TRANSCRIPT

The Implications of COVID-19 on Patient Care and Provider Safety

Heather Alger: 00:06 Thank you for tuning in today to hear from a panel of distinguished volunteers to discuss COVID-19 considerations for resuscitation. I'm Heather Alger, National Director of Research Bioinformatics at the American Heart Association and with me today is Dr. Dana Edelson, a hospitalist and Executive Medical Director for Rescue Care at the University of Chicago and co-founder of AgileMD, a clinical decision support, and predictive analytics startup. She's also the Chair of the American Heart Association's Get With the Guidelines adult research task force. Dr. Gustavo Flores is a volunteer member of First Response EMS in Puerto Rico. He has served as an AHA ECC volunteer for many years. Dr. Vinay Nadkarni is a pediatric critical care physician at the University of Pennsylvania, Perelman School of Medicine and Children's Hospital of Philadelphia. He has previously served as a volunteer Chair of the American Heart Association ECC and of Elcore.

Heather Alger: 01:04 American Heart Association has received many questions from health care providers just like you on resuscitation issues emerging in the COVID-19 pandemic era. Thank you so much for joining us today for this opportunity to discuss these important questions. Let's jump right into the questions that we've received. The first is, in an effort to limit exposure and conserve PPE, several hospitals are currently evaluating the number of team members that are in a room during a resuscitation for COVID and keeping other members of the team outside of the room. What are other hospitals currently doing? And Dr. Edelson, I'll leave that one to you.

Dr. Dana Edelso...: 01:46 Sure, thanks for having me. Happy to answer that question, it's a great one. Obviously the best way to protect rescuers is to avoid exposure entirely. So, if you're not essential you should not be in the room.

The question of who's essential, though, is a difficult and a moving target. And I will say that historically this is very different in the in-hospital setting than it is on the out-of-hospital setting. In the in-hospital setting, we often struggle with way too many people and crowd control, particularly when you call things overhead and everyone comes running. And so even just getting to a manageable number is a huge win for us. I will say that probably before COVID it was not unusual to have to be pushing people out the door and to have upwards of 10, 15 people in a room.

Dr. Dana Edelso...: 02:41

In the COVID era, we need to be much more careful about it. We probably should have been more careful about this before. I'll say that we need folks at the airway, so probably before intubation, you need one to two people at the airway. Chest compressions, we still need to deliver high-quality chest compressions and people still fatigue. So you need two to three people rotating on chest compressions. And then you need somebody running a code. You need somebody administering medications. And most everything else can be left outside. I'll say in our hospital we leave the pharmacist outside the door and the crash card stays out there. The recorder can be at the door, further away, but still needs to be in PPE to be able to watch what's going on. And for the most part, we're able to manage to keep fewer than eight people in the room.

Dr. Vinay Nadka...: 03:47

Dana, that's really important. Using choreography by doing some simulations we've been able to knock that down in some hospitals like in ours. We're also using iPads so that the code leader can actually be outside the room. And that we're keeping the code cart and some of the equipment outside of the room and only opening the door or sliding it through a window in order to minimize the risk of aerosolized particles getting out of the room and exposing other people who aren't in full PPE. Gustavo, are you doing anything different?

Dr. Gustavo Flo...: 04:27

So in the out-of-hospital environment it's difficult to limit number of people, especially if it's a public place. We definitely want to make sure that providers are number one, capable of doing the full code on-

scene so whatever it takes to be able to actually do entire ACLS on-scene may require moving the patient to a more suitable location. And that may also include the benefit of more air ventilation around so that providers are less exposed. However, we definitely need to make sure that we're also taking care of our providers on-scene and making sure they all have PPEs as well. So, other than that, non-essential personnel should be kept away.

Dr. Vinay Nadka...: 05:19 Dana, one of the things that we've started to do is we've restricted the use of the N95s and the papers. But we want the code team to be prepared, so we've created either bags or spots on each ward which have that material, but the use of that is restricted for the second, third, and fourth person in the room so that everybody doesn't have to always be in those masks. How about you guys?

Dr. Dana Edelso...: 05:48 Yeah, that's a really good suggestion and interesting point. We've gone back and forth in terms of whether to include the PPE as part of the crash cart or as a kit that goes with the crash cart. And I'll say that our position seems to change based on what the availability is and also what the stockpiling is happening behind the scenes. We find that when you leave things out, they send to go missing. And that's been one of the big concerns. So, so having them in kits that are clear kits that can only be used by the resuscitation team has actually been an interesting and exciting proposed solution to it, but I will say that we struggle in this continually.

Dr. Dana Edelso...: 06:40 There's one other piece that I would add which is, we're talking right now about confirmed COVID and PUI patients, but when we think about... Well, in the out-of-hospital setting we may not be able to know that someone isn't. In the in-hospital setting, there are definitely patients that we feel fairly confident have ruled out, are not COVID positive, have not had any other interactions. And, so when we think about how to adjust their resuscitation for the most part, while the algorithms would stay as they were before, there are some changes that we are making. And I'll say that still limiting people in the room is still really relevant to that population as well. And that's really

mostly because of social distancing purposes amongst our providers. We want to keep our providers as far away from each other as we can, also because if one of them turns out to be positive, we want to limit the exposure that the rest of the people in the room might've had.

Dr. Dana Edelso...: 07:37 Does anyone else do anything like that? Anybody, are you guys adjusting your resuscitation practices for non-COVID patients or non-PUIs?

Dr. Gustavo Flo...: 07:48 Because of community spread everybody right now it's being treated as a COVID-positive patient and all providers are wearing PPE.

Dr. Vinay Nadka...: 07:56 And in our hospital, we've had some negatives that have turned positive, so we are for the code team purposes considering everybody-

Vinay Nadkarni: 08:00 ... Positive. So we are, for the code team purposes, considering everybody Covid exposed.

Vinay Nadkarni: 08:07 But one of the things you mentioned, moving onto the next question we got, was about the use of mechanical chest compressors. You talked about limiting people going into the room and maybe limiting equipment that doesn't need to go into the room going in. A number of people have talked about using mechanical chest compressors, instead of using humans to do that. And I think we think that it's a good idea when teams are already trained and ready to do that, it's part of their usual choreography. But because of the potential exposure risk and the difficulties of learning and doing that well, the teams that are already doing that or trained up to do it, probably shouldn't just go out and buy mechanical chest compressors.

Vinay Nadkarni: 08:56 Gustavo, do you agree with that?

Gustavo E. Flor...: 08:58 Yes, absolutely. If your EMS team, your hospital care team, is already doing a pit crew CPR approach that incorporates mechanical device and you're already ... It's not only on their protocol, but it's also very well rehearsed, very well choreographed, you can certainly incorporate it, because it's adding another

barrier and limiting the exposure, and increasing high quality CPR. But the problem is that perfect implementation requires a lot of training, and when you don't do that training, your neurological outcomes will suffer. Therefore, that's why we are on the fence to recommend it, even for regular patients on a regular basis.

Heather Alger: 09:45 Great, thank you. That's some really important discussion.

Heather Alger: 09:49 We've also received a question about the use of ventilation with bag valve mask as an aerosol generating procedure, and it increases the risk, again, of healthcare provider exposure. What should providers do if there's a sudden code blue? What are some of the changes using the usual algorithm that people who are doing, to minimize the risk of Covid transmission? Dr. Edelson, you have some ideas on that?

Dr. Dana Edelso...: 10:14 Yeah, that's a great point. And so if I take a step back to just summarize the aerosol generating procedures that happen during resuscitation, there's CPR is aerosol generating, intubation, any positive pressure. So that bag mask ventilation, those are all aerosol generating procedures. And some of them are potentially worse in the moment than others. The actual moment of intubation is probably one of the highest risk things that we can do in a resuscitation. You have a rescuer in the face of a patient passing the tube. On the other hand, after intubation, when you have a cuffed tube, and you're connected to a ventilator, you actually are in a closed circuit, and that's the safest. And so there's prioritization that needs to happen around that in terms of what you can and can't do. So in the in-hospital setting, our priority is to get to intubation with a cuffed tube and a closed circuit with a filter as soon as we possibly can.

Dr. Dana Edelso...: 11:22 Gustavo, how are you dealing with this in the out-of-hospital setting?

Gustavo E. Flor...: 11:27 Well, we certainly have to begin CPR as soon as possible, so we should make sure that providers are

starting hands only CPR, before they start prepping for any advanced airway procedures. Some systems are already incorporating hands only CPR in the first few minutes. So if this patient is a presumed cardiac arrest from presume cardiac etiology, doing hands only CPR would make perfect sense from a pathophysiological standpoint. So that would give EMS providers a better opportunity to get ready, making sure that they got the right equipment, making sure that the most capable provider is ready to do the advanced airway management and obtaining first pass success. And that may take a little bit more time, but we're making sure that it's done right the first time.

Vinay Nadkarni: 12:25 And I would say that ... Dana, I don't think we can over emphasize enough, that when you decide that you need to give that ventilation, if you're giving him a bag mask, you want a tight seal, whatever technique is best to create that tight seal. And then, in addition, when we're intubating, as Gustavo said, the most experienced intubator, using the technique that works best for them, like intubators trained with video laryngoscopy, because of two reasons. One, it takes you out of the direct line of sight, so your head doesn't have to be right down by the patient's mouth. We're pausing chest compressions during that intubation event, so we're not pushing down and splashing the incubator. And then also, they're trained so that they can do it quickly with a video laryngoscope. That may not be the best technique for everybody, but knowing what your local circumstances for the best, fastest, earliest intubation, without spraying people, is what we're going to.

Dr. Dana Edelso...: 13:35 So absolutely agree. And I will say, so that's our ideal scenario, which is that we can get a tube in easily, that we have a provider that is skilled to do it and ideally is trained and knows how to use a laryngoscope, that's ideal scenario and we can do that quickly.

Dr. Dana Edelso...: 13:56 Now we all know that we don't always get to function in an ideal scenario, and there are times when there's going to be a delay to be able to intubate. And so in

those circumstances, we need to figure out what we're going to do in the interim. And so we're left with that question, "Well, do we bag mask ventilate or do we not bag mask ventilate?" And that's also going to be context specific, particularly in Covid, where a lot of these arrests tend to be hypoxic respiratory failure, it's hard to go a long period of time without any oxygenation. And so while compression only CPR is very appealing for short periods of time, because it's going to minimize aerosolization, we're not going to be able to maintain that for too long, all by itself.

Dr. Dana Edelso...: 14:55 One of the things that we've started doing at the University of Chicago as a temporizing measure, is to put people on a non-rebreather face mask, with a surgical mask over it, so that they're getting some oxygen. We don't know exactly how much air exchange is happening during CPR, but we assume that there's some. And so for short period of time, that's probably reasonable.

Dr. Dana Edelso...: 15:18 If we do need to bag mask, that is a difficult skill, it requires a lot of care, ideally someone who's well trained to do it, and potentially even two people, one to hold the mask, and another to squeeze the bag.

Dr. Dana Edelso...: 15:37 And then there's always the-

Vinay Nadkarni: 15:40 Dana, I would also say that with ...

Dr. Dana Edelso...: 15:43 Oh, go ahead.

Vinay Nadkarni: 15:44 Sorry, I was just going to say, completely agree. I think we want to reinforce, also, that those bags, when you're using the bag mask ventilation, you have a HEPA filter on the exhalation valve to try to protect the rest of the room from getting the exhaled gas. And of course, in children, ventilation.

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Speaker 1: 16:00 The exhaled gas and of course in children ventilation is probably even more important. So we're earlier to provide that bag mass ventilation with a nice tight seal and the HEPA filter in line.

Dana Edelson: 16:14 Yeah, and at least I think we cannot overemphasize that enough. Any positive pressure ventilation that we're going to give, we ideally would have a HEPA filter in line with the exhaled gas so with an ET tube, with a bag mask, with the ventilator, if available, a HEPA filter is going to cut down on the amount of virus that is dispersed into the air.

Heather Alger: 16:43 Great. That's an excellent discussion. We actually received some questions about specific patient populations. Many adults with sick lungs are being proned. What are some of the considerations for prone CPR, Dr. Vinay?

Vinay Nadkarni: 16:57 Well, I can make a quick comment on that. Yes, the cause, the technique for supporting very sick Covid patients in adults in particular involve prone positioning. The patient may already be lying face down, prone with an endotracheal tube in place. Under those conditions, the HA actually recommends class 2B prone CPR can deliver excellent pressures and is a legitimate form of CPR, so it's fine to do that. But again, remember the risk of dislodgement of the tracheal tube is an issue and it's something that should be practiced and rehearsed if it's going to be provided. Dana or Gus, do you have any other comments on the prone CPR?

Dana Edelson: 17:43 I will add the disconnection from the ventilator. So once you're on a ventilator, you have the closed circuit. Every time you open the circuit in any way, it pops up, you're spewing virus into the air. And so we want to be really careful about those disconnections. And so there are a couple of places being we're talking about the disconnection that can happen just from the CPR and you've got the patient prone and so you can't see what's happening underneath. But I'll also, if you try to turn a patient, there's a very high likelihood of disconnection, which is why it ... Particularly if the patient is adult size, it is hard to turn a patient without getting disconnected. Very small, small children you guys are probably better at flipping over without there being an issue. But in an adult population prone is probably going to be preferred for a patient who's intubated.

Dana Edelson: 18:44 Now we're also using proning earlier in these patients, so it's very possible that you will come across a patient who arrests in a prone position who's not on a ventilator. And in that case, I would flip them over because you're going to need an airway and that's just going to be to do. If you're doing CPR on a prone position on a patient who's intubated, it may be reasonable to have somebody keep an eye on or even hold the connections between the ET tube and the mechanical ventilator to prevent disconnections.

Heather Alger: 19:20 Great. Thank you. We've also received questions about the use of universal do not resuscitate and should there be a universal DNR or not for resuscitation during Covid 19 with Covid patients? Dr. Flores, would you like to speak to that?

Gustavo Flores: 19:37 Well, we stand by our mission to save patients who suffer sudden cardiac death. Therefore, we definitely want bystanders to start CPR. We certainly want EMS providers and in hospital providers to do CPR in patients who have sudden cardiac death. The discussion about do not attempt resuscitation in patients who have such a high mortality risk such as patients, Covid 19 patients, who have other comorbidities is a discussion that should start early on. Patients who are at risk of Covid and have other comorbidities that place them at a higher risk of death should definitely be having this conversation with their providers right now out of hospital or in hospital because this is a discussion that should be on record and readily available for providers that are responding to a patient who is in cardiac arrest who should be on a do not resuscitate order. So it is a highly ethical discussion and also dependent on a cultural context, but from a medical standpoint, it is something that has to be talked with patients on the best occasion, which is right now.

Heather Alger: 21:01 Great. Thank you for that context. Dr. Nadkarni or Dr. Edelson, anything to add in?

Dana Edelson: 21:08 Yeah, I guess I would say Covid 19 in and of itself is not a death sentence. 80% of people who get Covid 19 have mild disease and we're thinking there's actually a quite sizable population that actually is completely

asymptomatic. And with the community spread that we're seeing, we're going to see a lot of people who happen to have Covid 19 but actually are arresting from the stuff they would have arrested from before. And so I don't think that Covid 19 in and of itself is reason to make a decision about starting or stopping a resuscitation. There other things that we should be taking into account and we need to because we have to balance the needs of our patients against the resources that we have, which is our providers and other devices as well.

Dana Edelson: 22:13 And so it is reasonable to think about risk of, the immediate risk, and also the likelihood of success. So when we think about who's likely to have a successful resuscitation, that's going to depend on the severity of your disease in the moment, your age and some comorbidities. That's all data that we're seeing. We're a long way away I think from having really a full understanding of what the outcomes are from cardiac arrest and Covid 19 but there are certainly some things that we can see right now that increasing age and significant comorbidities do predispose to worse outcomes, but we should also be cognizant of a lot of these patients who are arresting, while there's a lot of hypoxemic respiratory failure, there's also cardiovascular ...

Dana Edelson: 23:11 There's actually a lot of arrhythmias as well and patients we know that patients who arrest even in an ICU on a ventilator with a shockable rhythm have significantly higher survival than those that aren't shockable. So I think you have to take a lot of things into context. And I would shy away from any blanket statements about resuscitation or not just based on Covid 19 status. Vinay, what's your general approach?

Vinay Nadkarni: 23:50 Totally the same. I agree. And I think we have to acknowledge that termination of resuscitation rules are going to be local and evolve over time as we understand more and more about this. I do know that several-

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Vinay Nadkarni: 24:00 ... Understand more and more about this. I do know that several centers when they'd gone into, like in New York where they have really been under siege and they've gone into this triage and sort of wartime kind of approach, they have even assembled a medical expert and an ethics expert who have participated in triage to try to help as Gustavo was saying, to predetermine which patients would be appropriate or not appropriate for resuscitation, which would be futile and which would not.

Vinay Nadkarni: 24:32 So I think that these will evolve over time. We don't have a blanket statement but on the website, at the end, we'll put up the website. As things evolve and as these termination of resuscitation rules evolve, if there is an evidence based approach, we certainly, the American Heart Association will certainly make that and disseminate that.

Dana Edelson: 24:52 I will say though that we should be very proactive about engaging patients in goals of care conversations. These are again all things we should have been doing before and COVID-19 is a good excuse to reinforce this stuff.

Dana Edelson: 25:07 When the patients come into the hospital, we should be addressing goals of care with them. Whenever there's a change in their status and we go up to a higher level of care, we should readdress it and so we should absolutely be doing that. But also as Vinay says, these policies are going to change based on resource availability and risk and data as we see it.

Dana Edelson: 25:36 But I will say that the one thing that health systems probably should be doing is they should be really clear about those policies so that frontline providers aren't making those decisions on their own without any guidance.

Dana Edelson: 25:54 If for example, an EMS system isn't, if you're not transporting patients who don't get ROSC in the field, that should be a policy that comes from the EMS system and not one that people are making on a game time decision at the front lines.

Vinay Nadkarni:	26:10	I wonder if we just switch for a moment. We're sort of coming to the end of the discussion and thinking are there... We've talked a lot about the in-hospital resuscitation quite a bit and we've gotten some questions about whether the lay person, are there going to be, is there a shift in anything that we should be doing for the lay person or asking the lay person to do that's different from our usual practice of scene safety, call 911, start chest compressions, listen to the telephone operator. Gustavo, is there anything different in that sequence or different about how cardiac arrest are going to happen around the country now?
Gustavo E. Flo...:	26:47	We want the lay person, the bystander, to start CPR as soon as possible. We certainly need to make them aware of the risk so dispatch or EMS dispatchers are informing them that they're willing to give real time instructions on a phone on how to do CPR, provided that they put some, face mask or some barrier for them and also for the patient. That would be the only recommendation.
Gustavo E. Flo...:	27:19	An AED is not an aerosol generating procedure so we really need the bystanders to do what they can for victims who have sudden cardiac arrest. A cardiac event such as this, in a public place, is likely due to a cardiac etiology. So these patients will definitely benefit from immediate bystander action,
Dana Edelson:	27:43	We should also remember that 70% of arrests occur in the house.
Vinay Nadkarni:	27:50	Even more. During the COVID era, it might even be more, right?
Dana Edelson:	27:54	Absolutely, right. With shelter in place orders, we can imagine that that's going to go up. So if you're in a household with someone who's COVID-19 positive, you're probably already been exposed and so the additional risk to you of doing CPR is potentially smaller.
Dana Edelson:	28:16	Now I will say, I say that potentially because we don't know. It's certainly possible that additional exposures, increased frequency of exposures is worse

and we'll know that in the future, but you've probably already been exposed when you're in the house.

Vinay Nadkarni: 28:35 I think we should also mention that children, for children, the recommendations really aren't very different at all because most of those times the children who are arresting in your home or in the presence of somebody they know, need rescue breathing more so initially then the adult who collapses with sudden cardiac arrest, so the emphasis on ventilation is a little higher in children.

Dana Edelson: 29:05 Great point.

Heather Alger: 29:07 Thank you both or thank you all so much. This has been very helpful information for both the clinical side as well as this last discussion on what individuals can do in their homes and their communities.

Heather Alger: 29:17 That's all we have time for today. Thank you doctors, Nadkarni Flores and Edelson for your time and expertise. We appreciate you sharing your perspectives on safely providing resuscitation to patients while protecting yourselves and your colleagues during COVID-19 pandemic.

Heather Alger: 29:33 We also want to say thank you to our audience who submitted the questions or clinical challenges that they've encountered during this time. Your shared learnings will help inform the health care community as we navigate forward together.

Heather Alger: 29:46 On behalf of the American Heart Association, thank you all.

Heather Alger: 29:50 The views expressed in this podcast do not necessarily reflect the official policy or position of the American Heart Association, the American Stroke Association, or the institutions of the speakers. For transcripts of this podcast and for more information about COVID-19 and resuscitation, please visit www.professional.heart.org/covid-19 or engage with the us on social media using the #AHACOVID19.

Heather Alger: 30:18 Thank you everyone and have a good day.

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