**Operator:**

It is now my pleasure to turn today's program over to Liz Olson with the American Heart Association. The floor is yours.

**Liz Olson:**

Thanks, Ginneen. On behalf of the American Heart Association and Get With The Guidelines: Resuscitation, I'd like to welcome you all to today's webinar, “Get With The Guidelines-Resuscitation 2017 Measures Webinar: Review of Pediatric, Neonatal, and Newly Born.” My name is Liz Olson, and I'm the program manager for Get With The Guidelines-Resuscitation and Heart Failure. On today's webinar, we're excited to introduce the updates made to the 2017 Get With The Guidelines-Resuscitation measures. The focus of this webinar will be on the changes in the patient management tool and a review of the science behind the measure changes for the pediatric, neonatal/infant populations and our addition of newly born patient population. A review of all measure changes will be touched upon during this webinar. However, for detailed information into the measure changes for the adult patient population, we invite you to the recording of our May 16 webinar, “Measure Changes Overview,” which will be available on our webinars page at heart.org/quality here in just a few days.

Today's presentation is designed to offer an opportunity for Q&A with our speakers, and we encourage your feedback and participation in this event. You can submit questions by using the “Q&A” button in the lower corner of your screen. As I mentioned, a recording of today's webinar will be made available on the American Heart Association website, heart.org/quality. It's my pleasure to now introduce our speakers for today. Dr. Elizabeth Foglia performs clinical research related to neonatal resuscitation. She studies innovative methods to monitor and optimize delivery room management for extremely pre-term infants. Dr. Foglia is the director of Neonatal Resuscitation and Simulation at the hospital of the University of Pennsylvania. She's a hospital-based neonatal resuscitation program instructor, a member of the American Heart Association Get With The Guidelines-Resuscitation Pediatric Taskforce, and a member of the ILCOR Neonatal Delegation. Dr. Vinay Nadkarni is chair of the Get With The Guidelines-Resuscitation clinical work group and is endowed chair of the Critical Care Medicine, director of the Center for Simulation, Advanced Education and Innovation at the Children's Hospital of Philadelphia, and associate director of the Center for Resuscitation Science at the University of Pennsylvania Perelman School of Medicine. He’s an internationally-recognized physician scientist with a long-standing commitment to discovery, translation and implementation of shock trauma and resuscitation science. To present the updates to the patient management tool and recognition program, we will hear from Christina Sterzing, healthcare quality informatics analyst for Quality and Health IT for the American Heart Association. And to moderate our question and answer session, we'll be hearing from Tanya Lane Truitt, senior manager, QSI Programs and Operations for Resuscitation and Heart Failure Get With The Guidelines. It's now my pleasure to turn today's webinar over to our first presenter, Dr. Vinay Nadkarni. Dr. Nadkarni, the floor is yours.
 **Vinay Nadkarni, MD.:**

Thank you, Liz. And welcome, everybody. We have more than 100 people on the webinar, and it's really a pleasure to sort of discuss the measures that we're going to be talking about. But I wanted just to start by reviewing that the core principles of Get With The Guidelines is really the focus on quality improvement and measuring and getting better. We recognize that data drives change, and these award measures are really trying to take leading practices, sharing it across the networks of hospitals, and then getting people to concentrate on those few things that really seem to make a difference and distinguish hospitals that are achieving sort of high levels of performance from those that are sort of just sort of working hard, getting better, but not quite making it to the level of expert. And we're all learning from each other, so we're all continuously trying to learn. The Get With The Guidelines program has the bronze program, when you're achieving more than 85% or more of compliance with all of the Get With The Guidelines achievement measures for a year. And then, if you sustain that for more than a year, you can move to the silver level and, for more than two years, to the gold level. So it's really sort of this progressive achievement, if you will. And when we think about the metrics, the metrics vary a little bit between the adult, the pediatric, the neonate, and the newly born, but they're mostly congruent with each other. And this webinar is intended to kind of tease out those few things that are different as well as emphasize those things that are the same across the award programs.

When we think about some of the key things, I want to take a moment first just to clarify how Get With The Guidelines is now defining the patient populations. As you know, those that are greater than or equal to 18 years at the time of the cardiac arrest event, those are considered adults. For purposes of the registry, children or pediatric population refers to those that are less than 18 but now older than -- greater than or equal to one year at the time of their cardiopulmonary arrest event. And we're calling neonates/infant those who are between 24 hours and one year of age. And those of you that have been with us for a while remember when we used to call this those that were less than two years of age. But because we're recognizing -- and Liz will be going over some of the newly born achievement targets -- we recognize that the newly borns, those that are less than 24 hours of age at the time of a cardiac arrest event, are a very special population that might need some different targets. So they've been separated out this time. So I hope you'll bear with us as we change a little bit the definitions but seek to improve them so they focus more tightly on those things that need to be done for the given age populations. You don't have to memorize or remember all the details of this. If you go to the “Files” section of today's webinar or access online to the Get With The Guidelines-Resuscitation, you can access the Recognition Measures Guide. And all of the content of today's webinar, and always available to you, are these sort of reminders, and including all of the details on the slide. Tanya or Liz, how else can they access today's slides or today’s information? Is that the best way, through the “Files” section and online?

**Speaker:**

Yes, you can access today's presentation in a PDF in the “Files” section of the webinar in the lower left-hand corner of your screen.

**Vinay Nadkarni, MD:**

Great. And if you're not sure, or if you’re having trouble with that, just put in the question section -- you can write in, and Liz or Tanya will help you find that.

So let's just take a quick crosswalk of the measure changes. And brace yourself -- this is going to be a very complicated slide that we're going to go through piece by piece, so hang in there with us. So what we wanted to do was to give you for your reference later a crosswalk. Now, this is for the pediatric measures first. We’re going to sort of dissect them apart. So for pediatric measures, it tells you what the current measure is in that left-hand column, right along here. And then, in the middle, it tells you if there's a new measure, the wording of the new measure. And then, on the right-hand side, it's the change notes. It tells you kind of what changed. So for instance, really, for this first measure, the device confirmation of correct endotracheal tube placement, the wording of how the measure is worded is really what changed. And the name and data element to support this measure were updated to more accurately reflect current terminology. So it's not a big change in the measure; it's just the way it's worded. And if we look at the second measure, time to first chest compression less than one minute in pediatric patients, you can see that that one really didn't change at all. So let's start walking through these one by one.

This next page is just to show you that we did the same thing for the neonate/infant measures, crosswalk, telling you what was, how it's worded now, and why or how it changed or didn't change. And then the third element is the newly borns, again, the same. Left-hand column is the current measure. Well, we don't really have them for the newly born. Now the new measures as they're stated, and then the change notes. And so let's walk through them -- and we did give you the adults, as well. But let's start walking through them in a much more readable and understandable fashion.

Let's start with the pediatric and the neonate/infant. These measures are the same. So the time to first chest compression less than or equal to one minute in pediatric patients, measured by the percent of events where time to first chest compression is less than or equal to one minute. This really represents no change of the new measure, and it's still a very important measure because we recognize that the no-flow time, or time when there's no blood flow going to the heart and brain, is really essential, really important that this is started rapidly. The Guidelines for Basic Life Support for the Healthcare Providers for either one or two rescuers recommend that we begin cycles of compressions and breaths if no pulse is felt within ten seconds of an unresponsive child. So the guidelines tell us that we should be doing -- we should be initiating chest compressions rapidly. And we know that even short durations between the onset of cardiac arrest and the start of chest compressions is associated with poorer survival and neurologic outcomes. Most of that information comes from the out-of-hospital setting, where every minute without adequate chest compressions decreases chances of survival by five to ten percent. And we extrapolate that to the in-hospital environment to say yes, we should be on there fast, we can measure it, and it is, indeed, a performance measure. And we provide for you in the background the important literature that supports this.

When we look at the second important achievement measure, the time to intravenous or interosseous epinephrine less than or equal to five minutes for non-shockable rhythms of asystole or pulseless electrical activity is measured as a percent of events in pediatric patients where time to epinephrine was less than or equal to five minutes of asystole or pulseless electrical activity. Now, this measure was promoted from a quality measure to an achievement measure and now replaces the time to first shock less than or equal to two minutes in VF/pulseless VT first documented rhythm. Why was that changed? It was changed a lot based on your feedback that many pediatric centers didn’t have a shockable rhythm event in their hospitals over the time period of the award measures, and thus they sometimes were meeting all of the other measures but were unable to meet the measure because they just didn't have a VF/pulseless VT event. In addition, there is new data that the time to IV/IO epinephrine is associated with outcome. So when we look at it a little more carefully, the 2015 guidelines say, and continue to say from 2010, that administering epinephrine every three to five minutes during pediatric cardiac arrest as initial pharmacologic treatment in patients or asystole or pulseless electrical activity is important. And that was a class 1-B recommendation. So it's in there for us. It's a potent vasoconstrictor, it's an inotrope, it raises the coronary perfusion pressure, and there were studies that showed that this dose of epinephrine was better than no epinephrine or high dose epinephrine in the in-hospital setting. What's very interesting and important is that since the publication of the AHA guidelines in 2015, there's even more data. Here's what was available in 2015. But Lars Anderson reviewed the Get With The Guidelines registry, from our own registry, and looked at time intervals for asystole and PEA patients and discovered that for each minute that epinephrine was delayed, there was about a three percent drop-off in survival. And when we looked at a cutoff of less than five minutes versus greater than five minutes for that first dose of epinephrine, there was a 21 percent survival compared to a 31 percent survival, less than versus greater than, so that it was better to give the epinephrine in less than five minutes. And that held true for return of spontaneous circulation, survival to 24 hours, survival to hospital discharge, and, indeed, survival with intact neurologic function. So from this data, the performance measure, the quality and achievement measure of time to epinephrine of less than or equal to five minutes for the pediatric and neonatal population, has emerged. And so we're putting more emphasis on it and less emphasis on the time to shock.

Now let's talk about the percent pulseless cardiac arrests occurring in an ICU setting. The changes for 2017 are that this measure was promoted from a reporting measure to an achievement measure. And it replaces the percent pulseless cardiac events monitored and witnessed, which didn't seem to be quite as helpful, and so many were achieving that it didn't seem to distinguish those who were doing really above and beyond. What we also know is that for this measure having the arrest occur in the ICU rather than on the wards is associated with better outcome. So cardiac arrest should occur in an ICU setting versus ward setting, as rates of ROSC are increased in these patients. What we also know is that with Medical Emergency Teams or Rapid Response Teams, the early identification of patients, moving them to a more intense setting with higher trained personnel, appears to improve survival outcomes. And so there's an emphasis on moving this into the achievement level and trying to facilitate that. And the data for that really comes from these seminal studies that are being projected now and are in and available to you for download.

Now, next, we want to move to the newly born population. And what I'm going to do is now switch over and give control to Liz Foglia, who's going to walk us through those measures.

**Elizabeth Foglia, MD:**

Great, thanks so much, Vinay. So the first thing I want to do is just to explain the rationale behind the newly born population. Previously, all newborns and neonates were grouped together and really included infants and young children up to the age of two. The reason for this new population is just a growing recognition that the physiology and pathophysiology of infants who require resuscitation immediately after birth is often very different than infants and neonates who are already in an ICU setting, and moreover, the NRP guidelines that guide our resuscitative efforts in the delivery room, while they're often very consistent with pediatric events like support guidelines, in some ways have their own unique nuances. So the first I'll do is just highlight the next measure, and for this measure, this is actually the fourth measure for pediatric, neonate/infant, and it also pertains to the newly born. So the newly born pediatric neonate measure is confirmation of airway device placement in the trachea. And this would be defined as the percent of CPA events in pediatric, neonate/infant, or newly born patients who have confirmation of airway device placement in the trachea. Again, as Vinay mentioned at the beginning, this was really more of a change to the wording of the measure. And the biggest change was that the measure was updated to include patients who already have a device in place prior to the arrest such that -- this was in response to some feedback we'd gotten from sites that all of their patients already had an airway device in place and thus were not eligible for confirmation of a newly placed device. So the name and data element now support this measure to reflect the terminology. And again, it includes patients who have a device placed during the event or who already had a device in place at the event.

Again, this was just a change more in the wording and terminology, but we re-emphasized the rationale for the guideline, which is that we know that continuous waveform capnography is recommended, in addition to clinical assessment, as the most reliable measure of confirming the correct placement of an endotracheal tube or advanced airway. However, in situations where waveform capnography is not available, other colorimetric or nonwaveform exhaled CO2 detectors would be appropriate as methods to confirm airway device placement in the trachea. This is just a bit more about the rationale, again, emphasizing that waveform capnography is really the gold standard in this regard. And finally, we’ve provided some literature that supports this recommendation and the rationale for the recommendations.

The next three measures I'm going to discuss only pertain to the newly born. So again, this would be infants – really, at time of birth is what we're trying to capture here. And the way that it's defined within the database would be infants in the first 24 hours of life. So the first measure for this new newly born category is time to positive pressure ventilation occurring in less than one minute from initial CPA recognition. This is defined as the percent of newly born CPA events in newly born infants who are less than 24 hours old where the positive pressure ventilation occurs within one minute of event recognition. All of these measures you could think of as changes because this is a new population. So at this point, we're really trying to move some of the measures that were in place for other populations and redefine them for the newly born. So this is very similar to the previous measure of time to first assisted ventilation within one minute quality measure. And by and large, this would include both noninvasive positive pressure ventilation as well as positive pressure ventilation given via invasive airways.

As far as the recommendation goes, we know that the AHA and AAP Neonatal Resuscitation Program, or NRP, recommends positive pressure ventilation for infants who remain are either gasping or apneic or have heart rate of less than 100 after 30 seconds of providing initial steps of warmth, drying and stimulating. And as far as the rationale for this, again, just to emphasize that positive pressure ventilation is really the cornerstone of neonatal resuscitation. So emphasized and really taken our cues from the NRP algorithm here, which is again to state that the initial steps in stabilization should occur first, but soon thereafter, for infants who remain bradycardic, positive pressure ventilation should be initiated within one minute. And after positive pressure ventilation is initiated, only then would chest compressions be initiated. And again, here's some of the literature supporting this rationale.

The next measure I'll discuss is again for the newly born, and this is that advanced airway should be placed prior to the initiation of chest compressions. This would be defined as the percent of CPA events in newly born infants who are less than 24 hours old who have either an advanced airway, which would either be an LMA or an endotracheal tube or tracheostomy tube, placed prior to initiation of chest compressions. In this situation, the major change that we made with regards to previous measures was instead of basing that time to invasive airway as far as a time-based end point, here we're looking at the sequence, that the important portion of this is that the advanced airway needs to be placed prior to the initiation of chest compressions. And again, the major recommendation and rationale for this is that the 2015 NRP guideline -- and I'll show that shortly -- recommends the placement of an advanced airway, again, either LMA or endotracheal tube, prior to the start of chest compressions. I don't want to belabor those points, but here is that – let me just move on to the next slide. So here, it’s a bit fuzzy, but we can see in the blue box, as we move down the neonatal resuscitation program algorithm, that PPB should be initiated soon, within one minute of birth for the bradycardic infant; that corrective ventilation steps should be taken if the infant is persistently bradycardic; and finally, if the heart rate remains less than 60, here in the blue box – and I recognize this doesn't transmit very well on this screen, so I'll read it -- it says intubate if not already done. And then we initiate chest compression, which are coordinated with PTB. And again, we've referenced some of the background reading.

The last measure I’ll discuss for the newly born has to do with monitoring during resuscitation. And the measure is pulse oximetry in place prior to the initiation of chest compressions, defined as percent of CPA events in the newly born patients where pulse oximetry was in place prior to the initiation of chest compressions. This again is a new measure for the newly born infants. The 2010 NRP guidelines had included and introduced the use of pulse oximetry for oxygen monitoring; however, NRP also states that this monitor can provide a continuous and objective heart rate assessment during newborn resuscitation. So as a recommendation, instead of objective monitoring heart rate, is that either pulse oximetry or ECG should be in place prior to the initiation of chest compressions. Again, here are just the initial steps stating, again, that the initial steps to resuscitation are stabilization, positive pressure ventilation, followed by chest compressions, understanding that the heart rate assessment is the most important assessment that helps providers understand whether or not the infant is responding to these resuscitative efforts. The goal here is to have a reliable and objective method of assessing that heart rate throughout resuscitation. We know from studies that pulse oximetry can give a fast and accurate reading of heart rate. More recently, ECG has started to be introduced as an additional consideration for monitoring the heart rate during resuscitation. And so for this measure, we stated it in terms of pulse oximetry, but really the recommendation would be to have a method of continuous and reliable heart rate assessment with either pulse oximetry or ECG during resuscitation of the newly born at birth.

I'm now going to pass over to Christina to go through the actual logistics of what this means for the PMT.

**Vinay Nadkarni, MD:**

Liz, before you do that, could I just ask you, on the pulse oximetry versus ECG, for the performance measure, is it just pulse oximetry that counts, or is it pulse oximetry or ECG?

**Elizabeth Foglia, MD:**

That's a good question, Vinay. Tanya, can you weigh in in terms of how this is counted for the recognition measure, please?

**Tanya Lane Truitt:**

Sorry about that. I was on mute. Actually, can we -- if we could go on through the explanation with Christina, I think she'll cover most of that and be able to answer everybody's questions a little bit clearer with the actual visual associated with it.

**Vinay Nadkarni, MD:**

Okay. Great. Thanks.

**Christina Sterzing:**

All right. Thanks, everyone. So if you attended the first webinar, some of this will seem very familiar to you because much of the changes on the PMT that I'm covering right now are the same as what we covered in the first webinar. But it's good to repeat that, and for those of you that did not attend the first webinar, this will be good information for you as you're doing either abstraction or pulling reports in the PMT.

So today, what I'm going to cover is where to find the recognition measures, as well as the new logic and rationale statements. And you'll also be able to understand the CRF changes which support the measure changes. Then we will look at the recognition program options with regard to the confirmation of airway device measure, and then we will go through the impact to the data entry that was changed in the CRF to support the confirmation of airway device measure. And then we'll also look at the timeline for the non-recognition measure changes.

When you are looking for the recognition measure changes, you'll go into “Configurable Measure Reports,” and you'll see under “Recognition” that each of the recognition measures is now grouped by their populations. And you'll be able to pull a recognition group or bundle under each of the populations, or you can select each measure individually. Then, also in “Configurable Measure Reports,” you'll see the new logic and rationale statement under the measure descriptions. So this is a new feature that we added this year with the measure descriptions which will outline the logic and rationale for our recognition measures.

With regard to the CRF updates, we had some changes to the CPA and CPA Newly Born forms, and both of the forms changed similarly, so we can talk about them in tandem. But the reason we made these changes was to support the confirmation of airway device placement in trachea recognition measures, so we'll talk a little bit more about that. The measure was also updated to include patients who had a device in place prior to the arrest event, as measuring airway device confirmation is important in this group as well. And Dr. Foglia mentioned that previously. So updates were made to the data element under section 2.3, Interventions in Place Prior to the Event. So if you select “Endotracheal tube” or “Tracheostomy tube” under section 2.3, you will now be required to select a method of confirmation under section 4.3. We'll look at some screen shots so you understand where this takes place. And again, just to reiterate that these changes took place both in the standard CPA form and also the CPA Newly Born form, and those changes are the same in both forms. And I have a screen shot here for you to see what those changes are. So what we're looking at here is under section 2.3, Interventions Already in Place, under Invasive Assisted Ventilation, you may select “Endotracheal tube” and/or “Tracheostomy tube.” If you do that in section 2.3, you will now be required to select a method of confirmation under section 4.3, which is on the “Defibrillation” tab. If you do not select a method of confirmation, you will get an error message to remind you to complete that information.

On this slide, we're looking at additional information for this correct airway device placement measure. So as a reminder, each population has this particular measure as part of the recognition program. It has replaced the device confirmation of correct endotracheal tube placement measure. What changed within this measure mainly is that we are now requiring, as I mentioned before, indication of the method of confirmation for airway devices in place prior to the event. It also includes -- we did not remove the requirement for devices that were placed or replaced during the event, so that is still required. We just added prior to the event. So as you are looking for documentation during the transition of now having to indicate the method of confirmation for ET or trach tubes prior to the event, you may check your nurse, respiratory therapist, or physician notes for documentation of this method.

So because of this change to the confirmation of airway device placement measure, we did take into consideration that, because this is a recognition measure, we would need to allow for a bit of a transition period. So 2017 is a transition year for this measure, meaning that, with automated awards, AHA will use whichever is higher, using either the new logic or the old logic. However, by 2018, sites will need to be fully transitioned to this new measure. And keep in mind that the transition period is for the airway device confirmation measures only. Hospitals will be able to qualify for recognition in all patient populations by using the old or new airway device confirmation measure in 2017. And as a reminder, please review the Recognition Guide, which is provided as a handout on this webinar. It was also sent out via email a few weeks ago, before the measure changes were made in the PMT.

As you are checking the old or new measure logic for this confirmation of airway device measure, if you wanted to look at the old measure logic, you will be able to go down to the historic measure, then select the device confirmation of correct endotracheal tube placement, and then you'll select the pediatric, neonate, or newly born populations to filter for the measure. Again, this is the old measure logic. If you're using the new measure logic, you would run that report through the recognition measure dropdown.

So the impact to data entry here is that you will need to make sure that you've gone back to all of your records with a core date on or after January 1st, 2017, to ensure that you have entered a method of confirmation if an endotracheal or tracheostomy tube was placed or replaced during the event and also prior to the event. So what we're going to look at next is how to ensure proper data entry. We found that the easiest way to review your patient records from January 1st, 2017, to the present date is to run your Confirmation of Airway Device Recognition Measure report in the Configurable Measure Reports. So let's take a look at these steps here. You'll go into “Configurable Measure Reports” and select your time period. And make sure your date range begins with January 1st, 2017. Then go to “Recognition Measures” and select “CPA confirmation of airway device placement in trachea,” and make sure you change your format from bar chart to patient records. We want to select patient records so that we're looking at each record that plays into this report instead of just the bar chart that gives you your compliance percentage. So then we'll review the patient records for accurate data entry. So these steps here on this slide will be good for after the webinar, when you're doing this step-by-step. We'll look at the next slide so you can see the screen shots that go along with these steps. And as always, if you have any trouble running this report after this webinar, please reach out to either your field staff contact, or you can call the quintiles help desk for assistance.

So in this screen shot here, I'm showing you how to set your filters so that you're looking at the correct records that are affected. So what you want to do is click on “Show Filters” first, then go to the “CPA Endotracheal Tube” column and change that filter to "checked." I have that highlighted in yellow here on the screen, in the middle. And then, on the very right, highlighted in yellow, under “Method of Confirmation,” you'll change the filter so that it is blank. This is a little confusing because you want to make sure that you are checking your filter that is the blank filter, not just leaving that filter unchanged. So this, after you select those filters, this is the list that's going to require that you go back and enter a method of confirmation. So basically, this list, when you have set your filters, will give you all the patient records where an ET tube or trach tube was checked prior to the event, then those that did not have a method of confirmation checked. So once you have that list, you'll go back and be able to enter in a method of confirmation. So a couple ways you can work from this list is you can either export this list and save it so that you have all the patient IDs to look up for future reference, or you can click on the patient record directly within that report to take you into that record to edit the information. Keep in mind you'll want to go through those steps 1 through 7 again that I mentioned before and set your filter for the tracheostomy tube so that you can also look at those records where a tracheostomy tube was in place prior to the event. And again, this gives you your list of patients, where you'll need to enter your method of confirmation. So as I mentioned before, you can either click right in the record on the patient ID, which will open up that patient's record, and you can make your changes there, or you can export to Excel or CSV and save that for future reference to go in later and look up each of those records.

Finally, the last thing I wanted to cover was just a mention of all of the measure changes will need -- I'm sorry. All of the measures will need to be changed because we updated our populations. So the quality reporting and descriptive measures will be updated, and changes are coming later this year. And we'll have more information about that exact date, which will be sent out to you via email as we identify that date. Thank you. I believe that was it, and we are going on to questions. So if we could have a little note about how the audience can ask questions as a reminder, that would be great.

**Operator:**

Thank you. As a reminder, if you would like to ask a question, please click on the green “Q&A” button in the lower left-hand corner of your screen, type your question in the open area, and click submit. I'll turn it back for your Q&A session.

**Tanya Lane Truitt:**

So before we begin, actually, with the questions and answers, I do want to clarify one point that was made earlier. So the newly born has two requirements, and one of them was a requirement of age – so have to be less than 24 hours old -- but the second requirement for newly born is that it has to be at time of birth. So keep that in mind. It's actually -- that's a pre-existing question that's been in the database now for a while. So you actually answer the question, did this event -- I'm probably misquoting the exact wording -- but something along the line of, did this event occur at birth? And if you click yes, then it opens up the newly born form. All other forms are together, and there's just data or questions that are skipped because of the age of the patient or other questions that were answered differently. So I just wanted to clarify that point before we get started. And the first question, Dr. Nadkarni, would you please explain the rationale for why epi is not -- given by ET tube is not acceptable?

**Vinay Nadkarni, MD:**

Yes. And just a reminder that it’s the time to EPI -- and we're talking about IV or IO epi, intravenous or interosseous epi -- less than five minutes are the performance or the achievement measure that we're looking for. And the reason that endotracheal tube epinephrine was downgraded or taken out of the recommendations in the guidelines was really because of its unreliable absorption, that it was very difficult to sort of quantify the response you got from an endotracheal dose of epinephrine. It was very much more variable and less reliably delivered than the intravenous or intraosseous form. There were minor findings that some intense vasoconstriction in the lungs and the pulmonary vasculature could occur with high doses of endotracheal epi, but the main driving force was the reliability of delivery with IV or IO epi in less than five minutes.

**Tanya Lane Truitt:**

Thank you. Dr. Foglia, can you address the question, “At what age does NRP end and PALS takes over?” The question goes on to say, “My understanding is that NRP is mainly for the delivery room, but the NICUs continue to use the guidelines in lieu of PALS, no matter how old the baby is.” Can you address this?

**Elizabeth Foglia, MD:**

Yep, that's a really great question, and I would say that's a really active topic for a lot of providers right now. So when NRP was designed, and the way that it’s conceived, it certainly addresses problems to do with delivery and neonatal transition. That said, the NRP guidelines, if you read them, actually state those guidelines and those recommendations can continue to be used for resuscitative efforts for infants until they're discharged home. So many NICUs are in a situation where they're still applying NRP guidelines to infants who have been admitted to the NICU. That's possibly okay, and frankly, we don't have great data to say whether it is or isn't okay for infants who are weeks to maybe a month old. However – and this is especially true among children’s hospitals -- we're now in a situation where infants could be up to six, nine months old and still having arrests in the NICU. And the question then becomes, is it really appropriate to be using NRP, or at what point should you move to PALS? We haven't directly taken a stance on this with these measures. The reason that we broke the populations down the way we did was to say that we recognized that the sort of interventions and the sorts of things that should be in place for the newly born infant, all of those measures are consistent with NRP, and they directly address issues that have to do with the specific environment of the delivery room setting and the specific patient population of the newly born. If you look at the measures that we're applying for neonates and infants, again, we're not necessarily saying follow PALS. What we’re saying is, these are the guidelines based on recommendations and data that exist for older children. So I think, without necessarily saying -- because I don't think anyone could say at this point exactly when NRP should stop and PALS should start. What we've tried to do with these recognition measures and guidelines is to say, let's focus on guidelines that are most appropriate based on the location and the age of the infant, without necessarily saying it has to be NRP or it has to be PALS.

**Tanya Lane Truitt:**

So the next question is, “How do you recommend these measures, or any documentation, be documented when a baby is less than one minute old?” In the neonatal or in the newly born world, do we do it by seconds, Dr. Foglia? What's your experience with it? We know what we have to document -- the database is by minutes. That's all we've got. But what is your experience in the practical world?

**Elizabeth Foglia, MD:**

In the practical world, I can say that, again, documentation in the delivery room setting is something that a lot of hospitals handle differently. Certainly, the first thing I'll say is that having someone who's role it is to document it is very important, and every hospital is going to operationalize it differently. That could be a labor and delivery nurse. That could be a nurse who is responsible for the newborn. Again, whatever makes the most sense in your environment. But one thing to think through in terms of documentation is having a way to document the sequence of events rather than specifically the time relative to a clock, because this then allows to you get at those nuances of interventions that may be performed within 30 or 60 seconds of each other to justify and to ensure that the sequence of events is happening in the proper order.

**Tanya Lane Truitt:**

Great. Thank you. Christina, there's a couple of questions about the different forms. Can you possibly go back through and explain that about the newly born form versus the form, the CRF that is used for adult, pediatric, and infant/neonate?

**Christina Sterzing:**

Sure. Just so I'm answering the question exactly what they're wanting to know, which question this?

**Tanya Lane Truitt:**

16.

**Christina Sterzing:**

So the question is, “I see there is a new PMT for the newly born group. Will we be using the CPA CRF tool for adult, pediatric, and neonate?” So the newly born form is not new. We've had this form, I think, since October 2013. It was called the neonatal CPA form, I believe. We changed the name to reflect the population name change. So this newly born CPA form is to be used only on the newly born infant, and it applies specifically to CPA events in infants at the time of birth. So that newly born population will be entered in to the newly born CPA form. And then, if the infant has subsequent CPA events later, after that time of birth time frame but during the same admission, they will use the CPA standard form. So the CPA standard form would cover the adult, pediatric, and neonate/infant population groups.

**Tanya Lane Truitt:**

Thank you. Dr. Nadkarni, can you please review again why it is important that we do continuous end tidal CO2 monitoring or ET tube device monitoring on our patients and not just -- when we just place endotracheal tube, but why we're now doing that at all codes, regardless of when the tube was placed prior to the event or during the event?

**Vinay Nadkarni, MD:**

Sure. And let's differentiate those a little bit more. So the key thing is that during a cardiac arrest, during a cardiac arrest in a newborn, an infant, a pediatric patient, even in an adult, during that cardiac arrest, if you have a tracheal tube in place, you want to confirm that it's in the correct place and that, with chest compressions, that you are generating exhaled CO2. And so even if that patient -- like the question asks, like even 21 minutes beforehand, if you had already documented it during a cardiac arrest and then it goes into another event, you still need to make sure that tube is in place and working. So you would want to again expect documentation of exhaled CO2. So that's to confirm tracheal tube placement. That's really what we're talking about in every event where a cardiac arrest or a new cardiac arrest occurs, even if they already had a tracheal tube in place. In addition to that, not currently a performance measure, we would be -- not currently an achievement measure, we would like people to also use the capnography, or the exhaled CO2, as a measure of their cardiac output, as a measure of their chest compression efficiency. But the achievement measure focuses that each and every time a new cardiac arrest is identified, whether they have an existing tracheal tube or a new tracheal tube placed, we expect people to confirm that with secondary confirmation, in this case, carbon dioxide. Did that do it, Tanya?

**Tanya Lane Truitt:**

Yes. Thank you very much. Okay. I think – we have a little bit more time, but we don’t have any – oh, actually more just came in, so there you go. “Is there a prototype for newly born CPA form?” I’m sorry --

**Speaker:**

I think they might be asking -- I'm wondering if they're asking for like the blank CRF, paper CRF. So if that's the question, you can find it in either the PMT under “Print blank forms,” or, if you go to heart.org/resuscitation and then click on the patient management tool icon, you'll see a neonate CPA data collection form link on that page. I did respond privately to that person with a link, so they can click directly on there, as well.

**Tanya Lane Truitt:**

Great. All right. Seeing that there's no additional questions, if do you have additional questions typed in that for some reason didn't come through, then we will answer them following. But otherwise, I'll turn it back over to you, Liz.

**Liz Olson:**

Great. Thanks. So I'd like to thank all of our presenters for leading us in today's webinar. Thank you to our attendees for your participation and all of your great questions. A quick reminder, if you'd like to hear more about the changes made to the adult population measures in detail, you can view our May 16 webinar, which will be available soon on heart.org/quality. In the next week, a recording of today’s webinar and presentation slides will be available on the American Heart Association website, heart.org/quality. We'll also be emailing you a brief survey to gather your feedback on today's webinar. Thank you again, and have a great day.

**Operator:**

Again, thank you to all our participant for joining us today. We hope you found this presentation informative. This concludes our program, and you may now disconnect.