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Update 46 - COVID-19 – From Office of the Medical Director 01OCT2020 0800

To: All EMS Personnel in the EMS System for Metropolitan Oklahoma City & Tulsa

Key Content:

- **CPR Futile in COVID-19? – Not So Fast! – CIDRAP & JAMA Internal Medicine with a bonus featuring your hard work - Medscape**
- **Mutant SARS-CoV-2 – What Does That Mean? – The Washington Post**

CPR Futile in COVID-19? – Not So Fast! – CIDRAP & JAMA Internal Medicine with a bonus featuring your hard work - Medscape

There's nothing like starting an encouraging communication with death, is there? Well, when it's you and your colleagues applying the critical thinking and medical procedural skills you have, you know better than anyone that sudden death in metropolitan OKC or Tulsa doesn't always stay that way, does it? Exactly. So, with that "eye," let's look thoughtfully beyond this headline:

Study finds 100% death rate in COVID-19 patients after CPR

At first glance, you'd wonder why we should even start CPR. In fact, with COVID-19 rising again in Oklahoma, should we start CPR on anyone in cardiac arrest? YES! And that is the truly life-threatening danger in headlines that don't tell the real stories that follow them.

This headline, even from a typically responsible news source, CIDRAP, is misleading when applied to our patients. This article reports findings in a "research letter." Now, what is a research letter? Well, it's not completely trash science, but it isn't science that undergoes rigorous peer review and then is reported in a typical format of an "introduction" to the topic, how the study was performed (the "methods" of data analysis), the "results" of the study, a "discussion" about what the results mean, often what they mean applied in the practice of medicine – in our case, the practice of EMS Medicine, and then a note of any "limitations" (aka complicating factors that might limit how accurate the study results are) the researchers encountered. A research letter (think of it as a "letter to the editor" of a medical journal) may contain multiple elements of a traditional study manuscript, but often in shorthand and it's not as subject to peer review in most publications. So, not junk per se, but read such very, very carefully.

This research letter appeared just 3 days ago, Sept 28th, in *JAMA Internal Medicine*. It only discusses cardiac arrest in patients already hospitalized. In fact, the median time from admission to cardiac arrest was 8 days. That doesn't describe our patients well at all, does it? Further, these were patients at a single hospital. Only 54 patients were included in this study. 54 is a small number. We initiate resuscitation on over 1200 cardiac arrest patients yearly in our EMS system. And, for further contemplation, this study reports results from a timeframe in March-

early April. A lot of understanding about the optimal care for COVID-19 patients has changed since the earliest days of in-hospital treatment for these folks.

Now, very importantly, my points are not to trash this article. I genuinely appreciate the clinicians that are sharing their experience and the CIDRAP writer for summarizing the letter, too. Without their work, we wouldn't have the opportunity to thoughtfully discuss it. In discussing it, we have the opportunity to better our own care – care for our patients and care for ourselves in the process.

This research letter notes that 52 of the 54 patients had cardiac arrest with initial non-shockable (non-ventricular fibrillation/pulseless ventricular tachycardia) rhythms. And that's monitored patients in a hospital! To me, that indicates particularly sick patients that don't even pass through a period of ventricular fibrillation before pulseless electrical activity or asystole.

What more about the patients in this study? From the CIDRAP summary: "CPR achieved a return of spontaneous circulation (ROSC) in 29 patients (53.7%) after a median of 8 minutes. Of the 29 patients, 15 (51.7%) had their code status changed to do not resuscitate, and 14 patients (48.3%) were recoded and underwent additional CPR; all died." And "At cardiac arrest, 43 patients (79.6%) were receiving mechanical ventilation, 18 (33.3%) were on dialysis, and 25 (46.3%) required vasopressor drugs to treat low blood pressure."

That's a sad outcome to be certain. It is interesting that over half had ROSC and within just a few minutes of CPR. So, is CPR futile? Doesn't immediately sound like it. With a change in code status, that pretty much guarantees no survival from any further cardiac arrest – a self-fulfilling prophecy, if you will. That doesn't mean I instinctively disagree with the suffering families that had to make those difficult decisions. I've had to make that very decision with my father years ago. Scientifically, easy. Emotionally, not easy. But such decisions must be factored in the results of this research letter, right? And by the description of these patients, these were not patients living a life at home or work, these patients were already on ventilators, dialysis, vasopressor support – pretty much maximal ICU care already.

All this is to say, we always must be careful when reading headlines – for our patients, our communities, and for ourselves.

This research letter does bring up ESPECIALLY important points about our own safety when resuscitating patients. I want you to hear directly from me again that is safety I will NEVER knowingly compromise. That is why from the earliest days of our understanding about the SARS-CoV-2 virus, we have consistently been encouraging proper use of the "MEGG" PPE for any suspected or confirmed patient with COVID-19. We will continue to do so for your safety.

I cannot yet release the contents of a paper about guidance for EMS systems in out-of-hospital cardiac arrest resuscitation in the era of COVID-19 that I am writing with several national experts in resuscitation (it's part of the publication process of "embargoing" the contents before formal publication by the journal). I can assure you that when it is published, and thus, when I can share it with you, that you will find our current standards of clinical care in our EMS system to be very appropriate, very up to date, and very safe based upon published scientific evidence. It will still be several weeks away, but I'll send it your way as soon as we get word it is published.

For now, keep doing what you do best and that is truly saving lives, including some suffering sudden, very unexpected cardiac arrest.

As always, I want you to see for yourself what we are discussing in these Updates, so here's the links. First to the CIDRAP summary of this item: <https://www.cidrap.umn.edu/news-perspective/2020/09/study-finds-100-death-rate-covid-19-patients-after-cpr> and then the original research letter as published: <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2771090>

You might also appreciate this sudden cardiac arrest-related news summary from *Medscape* as a little bonus, especially since it includes comments about your work!

I'd give you the link, but it seems you have to register to read it, so I'll do a little cut and paste from an email I was sent about it for your reading efficiency. It does look like it contains the link if you want to sign up for Medscape news emails.

"Study Challenges 'Scoop and Run' Model for Cardiac Arrest

Megan Brooks

Medscape, Sept 21, 2020

https://www.medscape.com/viewarticle/937768#vp_1

The odds of surviving out-of-hospital cardiac arrest (OHCA) are significantly better when resuscitation efforts are continued on scene, as opposed to being performed while the patient is being transported to the hospital, a large observational study has found.

The process of moving a patient during resuscitation (known as "scoop and run") may impair or delay best practices, including impairing the quality of [cardiopulmonary resuscitation](#) (CPR), say investigators with the Resuscitation Outcomes Consortium (ROC).

"Although infrequently there may be individual cases with a specific rationale to pursue hospital transport, overall, these results support a strategy that paramedics dedicate effort and expertise at the scene of the cardiac arrest, rather than prioritizing transport to hospital," first author Brian Grunau, MD, St. Paul's Hospital, Vancouver, British Columbia, Canada, told theheart.org | Medscape Cardiology.

Jeffrey M. Goodloe, MD, member of the board of directors of the American College of Emergency Physicians and chief medical officer, Medical Control Board, EMS System for Metropolitan Oklahoma City and Tulsa, agrees.

"This study supports and validates what most large urban EMS systems in the US are doing, which is actively resuscitating on scene for a minimum of 20 minutes," he told theheart.org | Medscape Cardiology.

"This is absolutely in line with what we have been doing here in metropolitan Oklahoma City and Tulsa for a number of years," said Goodloe, who was not involved in the study.

The study was [published online](#) September 15 in JAMA.

The findings are based on data from the ROC Cardiac Epidemiologic Registry, which involves 10 study sites and 192 EMS agencies in the United States and Canada.

We attempted to find subgroups of patients for whom intra-arrest transport may be associated with improved outcomes. However, the results for nearly all subgroups tested were consistent with our primary analysis," Grunau told theheart.org | Medscape Cardiology.

"We did find, however, that for patients who remained in refractory arrest past 30 minutes and were still undergoing active resuscitation, that intra-arrest transport was associated with improved outcomes," he said.

The caveat to this, however, is that most of the survivors who were transported during resuscitation were successfully resuscitated before they arrived at the hospital, "raising questions about the hospital-based contributions to intra-arrest transport survivors," the authors note in their article.

Strong Clinical Benefit

Goodloe is not surprised by the benefit of continuing resuscitation effort at the scene. "What we have seen in Oklahoma City and Tulsa is that, in the times that we do transport individuals to hospital, it becomes a significant challenge for the EMTs and paramedics that are continuing to provide care in transit to sustain the same quality of CPR," he noted.

In a JAMA [editorial](#), Alexander X. Lo, MD, PhD, Department of Emergency Medicine, Northwestern University Feinberg School of Medicine, Chicago, Illinois, says the findings suggest "a strong clinical benefit associated with continuing the resuscitation on scene until a definitive outcome has been achieved."

But Lo argues, "Before embracing this model, and substantially changing the out-of-hospital approach to OHCA, more definitive studies, including high-quality randomized trials, will be needed."

Lo says two contemporary issues lend greater importance to the need to advance the science on OHCA. One is the aging of the US population, which will likely increase the incidence of OHCA and the need for optimal OHCA care.

The other is COVID-19, which has added further risks to the management of OHCA, given that the infection status of patients may be unclear in many cases. CPR and intubation are aerosol-generating procedures and further increase the risk for infection for EMS and hospital workers.

"If continued on-scene resuscitation confers a true benefit in outcome for OHCA, then it must also be accompanied by the necessary policy and logistical considerations to ensure that all EMS personnel have the necessary personal protective equipment to minimize their risk of COVID-19 infection," Lo cautions.

Goodloe thinks this is a "thought-provoking study, not only within EMS and the larger medical community but even more so as we help communities better understand the advanced capabilities that EMS systems have today.

"We often equate rushing to the hospital with it being a good thing. God forbid, if somebody in my family has a sudden cardiac arrest, with a significant on-scene-time committed resuscitation, I'm going to feel a lot better about the outcome, and if that family member dies, I can at least be at peace that they got optimal care if you show me that EMS was on scene for 20-plus minutes as opposed to a handful of minutes," Goodloe commented.

The Resuscitation Outcomes Consortium is supported by the National Heart, Lung, and Blood Institute in partnership with the National Institute of Neurological Disorders and [Stroke](#), the US Army Medical Research and Material Command, the Canadian Institutes of Health Research – Institute of Circulatory and Respiratory Health, Defence Research and Development Canada, the Heart and Stroke Foundation of Canada, and the American Heart Association. Grunau is the principal investigator of a clinical trial investigating the benefit of intra-arrest transport to hospital for extracorporeal CPR initiation and has received speaking honorarium from Stryker Corp. Lo and Goodloe have disclosed no relevant financial relationships. JAMA. Published September 15, 2020. [Abstract](#), [Editorial](#)"

Mutant SARS-CoV-2 – What Does That Mean? – The Washington Post

This sounds scary, doesn't it? Mutant virus form of an already society as we know it disrupting virus? Mutant virus form of a virus that sadly has killed hundreds of thousands of folks around the world? Well, hold on, it's not quite as scary as it first sounds. We'll happily take any good news we can find in COVID-19 news these days, right?

All viruses can mutate over time. In this setting, "mutate" simply means a change in its genetic code or construction. In a virus with thousands of codes, 30,000 in the case of the SARS-CoV-2 virus, it's not unusual at all to see a code character change over time. That's a natural occurrence in fact. Some mutations, if not nearly all mutations, are harmless. They don't change what the virus does or how it acts. It's the few mutations that can lead to changes in viral behavior that appropriately get our attention.

The concept of viral mutation has been around long before (and will stay long after) this viral pandemic. I've been reading about such and came across what I think is one of the best articles to help us understand what this "mutation

thing” is all about. I predict you’ll hear more about this in the coming months. I think you’ll be better prepared to keep it in the right perspective if you’ll invest about 5 minutes in reading this article from *The Washington Post*:

<https://www.washingtonpost.com/health/2020/09/23/houston-coronavirus-mutations/?arc404=true>

Okay, just two topics, but plenty to chew on for Update 46. See you soon in 47!

Vigilance. Safety. Evidence-Based Service to Others.

Let’s be careful out there.

Dr. Goodloe