Inpatient Quality Reporting Program

Support Contractor

The Clinical Perspective on Sepsis Care: The Early Management Bundle for Severe Sepsis/Septic Shock Part III

Presentation Transcript

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November 10, 2015
2 p.m. ET

O'Neil Delva: Hello everyone and thank you so much for joining us for today's event. My name is O'Neil Delva, and I'll be your technical host for today's session. Now, before we officially get started, I just want to go over some housekeeping items to assist us with today's event. Audio for today's event is available via internet streaming. What that means, basically, is that no telephone line is required; however, you do need computer speakers or headphones in order to follow along with today's session. Now, we want to make sure that you are able to hear us for today's events, so if you do not have computer speakers or headphones, or encounter audio challenges, just know that we have a limited number of telephone lines available. Just send us a message, and we can assist you with that. Additionally, today's event is being recorded.

Now, during today's event, if for whatever reason, at any time, the audio suddenly starts to break up or suddenly stops, just know that you have the ability to fix that on your end. If you notice to the left hand side of your screen, under the audio information section, there is a pause button. If you click the pause button and just wait five seconds or so, you can then click the play button and that should resolve any audio challenges that you may encounter.

Additionally, if you hear an echo right now, echoes are typically caused due to multiple connections to a single event on one computer. So, if you hear an echo, check to make sure that you do not have multiple tabs or multiple windows open that's playing the exact same event. If so, please close the extra tabs, and make sure that you leave one open in order for you to be able to follow along with today's session, and that should resolve any echoes that you may hear.

Lastly, we do encourage that you get involved during today's session. So, to ask us questions or to submit comments, what you do is you use the chat with presenter feature that's located to the left hand side of your screen. Please make sure to remember to click the Send button so that our subject matter experts will receive your question. That will do it for me. At this time, I would like to turn it over to our first presenter.

Candace Jackson: Thank you O'Neil. Hello and welcome to part three of *The Clinician Perspective and Sepsis Care: Early Management Bundle for Severe Sepsis/Septic Shock*, a CMS educational series. My name is Candace Jackson and I will be your host for today's event. Before we begin, I'd like to make a few announcements. This program is being recorded. A transcript of the presentation along with the Q&A's will be posted to our inpatient website, www.qualityreportingcenter.com, as well as *QualityNet*, at a later date. Today's presentation will focus on SSM Health DePaul Hospital's Core Major Journey, presented by Dr. Michael J. Walter. At the end of the presentations, there will be a brief summarization of the SEP-1 measure changes for version 5.0b of the specifications manual.

If time allows, there will be a Q&A session after the presentation to address questions that you may have for Dr. Walter and that SSM Health sepsis staff. And, now I would like to introduce the subject matter experts for today's event. Dr. Michael Walter is currently the chairman of the Department of Critical Care Medicine at SSM Health DePaul hospital and a full-time intensivist providing patient care in the DePaul Hospital medical and surgical ICU and the Tele-ICU operation center, as an employee of Advanced ICU Care, which is located in St. Louis, Missouri. Dr. Walter is board certified with the American Board of Internal Medicine and Critical Care Medicine and Pulmonary Disease. He has a long standing interest in sepsis and will be presenting his talk titled *SSM Health Sepsis Core Major Journey*. We also have with us today Dr. Tefera and Bob Dickerson. Dr. Tefera serves as the medical officer, lead physician, and policy adviser for the Centers for Medicare & Medical Services Hospital Value-Based Purchasing Program. Bob Dickerson is the Lead Health Informatics Solution Coordinator for the Measure Development and Maintenance Team at Telligen. Most recently, Bob has been supporting CMS with development and maintenance of hospital clinical quality measures. His experience includes facilitation and intervention, implementation, data collection, and process improvements related to severe sepsis and septic shock in a hospital setting for the Surviving Sepsis Campaign. I would now like to turn the floor over to Dr. Walter. Dr. Walter the floor is yours.

Michael Walter: Thank you very much Candace for that introduction. As mentioned, my name is Michael Walter. I'd like to thank CMS for allowing us to present our work on the sepsis core measure. As mentioned, I'm a practicing intensivist, I've had an interest in sepsis for a number of years, and today I'll be focusing on our work over the last six years or so, and how we've incorporated that work into meeting the current sepsis core measures.

First, I'd like to take care of some CME requirements. My disclosures: I work for Advanced ICU Care, we're headquartered in St. Louis Missouri; I have no conflicts of interest. After introducing our health organization, I'm going break the talk into four themes. The first theme is incorporating the

evidence-based guidelines into new clinical work flows. The second theme is utilization of the electronic health record to support these clinical work flows, as well the sepsis core measures. I'll be using the SEP-1 abbreviation to also mean sepsis core measure as I go through. The third theme is education, and how we've developed educational platforms to teach clinicians about the sepsis core measure, the new work flows, and the changes that we've made to our electronic health record. Lastly, I'll talk about data monitoring and how we've created databases to monitor compliance, as well as drive process improvement.

Our learning objectives parallel these four themes. So again, the first learning objective is to understand the relationship between evidence-based guidelines and new clinical work flows; second, we'll go over the electronic health record and how we're utilizing that tool to improve compliance; third, how we educate the staff with different platforms to achieve compliance; and then lastly, we'll talk about a database that we're using to increase compliance and identify opportunities for improvement.

Here's a list of acronyms that you'll have for your reference as the talk progresses.

Well first, I wanted to introduce SSM Health. We are one of the largest Catholic health care systems in the United States. We were founded in 1872 by the Franciscan Sisters of Mary. We're a non-profit organization that operates in four states: Wisconsin, Illinois, Missouri and Oklahoma. In total, we have 19 hospitals, and we're headquartered in St. Louis, Missouri, which is where I'm presenting from today. We have a total of 4,220 licensed beds and about 145,000 annual inpatient admissions. There are 30,000 employees and 7,000 physicians. I just kind of wanted to give you a feel for the organization that we work in. I know today there's a broad audience, some of you may be in larger and some of you may be in smaller health systems. But, this gives you an idea of where SSM is.

I did want to spend a few minutes about the organization structure of SSM Health. It's a tiered organizational structure, with the top tier being the system level. The system is divided into five regions, based largely on

geographic area, and, within each region, there are individual hospitals. So, for example, I am in the DePaul hospital, one of eight hospitals in the St. Louis region, and there are five regions as you've seen here. Now, this organizational structure, when we first started our sepsis program, we envisioned that we'd be able to develop processes that could take place as the individual hospitals that could filter up to the region, so that the region could then distribute findings back to the other seven hospitals as well as up to the system. The system could then distribute the information and process improvement plans to the other regions, which would filter down to the hospitals. So, this bidirectional flow of information, we've used extensively to improve sepsis care throughout the whole system.

So, I wanted to start on the first theme, which is incorporating evidence-based guidelines into new clinical work flows. And, I think it's an interesting concept to go back and look at just briefly, a little bit of the history of sepsis treatments in microbiology. And I won't spend a lot of time here, but, over 150 years ago or so was the golden age of the germ theory. And during that time, certain observations were made, such as good hand washing could prevent communicable diseases, aseptic technique in other words. Lister developed aseptic techniques for procedures performed in the operating room and at the bed side. Now, we still use those techniques. Discoveries by Dr. Pasteur who proposed the germ theory and then ultimately Koch would describe the Koch's postulates, which some components are still in use today. We certainly try to isolate organisms from infected patients with blood cultures, urine cultures, respiratory cultures. In 1929, a change in the landscape occurred with the discovery of penicillin; obviously this was an antibiotic that was able to treat infectious disease. Certainly, there is a lot of research that goes on today in developing new antibiotics, and so that work continues even through to today. In the 1950s there were advancements in microbiologic assays and biochemical assays, such that components of bacteria could be isolated, such as endotoxin, as well inflammatory proteins in the host, such as interfering gamma. I just mentioned that because these identified targets that could then be studied or pharmacologic agents could be discovered to target these to treat sepsis. In

the '70s and '80s, there was a lot of work about the hemodynamics of shock, the cardiac and cardio pulmonary interactions of shock, including sepsis and septic shock. In the 1980s, they started to come up with a number of clinical trials that were performed in how best to treat patients with septic shock. I always say that we're fortunate to look at septic shock, one because it's the common disease and two because there's a lot of research that is ongoing with clinical trials as to how to best treat these patients. If we jump to about 2001, 2002, a group was formed called The Surviving Sepsis Campaign, and this was initially a group that set out to increase awareness and improve outcomes in severe sepsis, and initially consisted of experts in infectious disease and sepsis and consisted of 11 organizations. And that group has increased in size since then. About the same time, a landmark clinical trial was published by Dr. Rivers and his group in which they described how to use a protocol to treat patients with severe sepsis and septic shock. They used IV fluids, pressors, transfusion of blood, and inotropes to meet certain goals, such as central venous pressure, main arterial pressure, saturation of mixed venous blood. That protocol was described as early goal directed therapy; and, in that trial, patients that underwent this protocol had about 16 percent absolute reduction in mortality and this was a huge benefit, this was the landmark article and really shaped the way we looked at this disease for the next 12 to 13 years.

Coming up to you today, this slide will bring us up to 2015 and some of the work flows that are in placed at this point. But, I think it's important to mention that the Surviving Sepsis Campaign has published three guidelines, the first in 2004, then 2008, and 2012. And, these guidelines have been important in the field, in that they have graded the literature and the studies that are out there and left us with recommendations as to how to approach the treatment of sepsis. In 2008, the Surviving Sepsis Campaign partnered with the Institute of Healthcare Improvement to extend these recommendations to the bedside and the strategy for this was to bundle certain recommendations and release them as treatment bundles. And so, in 2008 they described a six hour resuscitation bundle and a 24 hour management bundle. And, when we started our projects, our sepsis

project at DePaul in 2009, we followed those guidelines as our treatment philosophy. The guidelines changed a little bit in 2012 and they revised those bundles and there was a three to six hour bundle that was put forth, and we followed those up until really April of this year. Over the last year and a half there have been three new trials that have been published, and everybody is familiar with these, and they have been reviewed at previous CMS webinars. So, I'm not going to spend a lot of time on them, but the proCESS, ARISE, and ProMISe trials have all been published, and I'm just going to talk about a common theme. The common theme is that they compared early goal directed therapy to other protocols or control groups of patients. And, the common theme is that early goal directed therapy provided no benefit and provided no harm. It was no different than usual care groups of patients. Now, the usual care groups of patients received such care as the measurement of lactic acid, they received IV fluid resuscitation, early antibiotics. And so, the Surviving Sepsis Campaign reviewed this data and they left – they updated their bundle in April of 2015. And, we're all aware that CMS' core measure has been released in October of 2015.

On the next slide, I'd like to just look at the components of the Surviving Sepsis Campaign update, as well as the core measure interventions. And so, in April of 15 the updates suggested to measure lactic acid, draw blood cultures before antibiotics, and resuscitate the patient with IV fluid, those components did not change in the update. But, the latter three did and those included applying vasopressors for hypotension; if the blood pressure remained low, to reassess the volume status; and then finally, to repeat a lactic acid, if the first lactic acid was elevated. So, those are the updates from the Surviving Sepsis Campaign, and you can see that they're perfectly aligned with the sepsis core measures, at least for these seven different interventions that we'll continue to talk about today.

I had mentioned previously that our healthcare system has a tiered approach. And, certainly in 2009, when I started as the ICU medical director, we had a sepsis program in place, and we – I also realize there was room for improvement. And so, I set up some meetings with the ED

medical director. We sat down and we talked, and we decided to start a kind of grassroots project for sepsis improvement. In 2009 and 2010 we formalized treatment philosophies. We created order sets. We developed screening tools. We developed educational modules. And we started to manually collect data. In 2011, as another way to promote better sepsis care at DePaul Hospital, our intensivist group has improvement metrics that we have put forth annually with financial incentives for the group members. And since 2011, we've included those metrics in our yearly review. In 2012, we realized that we really needed a more formal infrastructure to continue to tackle the problem of sepsis at DePaul Hospital, and we created a sepsis work group. This work group is still in place, we meet monthly and we talk about all things sepsis. We initiate new projects, we reviewed data, we roll out new initiatives. And initially, that was a multidisciplinary group consisting of nurses and doctors. But, since then, we broaden that to include respiratory therapist, pharmacist, we've included educators in that. More recently, we've included members of the core measure team. And so, that gives us a formal group that meets and discusses sepsis routinely. In 2013 we've performed an inpatient screening research project. In 2014, we performed a sepsis tracking tool research project and now those results will be presented at the Society of Critical Care Medicine's conference in February. If you remember that tiered structure, the local hospital receives ongoing process improvement from both the regional and system levels. And this, again, is a good way to distribute information down to the individual hospitals. So, these are just some highlights that I'll put forth that kind of note how we've improved sepsis compliance over the years at DePaul Hospital.

In the same way, we've extended some of these processes to the region. And, within the St. Louis region we have critical care collaborative monthly meeting, which is the ICU directors and a multidisciplinary team that talks about all ICU components, and we put sepsis as the standing agenda item for those monthly meetings. In 2011, we wanted to standardize our approach to sepsis throughout the region and we created a sepsis steering team. This was a multidisciplinary team that created a 19 page pamphlet that kind of gave some guide post or some

recommendations for each of the hospitals to work through, so that they could improve their compliance. That was presented at our first sepsis summit in 2012; and in 2013, SSM included sepsis metrics in the contracts with the intensivist groups. This is another way to align goals between hospitals and providers and it's been a very effective measure. We had a second sepsis summit in 2013, and the regional group continues to get process improvement goals and implements goals from the local, as well as the system.

Now, I wanted to talk about the system's involvement with sepsis improvement. This really started in 2011 when the continuing quality improvement, plus research team, did a study looking at the workflow and patient flow of patients through the triage, ED, and into the ICU. They developed a number of bottlenecks– they identified a number of bottlenecks, which we then worked on. And in 2013, a formal system–sepsis team was developed, and in 2013 this team undertook a number of projects. One of which was to develop a system score card. They rolled out the inpatient screening research project. We developed an ED symptom based screening, which I'll show you a little later. We have developed bundled tracking compliance tools, and a lot of these changes were highlighted at the system level Sepsis Summit III that was a webinar available to all 19 hospitals throughout our organization. Again, the system receives recommendations, both locally and regionally, and then helps distribute that information to the entire hospital group.

More specific to the sepsis core measure, in the last year, there have been two teams that have extensively worked on the sepsis core measure, that's the System Sepsis Team over the last six months or so has been exclusively looking at how to roll out and facilitate changes to the electronic health record, so that those core measured compliances could be improved. This also allows us to collaborate with other system teams, such as the ED system team, the nursing informatics team, the medical informatics team. The system sepsis core measure task force also is a multipurpose team that is set up to monitor the quality of the core measure compliance. They offer oversight to the entire project. They have worked

extensively on standardizing abstraction. They've performed the gap analysis of existing work flows and looking at areas that– such as chart abstraction, education, and reporting of the data and building databases. So, these two teams have a common theme with distinct roles. Well, this kind of ends the highlights that I wanted to talk about, the creation of new work flows, and some of the work that's been done at a local, regional, and system level to achieve compliance with the core measures.

I'd now like to move on to the second theme of the talk and that's utilization of the electronic health record to help improve compliance and help with these new work flows that we previously talked about. The electronic health record that we use at SSM is Epic. I understand that not everybody is using Epic and I'm hoping that, through the examples I'll show you, you can use your electronic health record to mimic some of these plan or projects. When we first thought about where we wanted to interact or where we wanted to start using the electronic health record to improve compliance, we decided to first start it at the first encounter with the patient, and that's in the triage admission process. We've developed some screening tools and I'll show you that next. The second thing we've done is we wanted to notify ED doctors and nurses about patients that may have severe sepsis or septic shock. And, the way we do this in Epic is through best practice advisories, and I'll show you some screen captures of those next. We wanted to help the providers with updated order sets that would improve compliance. We wanted to help the providers with documentation and we've created a note template, and I'll show you an example of that. Lastly, we've used the electronic record to track patients, as well as collect data for our report. So, just a quick view of some of these changes.

So, within Epic we have developed an infection screening process where we look for signs and symptoms of infection. I haven't talked at all about the definitions for severe sepsis or septic shock, but the first component of that diagnosis is determining if the patient has evidence of an infection. And, we're using this screen to determine that and we've listed a number of signs and symptoms, and if the patient has any of these, then they are

constituted as the positive infection screen. So, if they have signs or symptoms consistent with the cellulitis or urinary tract infection or respiratory tract infection, the button would be clicked down in this box here and that that patient would be screened positive.

This is an example of a best practice advisory. This is for an ED nurse. This is a screen capture of that, but it's a large yellow banner that is displayed in the patient's chart and it's triggered by a positive infection screen, which I showed you on the previous screen, and abnormal vital signs that are consistent with SIRS. We found that the fewer words on this BPA, the better, and the fewer choices to act upon, the better. And so, we've really pared this down to say, you know, this patient meets criteria for possible severe sepsis and septic shock, initiate the standing orders by clicking accept and notify the ED. It's kind of some direction as to how to progress in this work up. Clicking Accept in the lower right hand corner here, links the nurse to a nursing sepsis order set. The physician is notified so that early treatment can be initiated, and you want to give some thought as to where you want this alert to show. We've put this up as a pop-up alert and it's displayed in the ED work space, which is the common area that the nurses are using in the electronic health record. So, I said that– you can– the nurse chooses the Accept, and that will take the nurse to the nursing sepsis order set.

We've made a number of changes to the order set to help compliance, and these order sets are used early in the process to get the admission work up started. The orders are either auto selected or contain explicit directions as to what to do. And, we found another helpful idea is to include explicit directions on these order sets. So, in big red letters, "CMS Sepsis Core Measure requirements included... :" and then list out, you know, IV fluid bolus directions, blood cultures, lactic acid. Again, this serves as a reminder as well as educational.

I mentioned that we have 19 hospitals within our system and so that means that there are 19 different emergency departments with 19 different work flows and 19 different unique cultures. And, that's also something that you want to keep in mind as you're going through building your sepsis

program is that you need to understand the local environment that you're trying to improve. And so, our hospitals in Wisconsin and Maryville don't have nursing order sets in the emergency department, and so the BPA was modified and you can read it here, I won't read it for you. But, it was modified for their local environment, and so, this also is triggered in the same way, but just gives a little different direction to the nurse. Now, just some more subtleties behind these best practice advisories, there is some logic and some choices that can be used to suppress these BPA's. We found in some of our previous research that there can be alert fatigue, if these BPA's continue to fire repetitively. And so, if certain choices are chosen, then we can suppress the BPA from firing in the future and this has been a good strategy for us. Again, these BPAs are displayed in the work space.

In a similar manner, we've developed a BPA for the ED physician; it's triggered in the same way. And again, we have limited words and limited options. The two options here are Accept, which will link them to the ED physician order set, or an option that says "Evaluation is not consistent with sepsis." So, if the ED physician evaluates the patient and says this isn't severe sepsis or septic shock, then we can suppress this BPA in the future again to prevent alert fatigue. This BPA is shown as in the ED work space where the physicians are used to seeing this to help them guide therapy for the patient.

The ED physician order set is something that has been reviewed by the ED System Collaborative Group and a number of changes had been included in this order set to help comply with the core measures parameters. So again, we included new text that highlights the core measures. They're pretty much written out right at the top of the order set, again serving as education and reminder: serial lactic acid levels are ordered, blood cultures, antibiotics that comply with the requirements, IV fluid bolus orders, vasopressors, there's a central line insertion bundle that includes a default at CVP and mixed venous blood gas, should the central line be placed. Another collaborative approach that we've used here is to create a sepsis patient order.

And, this is an identification order that's placed in the patient's chart. It doesn't trigger any treatment plan, but it allows us to track these patients. It also will suppress further BPA's, so that we don't have a repetitive firing of the BPA. And, additional logic can be built in to this order, once it's placed. Once it's placed, we can delete this from other portions of the electronic record, so that there are no duplications, and we can apply repeated use, we can open up the order set multiple times, once that order is chosen, in case we need to go back and add orders for vasopressors at a later time as the patient progresses.

This is another visual clue that we've given the providers in the emergency department to identify a patient quickly. There is a ED track or summary report that's used within our electronic health record. And, that quickly displays all the patients in the ED, and can put up this sepsis risk patient, a big green color here that identifies the patient that may require time sensitive treatment. Again, logic can be built in as to when this should be shown, if a sepsis BPA is active or the sepsis patient order has been completed, then this banner will show up and highlight for the rest of the providers to be aware that this is a patient we need to closely look at.

We've attempted to aid the provider in compliance by creating a note template for the six hour focused exam and this is a screen capture of this note that can quickly be imported into the medical record by typing a certain catch phrase, and it will automatically populate into a note. The vital signs are auto-populated to comply with the six hour focused exam. Then the organ systems are listed here. And then, there's a hard stop that we built in, which for Epic is three asterisks, and those need to be deleted and the provider needs to type in their plan for subsequent pair. I'm going to show you in the next slide how the physical exam portion works.

So, you can tab over to the organ systems that you're examining, and once you tab over, you get a pull down window with multiple choices, and you simply choose the appropriate finding, choose the appropriate physical finding for your patient. And you click on that, and you tab to the next organ system. And so, I've shown you an example here for pulses– peripheral pulses, as well as capillary refill.

Well those are some of the changes that we've made to the electronic health record to aid in our compliance. And, the third theme that I wanted to talk about now is education. Over the years, I've realized that education is critical when you're rolling out any project. It's critical to educate the users about what you're trying to achieve and why you're trying to achieve it. But, it's also critical to have ongoing education for new hires that may start after you've rolled the project out. And so, we've developed a number of educational platforms to educate providers about the core measures, about the work flows that we are practicing, and about the changes in the electronic health record. So, just some specifics about the education that I think are very important. The education to the clinicians needs to be specific as to how to differentiate sepsis from severe sepsis from septic shock. This is critical because the clinician's documentation and use of these diseases, is going to determine how a chart is coded and whether or not a patient ends up in your denominator for your compliance calculations. And so, if you're treating septic shock, you don't want to write sepsis in the chart. Similarly, if you're treating sepsis, you don't want to be writing septic shock in the chart. Additional education to the clinicians and abstractors needs to be a really broad overview of the core measure. There has to be education about the electronic health record updates and changes that have been made, so they're aware of the tools that are out there to help them improve their compliance. Lastly, the rationale behind the improved work flows and the new work flows that we're doing is critical to– especially to physicians, so that there is good clinician buy-in to this process. Again, I want to just stress clinicians need to accurately document, so that the coding team can appropriately code patients. This is necessary for a successful program.

We've really developed six educational platforms and I'm going to touch on those quickly here. So, the first we developed was a tip sheet. You won't be able to read the details on this tip sheet, but I'll describe to you the goals that we have. The left side of this tip sheet really is all definition based. It tells you how to identify and define severe sepsis and septic shock. It goes through SIRS criteria. It goes through organ dysfunction and the criteria that are used, it goes through persistent hypotension. The

right side of the tip sheet contains the treatment overview. It describes exactly what needs to be done, for which patients in three hours and six hours with explicit detail, who should document that, where it should be documented, and how an order should be written. Now, this tip sheet has to be flexible. We have revised this tip sheet three times over the last probably 10 weeks or so with new updates that come out. Subtle changes need to be made to the tip sheet so that people have accurate information. We've developed electronic learning modules. We've used this for the nursing staff. We've made this a mandatory nursing staff requirement. This is an E-Learning module that contains case presentations as well as review of the core measures. We've developed a tri-fold pocket card, which is really a summary card of the tip sheet that clinicians can carry with them in their pocket. We presented the specialty teams like ICU and ED groups. We've had grand rounds for general medical staff, entire medical staff of hospitals. And, most recently, we've released some sepsis screen savers, so when a computer falls asleep on the floor, a sepsis reminder can come up, which lists some things to look for and think about, again to raise awareness for this disease.

The last theme of the talk really revolves around data monitoring. And so, this is critical for any process improvement, as everybody knows, is to have accurate data so that you can, one, see how you're doing, and two, figure out where your strengths and weaknesses are. Initially, when we started in 2009, we did manual chart reviews. It would take me anywhere from 30 minutes to 45 minutes to review a chart to see if we were complying with the metrics. Since then, over the last, I would say two to three years, we've really had a dedicated team that has continued to improve an electronic report card, or a system score card. Some of the features that we're continuing to improve upon are, one, we're making this a system-wide score card, so that all of the data within the system can be viewed rather quickly. With the click of the button, you can isolate your particular hospital, and look at hospital specific data. And, within this report, we've honed down to identify the clinicians that provided care for individual patients. And, I'll touch base on that in a little bit here as to why we found that important. Obviously, we're measuring compliance with the

seven parameters that we talked about earlier with our clinical work flows. With another click of the button, we can quickly go to our outliers to see who didn't comply, and we can do chart reviews– focused chart reviews on those patients, and try to figure out if there are new processes that we could develop to improve compliance. This data is provided to the hospital specific sepsis teams. The data is collected by the system and then distributed to the individual hospitals so that they can work in their local environment to improve these processes. I spoke a little bit about clinician specific feedback. And, within our group, as well as our hospital, we found that group education is always the beginning. But then, over time, you want to be able to provide individual clinician specific feedback. And we've done that at our hospital with educational letters that are sent out describing the patient's care. Well, really the patients presentation, as well as their care. And, this will allow the physician to, one, be educated about certain things that they may have missed, but, two, we ask for feedback as to how to make the job easier on the floor or the ward, what we can do to help compliance in the future. So, this specific feedback from the physicians at a local level has been very valuable in driving new projects and making changes to the electronic health record and so forth. This score card is currently being field tested and going to be released very soon. And, just from a personal view point, not having to review each chart is an excellent advancement and I'm looking forward to using this in the future.

So, my last three slides are kind of a general summary. And the first slide is really a broad recommendation of how I think we still need to approach and improve our care for sepsis, severe sepsis, and septic shock. I think we're still in the middle of a cultural change. I don't think we've quite accomplished that. When you look at compliance rates in published literature, there are areas for improvement. I think we need to understand this, I need – I think we need to keep regarding that there needs to be early identification, if there are time sensitive treatments that do make a difference and do save lives. I'm glad to see the CMS core measures implemented. I think that they will mediate this cultural change, and I know that they have raised awareness at our hospital. As you roll out your

sepsis project, I think the goal that you should always have in mind is how to develop tools to provide the clinicians a way to achieve success.

Some more specific recommendations for improving compliance, clinician engagement, I think this is critical. I've been very involved at our hospital and the region and the system over the years. I enjoy working on process improvement for sepsis. But, there needs to be clinician engagement both nursing, physicians especially, need to identify clinical champions at the hospitals that are ready to dedicate and tackle difficult problems and difficult issues as to how to change the culture in your hospital. I think heightened awareness, we talked about, wide scale screening, I think is an approach that's necessary for early recognition of sepsis, especially on the inpatient side. And, when we first started our grassroots effort at DePaul Hospital, I spent a lot of time to talking about other disciplines that have already gone through this time sensitive cultural change; for example, ST elevation, MI teams, acute stroke teams. When you go to an ST elevation MI meeting, you know, they're talking about, you know, door to EKG in minutes, door to balloon in minutes, and how to shave minutes off of these time sensitive treatments. And so, that's something I think we need to reflect in. And when– in our project is to how we can shave off minutes and some of these time sensitive treatments for severe sepsis. Another thing that really helped us at our hospital was the development of the code sepsis team. And, this was a team to a code MI or a code stroke team. And once the patient is identified as having septic shock, it alerts the team that helps facilitate completion of sepsis metrics, as well as move the patient through the ED and into the ICU.

A last summary slide here, I work in a large health care system with local regional and system governances. And, I've shown you how we started locally and then filtered up to the region in the system, but certainly I think a system could filter down to region and into the local environment as well, this bidirectional flow of information, I think can achieve equally good results. I've shown you specific examples of how we've utilize the electronic health record and some specific examples of educational tools that we've used to improve our compliance. And lastly, you need accurate

data, and I can't stress that enough. You need to spend a lot of time making sure you have good data to provide good feedback to the clinicians to drive improvement.

Well, my last slide is my acknowledgment slide. When I sat down, and we wanted to acknowledge all the people that have worked on all the projects that I've described to you, it was well over 100 people. Obviously, I couldn't thank all of them. But, I did want to highlight the presentation team, which is in the room here with me now. First, I'd like to thank all the members at Advance ICU Care, the group that I work with. They work hard and achieve great things every day. Leah Meyer, she is the System Sepsis Core Measured Task Force Team Leader. She's been instrumental in organizing the sepsis core measure and the sepsis project throughout the entire system. She works in the Clinical Excellence Department within SSM. Amy Vandeven, she is the System Sepsis Team Leader. She works in the Clinical Excellent and Informatics Department. And, I refer to Amy as the Epic guru. She knows all of the ins and outs, and how to program, and how to farm data out of Epic and she's been instrumental in implementing all the changes in the electronic health record. Kim Izard, she is our System Sepsis Lead Facilitator in Saint Luis, in the Southern Illinois Region. She works in the Clinical Outcomes Department. And, along with Kathleen Helferstay, who is the System Sepsis Lead Abstractor. Kathleen helps us help translate the hundreds of pages of instruction from the CMS into a language that the clinician can understand, so that we can create effective work flows for this process. Well, that formally ends my component, or my aspect of the presentation today. And, I'd like to introduce Bob Dickerson.

I mentioned that you need to have flexibility, and you need to have the infrastructure setup to deal with new data that comes out, new clinical trials that are published, new guideline updates, and the updates from the core measures team. And so, the sepsis team at our hospital is the team that facilitates that, and it's just important to remember that this is a dynamic process, the treatment of patients, and the guidelines, and the

updates. And so, Bob is going to talk about some of the recent measure updates, and I'm going to turn the microphone over to him.

Bob Dickerson: Thank you Dr. Walter. So, the next three slides will be going over are an overview of the changes to the most recent version of the manual, which is version 5.0b, and this was recently published out on *QualityNet*. So, be sure as you are doing chart abstraction that you are using the most recent version of the manual.

So the first slide, we– in the summary, we've made some changes to Broad Spectrum or Other Antibiotic Administration data element. Some of the changes were some edits to the language to better clarify that an antibiotic must be given or started within the 24 hours prior to presentation, or three hours following severe sepsis presentation, rather than full – completely administered. The data element is only concerned with whether or not an antibiotic was given, it's not concerned with what antibiotics or combinations were given. So, we removed all references to tables 5.0 and 5.1 in this particular data element. Now, for the Broad Spectrum or Other Antibiotic Administration Time data element, we added clarification to the time to use for antibiotics that are given in that 24 hours prior to presentation. So essentially, if you have one of more antibiotics that are given within that 24 hour presentation period, you will abstract the earliest dose of any of those antibiotics; as such, you may be abstracting a dose that was given more than 24 hours prior to presentation. And then, to the Broad Spectrum or Other Antibiotic Administration Selection data element, this is the only one of the antibiotic data elements that is looking at the types of antibiotics that were given. So, it is looking only in antibiotics given in this three hours following presentation, and if those are the only antibiotics given, then you would apply tables 5.0 and 5.1 to see if the antibiotics given in that period were consistent. So, we added some clarification to the directions for determining whether or not a correct combination was given, and then also clarification antibiotic need to be started or given, they don't need to be completely infused.

For the Crystalloid Fluid Administration data element, we clarified that the fluids given prior to the time of or after presentation are acceptable,

and previously they just indicated that the time of or following presentation. And, the Persistent Hypotension data element, we changed the basis for determining presence of persistent hypotension. Previously that was one single blood pressure reading, and we've changed that to two or more consecutive blood pressure readings. We also added guidance with some examples to help with determining when the 30 ml per kilogram of crystalloid fluids have concluded, and there was a reference in this data element to the 30 ml per kilogram of crystalloid fluids as a rate. That's been corrected to a volume because that is what it represents. And then, we added a bullet point reflecting not to use blood pressure readings that have documentation associated with them referencing or indicating that the reading is erroneous or questionable.

And, to the Septic Shock Present family of data elements, we made some wording and format edits to more clearly delineate the septic shock clinical criteria. We've added some additional examples for determining the presence of septic shock. And, we've also included specific reference to the persistent hypotension data element for assistance when you're abstracting for determining whether or not hypotension persist, because that is one of the criteria for identifying whether or not septic shock is present. And, for the Severe Sepsis Present family of data elements, we've added some clarifying language in the indicating nursing documentation of a suspected infection is acceptable. We've also added acute respiratory failure to the organ dysfunction criteria, and we've added a statement indicating to not use evidence of organ dysfunction that is due to chronic conditions or medications, and we've also included a statement to exclude viral and fungal infections. Guidance was also added for assisting in determining whether or not a documented condition is an infection. And, clarification was added to better address the time to enter based upon documentation in an ED physician note. And, that concludes an overview or summary of the changes. Deb, I'm handing the presentation over to you now.

Deb Price: Well, thank you Bob. And now I'd like to talk a minute about our CE credit process. Go back. OK.

Today's webinar has been approved for one continuing education credit by the boards listed on the slide. We are now a nationally accredited nursing provider; and as such, all nurses will submit their credits to their own board using the provider number you see on the slide.

We now have an online CE, certificate process, and you can get your certificate in two separate ways. If you registered for the webinar through ready talk, a survey will automatically pop-up when the webinar closes. The survey will allow you to get your certificate. Also, if you are sitting in a room and someone else registered, but you need the certificate, we will be sending out another survey within 48 hours. Please send that certificate – please send the survey to other people that are sitting in the room with you, and that will allow them to get the CE certificate also. When you see the survey, make sure you click Done at the bottom of the survey, and that will open a separate page. That separate page will take you to the HSAG Learning Management Center. Please don't think that that is the same registration that you had when you registered for the webinar. It's a completely separate registration. That one, we are asking that you please register your personal e-mail.

OK, all right. OK, there you go. If you do not immediately receive a response to the e-mail that you signed up for, that means that you have a firewall that is blocking that link. Please go back to the new user link and register again. Use your personal e-mail for that registration.

OK, this is what the survey looks like that you will see in about one minute. You see on the bottom there is that little gray box that says Done. You'll do the survey, click Done and then a separate registration opens up. This is what it's going to look like.

You notice in green that there are two separate links. There's a new user link and that's the one you're going to use, if you've never been able to get a certificate or if per chance that you fail to get it today, go back to this new user link. And, if you've been getting your certificates, then click on the second green link; it's the existing user link. OK, this is what the new user link takes you to.

It's the separate page. You put your first name, last name, and again, we're asking you to register your personal e-mail in where it says e-mail and that's because most of the hospitals have firewalls that are restricting our links from going in. If you are however an existing user, this is what's going to pop-up.

And, it's taking you to our Learning Management Center where you put in your user name; that's a complete e-mail address, including the @, you know, like DPrice@, and then whatever is after that dot com. Make sure you put the whole e-mail and then your password. And now, I'm going to return the webinar over to Candace Jackson, the host for today's event– that will go– She will be going over questions that you've been sending in. Candace, the floor is your.

Candace Jackson: Thank you, Deb. And, we do have time for about 15 minutes worth of question directed to SSM Health. And, if we have time from that, then we can address some additional abstraction questions. Our first question, we seem to have quite a few questions related to, and it's: can we contact the speakers once it is over for advice and starting our own program? SSM health?

Michael Walter: Hi, this is Mike Walter. Yes, we'd be excited to talk to you about other hospitals and kind of our experience and what we've learned over the years. We'll probably have you contact CMS, and they can forward your information to us.

Candace Jackson: Thank you Dr. Walter. And, on the same line, we had multiple questions in regards to your screening tool, sepsis orders, and the tip sheet. So, would SSM health be willing to share their sepsis screening tool and sepsis order sheet as references for hospitals trying to create tools on their EHRs?

Leah Meyer: Hi Candace. This is Leah Meyer. We would be more than happy to share those tools. I can send those to you and have them posted with the presentation on your website.

Candace Jackson: That would be very helpful. Thank you, Leah. And, another question: were contracts with the ED providers considered, since the three hour bundle starts in the ED?

Michael Walter: Hi. This is Mike Walter again. I work in the ICU. So unfortunately, I can't comment about the ED physicians' contracts. I'm just not that familiar with the details of their contracts. So, I can't give you any insight there.

Candace Jackson: Thank you. And there was several questions about what representatives are on your system sepsis team?

Amy Vandeven: Hi. This is Amy Vandeven. So, the system sepsis team is comprised of nurses, physician, we have some pharmacy members, abstraction coders, educators; it's a really well rounded team from all the hospitals, both ED and admissions.

Candace Jackson: Thank you. Next question: if the sepsis BPA is suppressed because the patient is being treated for sepsis, is there an alert, if the patient declines/progresses to severe sepsis or septic shock?

Amy Vandeven: This Amy again. So the alert if – when it's suppressed because they're being treated, that will be within the ED, and so far the expectations of those patients, they're very closely monitored while they're being treated for sepsis, severe sepsis. And, if they do deteriorate into septic shock, currently, we do not have an alert that would re-identify them as a septic shock.

Candace Jackson: Thank you. Next question: I would like to ask Dr. Walter what is a false-positive rate with the ED sepsis screen?

Michael Walter: We haven't calculated formal sensitivity and specificity values for our sepsis screens. Our idea with the screen is that, it would be very sensitive, overly sensitive and not very specific. The idea behind to the screen is that it would heighten the awareness for the nurse or the physician to then examine the patient to provide that specificity as to whether the patient then has severe sepsis or septic shock. So, the screening is very sensitive. And that's why we've worked on suppressing the BPA because it does fire

until it's suppressed. But, it's not very specific; and that's by design, so that we can then have further clinicians or providers determine that specificity.

Candace Jackson: Thank you Dr. Walter. The next question: have you integrated a trigger into your EHR, so that the provider knows when to complete the 6 hour focused exam? How do they know when to complete this in the correct timeframe?

Amy Vandeven: So, this is Amy Vandeven. We have not currently done that. There isn't really a great way to remind the physicians, other than potentially adding an instruction to the IV bolus order for the nurse to notify the physician to go ahead and complete that note. But, it's still a very manual process and that's simply because we can't identify the presentation time with the way that the measure is written currently.

Michael Walter: This is Dr. Walter. I'd like to add on to that response. You know, initially, when we did our compliance metrics, it was a little bit easier in that ED presentation time was time zero. Time zero, as you now know, is dependent on a few different parameters. And, so that time zero has been a real challenge for us. And we're currently brainstorming as to how to figure out how to, on the fly, denote time zero, so that we could do that exact thing. And so, if anybody has any clever ideas or a way to abstract that from the electronic health record and can share that with us that would really be helpful because we've kind of sat down and had one session as to how to figure out that problem. And, haven't quite got there with a good solution yet, but we're working on it, as I'm sure everybody else is.

Candace Jackson: Thank you. Next question: sepsis patient order does not seem to specify between sepsis versus severe sepsis. How do you verify severe sepsis as opposed to mild sepsis patients?

Amy Vandeven: This is Amy again. So, we do not differentiate between the different– I guess levels of sepsis, severe sepsis, septic shock, plain old sepsis. It should say to identify that those patients have been identified at some level of sepsis that's a fluid – it's a fluid progress, if they're in the hospital. And so, we don't really, I guess nail them down as being one or the other

because they can progress and become more – or get better. It's simply to identify those patients as being treated and not merely to suppress the alert, but it also does drive the banner and the track board. So, that the charge nurse and other clinicians can see from the track, or without entering the patients chart, if that patient is a sepsis patient.

Michael Walter: Good. And I can add on there. Again, this is Mike Walter. So, we've aimed with most of these alerts and banners to be overly sensitive. We don't want to miss people. We don't want to miss people that may progress. We want to have a very high level of awareness. And like I say, most of the philosophy behind most of the development of these BPAs, as well these orders, are that overly sensitive with specificity provided by clinician or nurse interview. And so, you know, like Amy said, we don't try to distinguish. And, we've noticed a lot of patients certainly present with sepsis. But, over the next few hours may progress to severe sepsis. And so, we want to know about those patients, even if they're just simple sepsis as was referred to in the question.

Candace Jackson: Thank you. Next question: We have issues with Epic taking out our serial lactic acids as duplicates. Is this something we have altered, or have you had similar issues? Also, does lab collect your labs or are labs clinician collected?

Amy Vandeven: OK. This is Amy Vandeven again. We have a specific frequency for our lactic acids that times them three hours apart. So, the first one is STAT. The second is three hours after that. The third one is six hours after the initial one. And it's not– it's identified in our EHR as a duplicate order where they're placing them. It doesn't kick them out like you said, it doesn't reject or anything like that. What was the other question?

Candace Jackson: And, who collects them?

Amy Vandeven: And, sorry: it varies between hospitals, as far as who collects the lab. At DePaul I think they collect– the nurses collect all their own labs, versus some of our other hospitals, the nurses don't collect labs except for the ER. So, it varies.

Candace Jackson: Thank you. I have another Epic question. Is the ED tracking board part of Epic?

Amy Vandeven: Yes.

Candace Jackson: Thank you. And, next question: how do you educate the physicians?

Michael Walter: This is Dr. Walter. We went through some of our educational platforms. We're using all of those platforms to educate the physicians. We've distributed the tip sheets. We have developed the tri-fold pocket, and we have presented data at different business meetings, at different specialty groups, to help them understand the metrics. We've had grand rounds. And, when we sat down and tried to talk about how we wanted to educate the physicians, we understood that, you know, we're talking to a few different generations of physicians. Some that are very in tuned with written materials, some that carry stuff in their pockets, some that use iPads, some that use their mobile phone. And so, we've tried to develop numerous platforms because every physician learns things differently; and so, we've tried to have a broad, or many broad platforms, to reach each physician.

Candace Jackson: Thank you. And, our next question: in your facilities, is core major abstraction done in real time or retrospectively?

Leah Meyer: This is Leah Meyer, currently it's done retrospectively. We've talked about trying to incorporate some concurrent elements in the future. But, at this time, we're just looking at charts after they're closed.

Candace Jackson: And, another question: do you have clinical documentation improvement specialist in your hospital? They too work with providers to document correctly to capture the most accurate coding and would be great additional resources.

Leah Meyer: Yes, we do have those clinical documentation specialists at our hospitals as well.

Candace Jackson: And, the next question: does your BPA allow you to diagnose sepsis before the patient develops severe sepsis or septic shock? Do you track the ratio, and do you have data as to whether you are diagnosing more sepsis in your system?

Michael Walter: So, the BPA does not diagnose severe sepsis or septic shock. The triggers for the BPA are: one, does the patient have evidence of infection; and two, is there SIRS criteria that are met on the vital signs. Now, we use the electronic health record to screen the vital signs, but we do not look for organ dysfunction to diagnose severe sepsis. Now, with that caveat, we have tried to develop some inpatient protocols that also electronically try to capture organ dysfunction. And, we are in the middle of some of those trials; and so, that research is under way, and we may be able to give you an update next time we talk.

Candace Jackson: Thank you. Next question: does your organization abstract the full or sampled population? If sampled, is there an alternative way to monitor the noncore measure patients in compliance with care?

Amy Vandeven: We actually abstract for the sampled population currently. We do have some reports that we've developed that do capture all patients that we're, you know, updating, so that we can ensure that they're meeting all of the requirements, but currently our focus has been on those patients that we're abstracting.

Candace Jackson: And, does SSM include any monitoring that identifies the time zero for severe sepsis/septic shock presentation time?

Michael Walter: This is Mike again. We kind of touched base on that. That's a more difficult parameter to measure right now because it really relies on a number of documentation events to occur. And so, the short answer is no, we don't have an automated way to define time zero for the core measure requirements.

Candace Jackson: Next question: how do you apply these metrics to inpatient identification and treatment? So, I'm assuming that these are not patients that have come in through the ED.

Amy Vandeven: So, this is Amy Vandeven. The majority of our patients come through the ED, and that's not to say we're not focusing on the inpatients at all; but, our focus thus far has been pretty heavily concentrated in our ED departments, since that's about– we're 90 percent of our patients come in and present with severe sepsis or septic shock on arrival to the ED. The inpatient workflow, the inpatient work, is getting under way now. So, the nurses are using that same screening on admission, as the nurses in triage. There's no alert currently, there was one piloted a few years ago, and it had very little success, so that may change. But, we are looking at doing a systematic screening on the inpatient side and maybe pairing that with another.

Candace Jackson: Thank you. Next question: is SSM Health DePaul Hospital an academic medical center?

Michael Walter: This is Dr. Walter, we are not an academic medical center, we're a community hospital, part of the Saint Louis region, one of the hospitals is Saint Louis University, SSM Saint Louis University Hospital, which was recently purchased. So, DePaul is not, but within the region there is an academic medical center.

Candace Jackson: And, how long has your system been on Epic?

Leah Meyer: Our first – this is Leah, our first hospital went live in 2008, and each year we have added additional hospitals. On our last hospital, we'll go live on Epic next year. So then, everyone will be live next year.

Candace Jackson: OK, thank you. And, next question: how do you ensure timely MD/APN documentation following fluid resuscitation and vasopressor therapy when patient leaves ED and is admitted to critical care?

Michael Walter: This is Doctor Walter. So, if the patient has a code sepsis activation, the ICU team, including the ICU physicians, will know about that patient before they arrive in the ICU. There is a verbal sign out from the ED physician to the intensivist, and within that sign out, we talk about bundle compliance and completion of specific time sensitive measures, so that the care can be continued in the ICU.

Candace Jackson: Thank you and we have time for one more question. This one is I believe directed to either Dr. Tefera, Dr. Walter, or Bob. If the ProCESS, ARISE and proMISe trials show no difference in outcomes, when compared to guideline driven care, why are you continuing to push guideline driven care?

Lameneh Tefera: So, this is Dr. Tefera, CMS. As the questioner mentioned, the trials did not show a difference in mortality, but there was evidence that within each individual trial for benefit for various components of the SEP-1 measure, and as Dr. Walter mentioned, the SEP-1 measure is consistent with the Surviving Sepsis Campaign guidelines. From our policy aim, our intention is to improve sepsis care nationally, and we believe we can do that by encouraging all providers to try to provide the most up to date evidence, and we believe that the measure supports the most update evidence in caring for septic patients.

Candace Jackson: And, with that, Dr. Tefera would you like to add any additional comments as we conclude today's presentation?

Lameneh Tefera: Thanks Candace. Going along from the last question, to keep things in context, we have approximately a million cases of sepsis per year. Mortality rate varies from 20 to 40 percent. And, with the introduction of this new SEP-1 measure, we completed a gap in our measures in CMS where prior to SEP-1, there was no quality measure in the inpatient quality reporting system. I'd like to thank Dr. Walter and the SSM health team for reviewing their response to this new measure and showing how, at the local level, work flows can be modified to accommodate the measure. And, to five states and 19 hospitals, they've also discussed how bidirectional learning can help the institutions, the providers and the staff respond to this new measure. Regarding SEP-1, it took approximately eight years to get to the point where we now have it in IQR. Now that the measure is in the inpatient quality reporting system, this is just the beginning, we are hopeful that the measure will drive sepsis care improvement nationally. But, now we're in the maintenance phase. We continue to encourage all stake holders to give us feedback, which folks can do on *QualityNet*, and as evidence by the updates on 5.0b that Bob

Dickerson mentioned. When we receive feedback from stake holders, we review them, we respond, and we update the specifications to make them less onerous, and again, so we can work together to get to the shared desire of improving care. And, I'll leave at that point that CMS will need to have a shared goal with providers and hospitals nationally, to decrease sepsis mortality and improve sepsis care, and we're hopeful that this new measure will do that.

Candace Jackson: Thank you Dr. Tefera. And again, we'd like to thank Dr. Walter and the SSM Health team and Bob Dickerson for presenting this information for you today. We hope that you have found this information valuable and beneficial. And, we hope that you have– the rest of the day is a good day. Thank you very much.

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