quarters for which we have data. There is a progressive, albeit very gradual, trend towards increased performance over time, and this is what one would expect to see for care of a very complex condition that is gradually improving over time. And the slight dip in performance for the third quarter of 2016 we suspect represents normal variation. A potential criticism is that performance is very low and not increasing as quickly as one would expect for a well-constructed, stable measure. And, the thing to keep in mind with SEP-1 is that it is a composite measure, so passing SEP-1 requires meeting requirements of all bundles for which a patient is eligible. If one bundle or bundle element is not met, the case does not pass the measure. So let's next take a little bit of a deeper dive into the individual bundle performance.

The severe sepsis three-hour bundle, as noted earlier, consists of three interventions that must all be completed within three hours of severe sepsis; and those are collecting the serum lactate, obtaining blood culture, and starting antibiotics. And when we look at performance of this bundle separate from overall performance, we can see a much higher performance rate with steady improvement over time. In fact, we have seen about a 10 percent increase in performance of these three evidence-based interventions as a bundle over the six quarters for which we have data. So now, let's look at a relationship of each of the components of the severe sepsis three-hour bundle in reference to performance of this bundle overall.

We can see there's a notably higher performance for each component of the severe sepsis three-hour bundle when looked at separately. Each of

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these individual components for the last two quarters is at about 90 percent. Now, we must keep in mind that to pass this severe sepsis three-hour bundle, every case must meet the criteria for all three of the components that make up this bundle. This results in the bundle performance being lower than the performance for each bundle component. For the first quarter of 2017, bundle performance is about 75 percent. This is still a high rate of performance. Considering the higher rates of performance for each component, we feel the overall performance can be addressed in part through better coordinated care. Now, the next bundle in our analysis is the severe sepsis six-hour bundle, which consists of obtaining repeat lactate, if the initial lactate is greater than 2. For this bundle, we can see even more marked improvements over time. Since the measure was implemented, performance on this bundle has increased by about 30 percent.

The septic shock three-hour bundle addresses the administration of 30 milliliters a kilogram of crystalloid fluids. The data demonstrates since SEP-1 was implemented, there's been a 15 percent improvement in hospital administration of crystalloid fluid for cases with sepsis-induced hypotension and/or septic shock. Abstraction of data elements for this bundle is a bit complex. And, over time, revisions have tried to, and continue to, consider ways to add more specificity while trying to simplify the guidance.

Next, let's take a look at the septic shock six-hour bundle. For analysis purposes, we are further breaking down this bundle to vasopressor administration for patients with persistent hypotension and the repeat volume status and fluid assessment, which we will see on the next slide. As we can see from this slide, vasopressor administration has been relatively high since facilities started reporting on SEP-1, and has remained relatively steady with only very slight increases in performance. We feel this is a reflection that vasopressor administration has been a staple of treatment for patients with hypotension that is not fluid responsive.

The last bundle component we'll take a look at is the repeat volume status and fluid assessment portion of the septic shock six-hour bundle. This has been the bundle component with the lowest rate of performance. There have been noteworthy increases in performance since the measure was

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implemented with an increase over time of almost 27 percent. One of the challenges regarding this measure component is the wide variation in what clinicians assess and document to determine the patient's response to crystalloid fluids versus what the specifications require they assess and document. And CMS wants to measure what matters most for sepsis care. We recognize the assessment of fluid responsiveness can include consideration of many different parameters and may vary, depending on the clinical situation. Based on feedback from clinicians, facilities, and recent literature, the requirements for clinician documentation of the patient assessment have been, and continue to be, reevaluated and revised. The current specifications allow for clinician attestation to having assessed or examined the patient without the need to provide specific details of the assessment or examination, as was required in previous versions. This and other changes allow more flexibility for what is acceptable to demonstrate the clinician has reassessed the patient. With these specification changes we anticipate continued improved performance.

Bringing this all back together, as previously noted, increasing performance of bundled elements of care and bundles is represented in the overall performance. But, because the overall performance rates are a result of the combination of all the individual elements and bundles being met, the high rates of performance noted for many individual elements and bundles are not directly apparent in the overall rates. So one must view the overall results with this in mind. I do want to emphasize that the SEP-1 measures hospital performance, not individual clinician performance, and as noted earlier, there is a consistent trend toward improvement, which is particularly evident for antibiotic administration, obtaining blood cultures, drawing lactates, administering fluids, and clinician reassessment of patients. We also note that there is high rate of vasopressor use where indicated and consistency in that. Now that we've seen evidence of improved performance in care processes, let's take a look at the impact this may have on an outcome measure, mortality.

This slide shows in-hospital and 30-day post-discharge mortality rates for Medicare patients who met all components of SEP-1 for which they were

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eligible compared to those who did not meet all components of SEP-1 for which they were eligible. The differences for each quarter are consistent, ranging from around 8.3 to 9.5 percent, and are statistically significant. So based upon this preliminary information, there does appear to be an association between Medicare cases that pass SEP-1 and mortality. Now, it's important to note this is preliminary data, it is not risk adjusted, so there may be some limitation.

And this slide contains some summary-type takeaway messages. We want to emphasize that SEP-1, as with many measures, is evolving over time. And, there are multiple factors that must be taken into consideration with each iteration of this measure because of the complexity of the condition and the components of the measure. At the core, refinement is driven by three major forces: the goal of maximizing the benefit to the patient, the goal of minimizing clinician burden in demonstrating care provided, and the goal of minimizing the burden to the hospital of abstraction associated with SEP-1.

And this slide has links to some of the "Sep" resources on *QualityNet*, including a measure fact sheet and summary of measure changes. There is a link to the *QualityNet* question-submission page, and a link to searchable questions posted on *QualityNet*.

And with that, I believe we are ready to start taking some of your questions. So Candace, back over to you to get us started on questions.

Candace Jackson: Thank you, Bob, and thank you, Dr. Uppal. As Bob said, we will go into a brief Q&A session at this time. There have been a lot of questions submitted through the chat feature, so we will not be able to address all of them during this live Q&A session. But, please remember that all questions will be responded to and posted to the qualityreportingcenter.com website at a later date. So at this time, we will go ahead with the question-and-answer session. Our first question is, Dr. Uppal, can you provide any compliance data in terms of the use of a sepsis order set in the ICU setting? Do you think this is an important metric to follow?

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Dr. Amit Uppal: Yes, I do. I think ICU patients are a unique challenge. On the one hand, you would assume because we have so much data and that data is frequently checked, these patients are often checked every hour or every two or three hours, that it would be easier to detect those cases in the ICU. Our experience has been because the patients already have so many existing organ dysfunction parameters—they already have hemodynamic instability, they have multiple reasons for fevers, they already have a white count—we’ve actually struggled to detect those patients early. Once recognized as severe sepsis or septic shock, I think they tend to get rapid management, but we do see long delays in recognition that is a little bit counterintuitive for an ICU population. Our challenge with these patients has been that we actually use a different computer system to track vitals in our ICU patients, and so we haven’t as of yet been able to build the same screen in on the ICU side, but we’re actively working on that right now.

Candace Jackson: Okay, thank you. And, I believe our next question is also directed to Dr. Uppal. And, it is, What is the best way to gain compliance with documentation of the septic shock reperfusion exam?

Dr. Amit Uppal: Yes, I think the change in the measure from very specific exam elements over to, you know, a provider attesting that they did do a sepsis exam helps a lot. It more closely aligns with clinical workflow. I think it’s still a challenge—as I mentioned during the talk—for a provider to leave an unstable patient to document this note, and although we have a templated note in our chart, we’ve struggled to remind people to backdate that note to the time that they did the exam. So we’ve continued to have fallout in that. The computer logic that I mentioned at the end of the talk, I think is going to be successful because it’s a—it’s built into their current clinical workflow. Our ED providers always write that same disposition note and if this pops up and says, “Did you reexamine this patient after the fluid bolus,” it’ll be built into the clinical workflow and nobody will have to, sort of, remember to go back and write this note. So I think the key lesson we’ve learned so far is not to ask people to deviate from the typical workflow and try to build that process into how they take care of patients.

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Candace Jackson: Thank you. Our next question is, Can you share the triage screening that was done in the process? And I believe that's again for Dr. Uppal.

Dr. Amit Uppal: Yes, so on ED triage, as soon as the triage nurse puts vitals in, the, there's computer logic that will screen those vitals for changes that could be consistent with sepsis, as I mentioned, either hypotension, tachycardia, hypothermia, or fever, or tachypnea. And, we'll also answer questions about altered mental status or suspected infection; and if any three of those criteria are positive, that's a positive screen. It doesn't mean the patient must be managed for sepsis. It means the provider must come and either say why this is not potentially a sepsis case, or sort of, commit to at least working them up for potential severe sepsis and then managing as appropriate.

Candace Jackson: Thank you. Our next question is in regards to slide 14, so could we go to slide 14, please?

The population that providers are most hesitant to give the fluid bolus to are those with congestive heart failure and those that are DNI. How do you handle these patients at your hospital? Dr. Uppal?

Dr. Amit Uppal: That has definitely been a challenge. And, we had a lot of patients who came in highly febrile, rigoring, hypotensive, and they did not get an aggressive fluid bolus because they had a history of heart failure, or an EF of 45 percent, you know, relatively mild heart failure with no signs of fluid overload at the time. So we did a lot of education that even heart failure patients or renal patients, if they're truly in septic shock and their venous capacitance has increased, they still respond to this fluid bolus. We have dealt with the issue of, yes, we will put some people into pulmonary edema, yes, some people will get intubated after that fluid bolus; and that is, as many things in medicine, that is us accepting the potential consequences of taking care of sick patients. But, we always manage risk and benefits. And then on the other side of that, we educate that, if you are going to decide not to give that full bolus to a patient because you think it's contraindicated, then make sure you say so. Just as if someone comes in with a potential stroke syndrome and you decide that TPA is contraindicated, you would document why. So I think this is very similar.

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You always have the right as a provider to make that risk-benefit analysis and then document your thoughts.

Candace Jackson: Thank you. Our next question is in regards to slide 15. Go to the next slide, please. What does EW stand for?

Dr. Amit Uppal: Oh, I apologize. That's probably unique to our hospital. We have a small ICU that's actually just adjacent to our emergency room. It's an inpatient unit, it's staffed with ICU nurses, and we use it for a combination of patients. On the medicine side, it's for patients that need ICU, but maybe for a short time like a DKA patient, or potentially a severe sepsis patient who appears to be responding well to fluids and maybe will need a day or two in an ICU setting. Also, our surgical colleagues use it for trauma patients who don't urgently require the SICU, but need a little bit of extra monitoring before going to a regular surgical floor. So it's, sort of, a short-stay ICU. I don't think many hospitals have a unit like that, but that's what that stands for.

Candace Jackson: Okay, thank you, and we'll stay on slide 15 for the next question. Is the initial sepsis alert placed on whiteboard and ordering the sepsis panel a nurse-driven protocol?

Dr. Amit Uppal: So placing the alert on the whiteboard is actually computer driven. If the patient screens positive, that alert automatically appears next to the patient's name on the whiteboard. The sepsis panel ordered is expected to be a physician order. So the physician should go to the bedside of the patient with that alert, either say, "Oh, no, this is," you know, "this is alcohol withdrawal and there's no signs that there's an active infection here," and then document that this is not severe sepsis. Or, if they can't rule out severe sepsis, to order that sepsis panel of labs, which the display I didn't give you with the screenshot is, as you notice, every box has a number in it, and there's another page that describes the details for each of those numbers with very specific instructions.

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Candace Jackson: Thank you. Our next question. We rarely have anyone that gets the full fluid bolus. I am told it is too much fluid. Do you have fallouts because of this or does everyone that meets criteria, criteria, excuse me, get the full bolus?

Dr. Amit Uppal: I think probably one of our biggest educational success has been getting that number into people's heads, 30 cc per kilo, and very often our residents will write "sepsis," you know, quote-unquote, "sepsis fluids," and everyone knows what that means. So I think we've done a good job at making sure people know what the expected bolus amount is. I think the literature has been very active on the risks and benefits of fluids in general and in specifically with regards to sepsis. I just want to point out that, in my opinion, that discussion does not apply to the upfront bolus that a patient gets for hypotension or a lactate greater than 4. Any study that's been done on septic shock patients, the patient comes in, if they're hypotensive, they get their initial bolus. If they remain hypotensive or if they had a lactate greater than 4 on presentation, then they're enrolled in the study. And, what we do with fluids after that, I agree, is not clear yet in the evidence. But, I, for the majority of patients we're talking about, two to three liters, maybe a little bit more, and I don't think there's evidence that that is more harm than benefit in this population of patients.

Candace Jackson: Thank you, and our next question. How did you identify sepsis cases concurrently in real time?

Dr. Amit Uppal: Yes, I want to give a lot of credit to our quality management department for that. So they designed the system where, when a patient is admitted into the hospital from the ED, an admission diagnosis is listed. And so, instead of just looking for sepsis, severe sepsis, septic shock, they also run through a list of terms that might mean infection, so things like pneumonia, UTI, pylo, etcetera, and also a lot of terms that might represent organ dysfunctions like altered mental status, elevated lactate, hypotension, shock, words like that. So if they see an infection term, such as pneumonia, they look at that case and look for any associated organ dysfunction. And, if they see an organ dysfunction criteria, they look at that case and look for any signs of infection. And, that's how they get those real-time cases. It's a very heavy list they do. They spend quite a bit

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of time on this. But, the system works well enough that if somebody was admitted from the ED with sepsis today, my, our team would know about it by Friday. And, we can provide that feedback to the providers who took care of the patient within a day or two after that. That's been a big part of our effort.

Candace Jackson: Thank you. Our next question is in regards to slide 18. Who sent the email of the case that did not meet protocol to the provider?

Dr. Amit Uppal: Yes, so this went through different phases. Initially, we decided if it was an ED case, then the ED representative, Raj Gulati, our director of ED here, would send that email. If it was an inpatient case, Mike Janjigian, the director of our hospitalist program, would send the email. And, if it was an ICU case, then I would send the email. We actually found out it was more intimidating to the recipients of the email coming from their own director. So more recently, me, as the chair of the sepsis committee, has been sending all the emails, which worked out nicely because the ICU side is the minority of cases. But, no matter what, the email is signed by the entire sepsis committee, so they see that this is, sort of, a standardized template that goes to everybody.

Candace Jackson: Thank you, and our next question. Are the RN sepsis screens being used in the ED only or on the units, also?

Dr. Amit Uppal: On the inpatient units, as well. The one difference is that in the ED, the triage nurse will answer those sepsis-specific questions on every single patient, whereas in inpatient units, because they're getting vitals checked Q4 on a regular basis, first, vitals must meet certain criteria, and then the nurse will be expected to answer the sepsis-specific questions on the patient. And, if any of those questions is then positive, in addition to the abnormal vital signs, they're required to document which physician they notified about this potential sepsis case. And, I think the biggest impact of this is we saw a big string of cases, with overnight cases, someone spiked a fever, and the only intervention is to give them Tylenol. And, in talking to the nurses, they'd say, "I called Dr. So-and-So. I say So-and-So has a fever; and they order Tylenol." Now, they're calling and saying, "I have a

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potential sepsis case,” and that frames the patient very differently. And, then we’ve messaged that if you get called about a potential sepsis case, the expectation is, you go to the bedside, you see the patient, you review the chart, and then you document either that you think there’s an alternative explanation; or yes, this is a sepsis case we knew about and the fever curve is coming down; or this is potentially a new case and I’m going to manage it as such.

Candace Jackson: Thank you. Our next question. How do you handle cases of vital-sign abnormalities that could be attributed to the post-op phase of care?

Dr. Amit Uppal: Yes, I agree those are challenging and I would lump in the OB-gyn population with the, with the post-general surgery patients, as well. It’s just the vital signs are abnormal, they have more reasons for fevers, they have more reasons for tachypnea. So they’re a challenge, definitely, on the one hand, you know, you’d like to say post-op fever is normal, post-op tachycardia is normal. On the other, we’ve had cases where the abnormalities were attributed to that and it turned out there was a new source of sepsis that we missed. So we have the same triggers for those patients; and the providers are always welcome to document that “I don’t see any localizing signs of infection. I think this fever is,” you know, “post-op fever,” but we don’t—we didn’t change our trigger criteria for those patients.

Candace Jackson: Thank you, and our next question, and we got several questions in regards to this one. What EHR system is used at Bellevue Hospital?

Dr. Amit Uppal: We are currently on a system called QuadraMed. We are part of a bigger network, the [NYC] Health + Hospitals network of public hospitals in the New York City area. And, our system has contracted with Epic, so we’re in the process of phasing that into all our different hospitals. So within the next few years, we’ll be transitioning to Epic, but currently we’re on QuadraMed.

Candace Jackson: Thank you, and our next question. Today, EMS has a role in driving care for STEMI, stroke, and trauma patients, through identification,

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transportation to appropriate facility, early pre-arrival notification, and quality patient-centered treatment. What should we expect from EMS systems concerning the sepsis patient?

Dr. Amit Uppal: That's a great question. And, I'm sorry, I can't quote you the reference on this off the top of my head, but I know there was a study showing—looking at how many sepsis cases presented to the ED had evidence of sepsis on EMS arrival, wherever they were brought from. And, it was a high number. I think it was on the order of 75 percent. And, if you think about their arrival time, and then transport time to the hospital, and then processing time in triage, it was at least an hour in there. And we know that an hour can make a big difference in a sepsis case. So certainly, if, you know, those services can be, sort of, organized and protocolized, you could certainly imagine patients that meet certain criteria getting blood cultures drawn and antibiotics started in the field, and perhaps fluids during transport, as well, and that could certainly have an impact. I think that's a great question.

Candace Jackson: Thank you, and our next question. How were you able to link the patient's documented weight to the order set for crystalloid fluids at 30 milliliters per kilogram?

Dr. Amit Uppal: Yes, that was challenging. We did two—what we did is we created a two-step calculation in the system. And so, we—instead of treating it as an IV fluid, we treated it as a medication that was sodium chloride. And, actually calculated first, how many milligrams of sodium chloride we had to give the patient and then performed a second calculation of how many cc of 0.9 percent solution that would require. And one of the reasons that order caused confusion is that the nurse would open it up and it would say, “29,000 milligrams of sodium chloride,” you know, some ridiculous number that didn't sound intuitive. So that was how we did it. We, sort of, had to trick that computer into making that two-step calculation. The next phase that we're probably going to do, because that order didn't work so well, is when you go to our saline sepsis order, it'll ask you to choose from among several weights, you know, 30 cc—sorry—50 kilograms, 60 kilograms, 70 kilograms, 80 kilograms. And then, it'll show you how

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much fluid you're going to give, based on that weight. That will definitely be technologically simpler and probably won't cause the same confusion.

Candace Jackson: Thank you, and our next question. And, I'm going to ask two questions in this because they are related. So how does the sepsis team function? Do they respond to other activations like codes and/or RTs? Does the nurse have patients or other duties? And, how long does the sepsis response team respond until disbanding?

Dr. Amit Uppal: So they did not respond—the team did not respond to any other alerts besides sepsis alert. It was a unique team in the sense that it was the ICU fellow and the ICU nurse that we called upon was actually the—a leadership position, our ADN, whoever was on as the ICU ADN at the time. And that was for two reasons. One was what you mentioned. We didn't want to pull someone away from patient care. And, two was it would be a challenge to have every single ICU nurse be well-versed enough to serve that role in our sepsis protocol. We would have to constantly be doing updated education. But, the ADNs is a smaller pool that we could make sure they could be experts on this, and go to the bedside, and feel comfortable teaching other people what should be done. So they didn't respond to any other alerts and the threshold for calling them was different. And, early on, we said, "If you have a sepsis patient, you call this team." And, as people got more and more comfortable, we found that they only called really when they needed—when they felt they specifically needed help. And then, eventually people really just stopped calling because they didn't feel they needed help anymore. I would say that team was active in place for probably three full years until we really started to get the sense that maybe they're not necessary anymore, and then, we probably spent another six months phasing it out.

Candace Jackson: Thank you, and our next question. How is the sepsis reassessment form being auto-populated?

Dr. Amit Uppal: I'm sorry, could you repeat that?

Candace Jackson: How is the sepsis reassessment form being auto-populated?

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Dr. Amit Uppal: So the only portion of it that was auto-populated was the vital signs. And, one of the requirements at the time was to document that you'd reviewed the vitals and what those vitals actually were. So by putting it right into the notes, we felt that the provider was looking at them there, signing that note, and in that way, documenting that they had reviewed them. The other portions of the exam elements, we tried to make as quick as possible, so that a provider could, you know, confirm that they've done these exam elements, but not make them go through menu after menu to document their findings or write out a full physical exam. So for example, cardiac exam, we wrote normal—we gave them choices, normal, abnormal, capillary refill, risk, normal, delayed; you know, gave them very small number of categories to choose from. And then, we just, sort of, tested it, in “how quickly can I get through this note while being sincere,” and you know, it was under a minute to complete that note, so we felt that that was reasonable. But again, our challenge was getting people to remember to go to that template and to enter the time that they actually did the assessment, as opposed to just signing it as the time they wrote the note.

Candace Jackson: Thank you, and we're going to switch gears a little bit here for the next question. And, I believe this will go to Bob. Will sepsis measure results be added to the IQR benchmarks of care document published on the *QualityNet* website each quarter?

Bob Dickerson: Thank you, Candace. Yes, that is a great question because we've had several quarters of data submitted for the measure and what is happening right now is CMS is looking at the data that we have, much of what you saw presented in that portion of the slide, the slide set today, and trying to figure out how they will incorporate that data into the benchmarks of care document. So all I can say at this point is it is being looked into. When it will be on the benchmarks of care document I cannot say.

Candace Jackson: Great, thank you, Bob. And, we do have time for one more question. Is there a thought of breaking down the reporting of the bundle into three-hour compliance and six-hour compliance, or will it continue to be reported as a composite score?

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Bob Dickerson: Yes, this is another great question. I think, since inception of the measure, there have been questions asking about the ability to do something like this. So what I can say for sure at this point in time is that CMS is really critically looking at what is the optimal way to report this measure in terms of what will be most meaningful for folks and what can be realistically done, based on how data is collected and how the performance rates are calculated. So I can't say for sure what will happen, but again, it is something that is definitely being looked into, and feedback such as this, questions such as this, are extremely helpful in—with CMS, in further determining how to do that.

Candace Jackson: Thank you. Again, I'd like to remind you that all questions and responses will be posted to the *Quality Reporting Center* website at a later date. I would now like to thank Dr. Uppal and Bob Dickerson for presenting today. They presented quite a lot of information that was very valuable. And at this time, I will turn the presentation over to Dr. Debra Price to go over our CEU process.

Dr. Debra Price: Well, thank you for that introduction. And now, I will start talking about the continuing education credit. This is Debra Price. Today's webinar has been approved for 1.5 continuing education credits by the boards listed on this slide. We are now a nationally accredited nursing provider and as such, all nurses report their own credit to their respective boards, using our national provider number, shown on the last bullet, here. It's number 16578. It is your responsibility to submit this form to your crediting body.

We now have an online CE certificate process. You can receive the CE certificate two different ways or two different times. One, if you registered for the webinar through Readytalk®, you will get a survey at the end of our slides. The survey will allow you to get your certificate. However, you will only be able to get that certificate if you were the one that registered. The second way to get a certificate is within 48 hours, we will be sending out a separate survey. When you receive the survey, please give people who are in your room listening, but did not register through Readytalk®, please give them the survey. They take the survey and then they will get the certificate themselves. After the completion of the survey, you click

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the “Done” button on the bottom of the page, and another page will open. You will need to choose to register as either a new user or an existing user. If you’ve been receiving certificates with us all along and you haven’t had any problems, go ahead and click on the existing user link. If you have never received a certificate or if you’ve had problems in the past getting your certificate, please register as a new user, using a personal email. Just a note that healthcare facilities have firewalls that are continually being upgraded and you may have a firewall up on this event that wasn’t up last week, if you attended any of our other events.

If you do not immediately receive an email to the address you registered with after the survey, that means that there is a firewall up and what you’ll need to do is go back and register as a new user, using your personal email address.

This is what the survey will look like. It will pop up again at the end of the event; and again, we will send you a survey within 48 hours. You see on the bottom righthand corner the little “Done” button? That’s what you’re going to click on when you are finished with the survey.

This is the page that pops up when you click the “Done” button. This is what I was talking about previously where you have two links: a new user link and an existing user link.

New user is if you have never gotten a certificate from us or if you’ve had problems in the past getting a certificate. Use the new user link and make sure you fill in the form for your personal email. If you have been receiving certificates all along, please click on the existing user link.

This is what the new user screenshot looks like. So if you clicked on the new user link, you put your first name, your last name, your personal email, and a phone number that will be identified with that email.

Remember again, to use a personal email because hospitals and other healthcare facilities have firewalls that are constantly changing and being upgraded.

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This is what the existing user screen looks like. If you've been receiving certificates all along, please fill in your user name, which is your email address complete with the—what's ever after the at sign—so it would be your complete email address and whatever password you used when you registered. And, if you don't remember what your password is, then you'll have to get back with us, and we'll have to reset your password. Thank you for your time, and have a great rest of the day.