EMS OPERATIONS & CARDIAC ARREST
UPDATE FROM THE FRONT LINES: BRAZIL

JUNE 10, 2020
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<th>WEBINAR SERIES PARTNERS</th>
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ON-DEMAND RESOURCES

All webinars are recorded and posted to the ACMT website: www.acmt.net/covid19web

Questions?
Write to: info@acmt.net
Q&A

will be at end of the Webinar

Please type your questions into the Q&A or Chat function during the webinar and we will get to as many as we can.

We monitor all platforms, including YouTube and Facebook, for questions.
MODERATORS

Paul M. Wax, MD FACMT
- Executive Director, American College of Medical Toxicology (ACMT)

Ziad Kazzi, MD, FACMT
- Board Member, American College of Medical Toxicology (ACMT)
- President, Middle East & North Africa Clinical Toxicology Association (MENATOX)
CONFLICT OF INTEREST

THE SPEAKERS DO NOT HAVE ANY CONFLICTS OF INTEREST TO DISCLOSE
OUT-OF-HOSPITAL CARDIAC ARREST
IMPACT OF CORONAVIRUS
MEDICAL AND PUBLIC HEALTH CONSIDERATIONS OF COVID-19

Bryan McNally, MD, MPH
Professor, Emergency Medicine, Emory University School of Medicine, Atlanta, GA

Lekshmi Kumar, MD, MPH
Associate Professor, Emergency Medicine, Emory University School of Medicine, Atlanta GA
Out-of-Hospital Cardiac Arrest (OHCA) Presentation Overview

- Optimizing OHCA Care
- CARES – Cardiac Arrest Registry to Enhance Survival - COVID Data
- Enhanced Communication EMS/MDs
- Non-ROSC Patients That May Benefit From Transport
- Reviewing Termination of Resuscitation (TOR) Guidelines
- Minimizing Transport of Medically Futile Patients
CARES
Cardiac Arrest Registry to Enhance Survival

CARES 2020 FOOTPRINT

- 144 million catchment area
- Almost 45% US pop covered
- More than 1,800 EMS agencies
- More than 2,200 hospitals
- 28 state based registries
- 45 additional communities in 14 states
OHCA SURVIVAL

1) Bystander Witnessed OHCA patients presenting in a shockable rhythm -- 33% Survival

2) Bystander CPR more than doubles survival

3) The most powerful predictor of survival is ROSC in the field, 35X greater chance of survival compared to non-ROSC

4) Unequivocal evidence that the battle to save an OHCA patient is won or lost at the scene.

5) Hospital care is important but can not compensate for a failed field resuscitation.

Impact of the Links in the Chain of Survival

<table>
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<tr>
<th>Variable</th>
<th>Adjusted Odds Ratio (95% CI)</th>
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<tbody>
<tr>
<td>Age &lt; 75 yr</td>
<td>1.6 (1.2–2.3)</td>
</tr>
<tr>
<td>First link: early access by bystander</td>
<td>4.4 (3.1–6.4)</td>
</tr>
<tr>
<td>Second link: early CPR by bystander</td>
<td>3.7 (2.5–5.4)</td>
</tr>
<tr>
<td>Third link: defibrillation in ≤8 min</td>
<td>3.4 (1.4–8.4)</td>
</tr>
<tr>
<td>Fourth link: advanced life support</td>
<td>1.1 (0.8–1.5)</td>
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</table>
Number Needed to Treat for OHCA

• Epinephrine – 112
• Early Recognition of OHCA – 11
• Bystander CPR – 15
• Early Defibrillation – 5

NEJM, PARAMEDIC2 Trial, July 2018
Local Field Termination of Resuscitation (TOR) Rates Range from 9-22%

>90% Non ROSC patients Presented in a Non-shockable rhythm
Coronavirus
AHA Guidance for Resuscitation When Caring for Patients With Suspected or Confirmed COVID-19

This information is intended to help find the right balance between providing timely, high-quality resuscitation to patients and protecting rescuers.

Reduce Provider Exposure

- Properly don personal protective equipment before entering the scene.
- Limit the number of personnel inside the resuscitation room.
Prioritize Oxygenation and Ventilation Strategies That Minimize Aerosolization

- Use a HEPA filter for all ventilation.
- Intubate early with a cuffed tube and connect to a mechanical ventilator, if available.
- If intubation is delayed, consider using a supraglottic airway.

Consider resuscitation appropriateness. Address the goals of care in anticipation of the potential need for increased levels of care.
Etiology of Arrest

February – April 2019

- Presumed Cardiac Etiology: 82.1%
- Respiratory/Asphyxia: 0.8%
- Drug Overdose: 5.4%
- Exsanguination/Hemorrhage: 0.6%
- Drowning/Submersion: 1.3%
- Other: 9.8%

February – April 2020

- Presumed Cardiac Etiology: 79.3%
- Respiratory/Asphyxia: 0.7%
- Drug Overdose: 6.1%
- Exsanguination/Hemorrhage: 0.4%
- Drowning/Submersion: 2.7%
- Other: 10.8%
Other Etiology

![Bar graph showing etiology percentages over time]

- **February (N=112):**
  - Other: 100.0%
  - Coronavirus: 0.0%

- **March (N=211):**
  - Other: 75.8%
  - Coronavirus: 24.2%

- **April (N=322):**
  - Other: 62.3%
  - Coronavirus: 37.7%
Shockable Presenting Rhythms

- February: 17.4%
- March: 16.2%
- April: 14.2%
Public Location of Arrest

Rate [%]

Month (2020)

- February: 17.8%
- March: 14.5%
- April: 11.7%
Bystander AED in Public Location

![Graph showing the rate of bystander AED application in public locations over time. The graph indicates a decrease in the rate from February (13.8%) to March (10.2%) to April (9.2%).]
Bystander CPR

![Graph showing bystander CPR rates over March and April 2020. The graph indicates a slight increase from 38.8% in February to 39.4% in April.]
Field Termination of Resuscitation

- February: 37.9%
- March: 40.5%
- April: 49.4%
Coronavirus Impact

![Graph showing the impact of COVID-19 on various cardiac arrest outcomes.](image-url)
Out of Hospital Cardiac Arrest
in the times of COVID19
Dispatch

• Surveillance

Arrest Setting

[Graph showing arrest setting over time, with Home/Residence (blue) and Public setting (orange) lines graphed against months from Aug-19 to May-20.]
Personnel & PPE

- Least number of personnel required
- Don PPE prior to entering scene
- Full PPE
  - Single pair of gloves; change gloves if torn or contaminated
  - Disposable isolation gown
  - Respiratory protection N-95 with shield or eye protection that fully covers the front and sides of the face
Airway management

- Early airway control with iGel (SGA)
- HEPA filter use
Resuscitation

Staying in place to provide high quality CPR
Resuscitation

- CPR on scene until ROSC or asystole
- Sustained asystole – on scene termination
- Online Medical Control
Cessation Criteria

- >18 years of age
- No ROSC
- Remains in asystole/PEA
- Adequate ventilation
- IV/IO access established and ACLS medication administered
- No hypothermia
- Non traumatic
- Considered reversible causes
Special situations

- Pediatrics
- Witnessed arrests
- Persistent shockable rhythm
- Public arrests
Future guideline changes

- Personnel
- PPE
- Airway
- ACLS
Thank You

Bryan McNally: bmcnall@emory.edu
Lekshmi Kumar: lekshmi.kumar@emory.edu
UPDATE FROM THE FRONT LINES:
SÃO PAULO, BRAZIL

Alvaro Pulchinelli Jr, MD, PhD
- Clinical Toxicologist and Clinical Pathologist, Affiliate Professor at Federal University of São Paulo
- Medical Supervisor at Planitox, Medical Advisor at Fleury Laboratory, Scientific Director of the Brazilian Society of Clinical Pathology
A PERFECT STORM...

- Here we have the four horsemen of the apocalypse:
  - Pandemic
  - Fragility of our health system
  - Vanity
  - Ignorance
THE FIRST: A PANDEMIC

- Unknown behavior
- The second country in number of cases
- The epicenter of the pandemic
THE SECOND: FRAGILITY OF OUR HEALTH SYSTEM

- 220 million inhabitants
  - with great social inequality
- Private health system covers only 25% of the population
- Public health system covers 100%
  - (25% of the population has access to both systems)
- The spread of the disease caused concern throughout the health system
- Best private hospitals are under constant concern with the prospect of not being able to meet the demand
- Public hospitals have an average occupancy rate of 90%.
- There are places where the system has collapsed
  - City of Manaus – AM; Belém – PA; Fortaleza – CE and Rio de Janeiro - RJ
Vanity of our politicians and the medical profession

The president with an attitude that denies the magnitude of the problem, does not fulfill his role as a leader and attacks the governos

Governors counterattack, however, governors do not have a unified proposal

There is a large underreporting of cases

The number of tests is still low

Doctors are also lost in useless discussions

- We have never had so many “scientists and experts” in COVID-19
- And we've never been so poor in information
THE FOURTH: OUR IGNORANCE

- Result of the low educational level of our population
- Part of the population simply does not meet the isolation norms
- The factors of non-compliance are:
  - denialist attitude
  - ignorance of the danger of the disease
  - not having financial resources to remain in isolation
- From the toxicological point of view:
  - increase in cases of poisoning by household cleaning products
The Brazilian Society of Clinical Pathology / Laboratory Medicine carries out a project with the aim of testing the diagnostic kits used in our country. The results are still being analyzed, but partial results are already published on the website: testecovid19.org
Thank you!

Alvaro Pulchinelli Jr, MD, PhD

alvaro.pulchinelli@planitox.com.br
alvaro.pulchinelli@unifesp.br
alvaro.pulchinellijr@grupofleury.com.br
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Write to: info@acmt.net
Acute Kidney Injury During COVID-19
Update From the Front Lines: Protestors, Tear Gas, and COVID-19

Wednesday, June 17, 2020
3:00 PM EDT

www.acmt.net/covid19web