UTSW/Parkland BioTel EMS ALERT

April 24, 2020

EMS ALERT 20-008
COVID-19 Modified Cardiac Arrest Management Policy

Purpose: In order to lessen risk of exposure to COVID-19 for First Responders in the field and for healthcare providers at our receiving hospitals, this directive amends the guidelines for the on-scene management and transport of patients with suffered Out-of-Hospital Cardiac Arrest (OOH-CA).

Background:
Refer to previous EMS Alerts (20-001, 20-002, 20-003, 20-004, 20-005, 20-006, 20-007) for additional COVID-19 related information.

The BioTel Clinical Practice Guidelines (CPGs) set forth best practices for the management of OOH-CA patients, including the recommendation that medical (non-traumatic) resuscitation be performed on-scene to increase the likelihood of Return of Spontaneous Circulation (ROSC) and neurologically intact survival. Furthermore, the risks associated with red lights and sirens transport with ongoing CPR outweigh the extremely small likelihood of benefit for patients who have not achieved ROSC prior to transport. In light of the COVID-19 pandemic, care of OOH-CA patients presents additional risks to EMS professionals invasive airway management and CPR. This policy modification seeks to mitigate that risk.

Effective Immediately and Until Further Notice for ALL OOH-CA:

General Cardiac Arrest Management:

- **The vast majority of cardiac arrests are NOT related to COVID-19 and current BioTel CPGs should be followed unless otherwise specified in this alert or associated algorithm.**
- All team members must don PPE (i.e. N95 mask, goggles or face shield, gloves, and gown) before approaching within 6 feet of an unconscious/ unresponsive patient and/or starting chest compressions -- "PPE before ABCs":
  - This applies to all patients, even EMS-witnessed cardiac arrest
  - Place a surgical mask on the patient before ANY interventions ("source control"), while preparing for early advanced airway placement
  - Chest compressions-only CPR may be provided by a single rescuer in full PPE if other team members are delayed in donning their own PPE and are at least 6 feet away
- If a patient arrests while receiving care by EMS and a shockable rhythm is identified, it is appropriate to immediately defibrillate prior to donning PPE to start chest compressions; defibrillation in the absence of chest compressions is low risk for aerosol generation.
- Limit non-essential equipment and personnel within a 6-foot perimeter around the patient's head (All equipment used within that perimeter MUST be decontaminated after the incident.)
- Use a mechanical CPR device, if available
- Place a supraglottic airway (SGA), e.g. King or i-gel, as early as possible:
  - **Only after failure of both SGA and endotracheal intubation (ETI) should BVM ventilation be used**
  - Should SGA placement be unsuccessful, a repeat SGA or ETI may be attempted:
    - Use video laryngoscopy if available
  - Assist ventilations at a rate of no more than 10 breaths per minute with a minimal volume and force sufficient to achieve chest rise
  - Utilize a viral or HEPA filter, if available, prior to any ventilations

Management of Medical Cardiac Arrest On-Scene:

- **If ANY of the following exclusion criteria are met, Termination of Resuscitation (TOR) is not permitted, except in extenuating circumstances and as directly authorized by BioTel. Resuscitate on-scene for a minimum of 10 minutes (unless the scene is unsafe) and transport to the closest appropriate hospital:**
  - Patient is already present in the ambulance and/or being transported at time of arrest
  - Pediatric patient (less than 18 years of age)
  - Patient is visibly or reported to be pregnant
  - Persistent/ recurrent VF or pulseless VT
  - Narrow-complex rhythm at a rate greater than 40 beats per minute
  - Patient has any neurological signs of life
  - Two or more episodes of Return of Spontaneous Circulation (ROSC), or ROSC greater than 5 minutes in duration
  - Cardiac arrest in the setting of hypothermia, drug overdose or toxicological exposure
  - Crowded public setting (excluding nursing home or long-term care facility)
- **Otherwise, NO ADULT medical cardiac arrest patient shall be transported to a receiving hospital with chest compressions in progress unless directly authorized by BioTel.**

Management of Traumatic Cardiac Arrest On-Scene:

- **Blunt traumatic cardiac arrest** not meeting current BioTel criteria to withhold resuscitation:
  - Continue resuscitation and initiate transport to the closest Level I/II Trauma Center if:
    - Unsafe scene;
    - Pregnant patient;
    - Pediatric patient (less than 18 years of age); OR
    - EMS-witnessed arrest.
  - Otherwise, remain on-scene for at least 15 minutes of resuscitative efforts, including: CPR, IV/IO, medications, advanced airway and needle decompression (as appropriate)
  - If no ROSC is achieved, you may terminate resuscitation without BioTel consultation after 15 minutes, if the patient remains apneic, pulseless, with no signs of life and ECG shows either asystole or PEA less than 40 bpm
  - If ROSC is achieved at any time, transport to the closest Level I/II Trauma center
- **Penetrating traumatic cardiac arrest:**
  - There are NO changes to current criteria for withholding or termination of resuscitation
- **Combined blunt and penetrating trauma:** Follow guidelines for penetrating trauma

Termination of Resuscitation (TOR) for Adult Medical Cardiac Arrest:

- For all timeframes below, the following must be in place prior to TOR: high-quality CPR; effective ventilation confirmed (SGA or ETT preferred, BVM acceptable); IV or IO access established; and monitoring of continuous waveform capnography.
- Before performing TOR, consider and treat, as needed, potentially reversible or treatable causes, such as: hypovolemia, tension pneumothorax and displaced/obstructed airway device.
- **TOR may be performed ONLY WITH BioTel authorization if:**
  - **After 10 minutes of resuscitation without ROSC:**
    - Unwitnessed arrest (not seen or heard by a bystander), AND
    - Cardiac rhythm is asystole; AND
    - Either (a) or (b):
      a) Confirmed[1] positive COVID-19 test within last 14 days; OR
      b) Household contact with confirmed[1] positive COVID-19 tested individual AND family/bystander/caregiver reports patient has been sick with symptoms[2] suggestive of COVID-19
- **TOR may be performed without BioTel consultation if:**
  - **After 10 minutes of resuscitation without ROSC:**
    - 75 years of age or older; AND
    - Cardiac rhythm is asystole or PEA less than 40 beats per minute; AND
    - Unwitnessed arrest (not seen or heard by a bystander).

- **After 20 minutes ("20 at 20" rule) of resuscitation without ROSC:**
  - 18 years of age or older; AND
  - Initial rhythm of asystole and no rhythm change; AND
  - $PetCO_2$ 20 mmHg or less.
- **After 30 min ("30 at 30" rule) of resuscitation without ROSC:**
  - 18 years of age or older; AND
  - Patient remains in asystole or PEA less than 40 beats per minute; AND
  - $PetCO_2$ 30 mmHg or less.

- **For all other scenarios not covered, contact BioTel for consultation**
- If at any time a paramedic feels resuscitation should be continued outside of these guidelines, s/he should use best clinical judgment and follow the current BioTel Clinical Practice Guidelines

Documentation of TOR:

- EMS Professionals should document in the electronic Patient Care Record (ePCR): "Resuscitation efforts terminated per Modified Cardiac Arrest Clinical Guidelines" and include information regarding final rhythm and $PetCO_2$

Additional Guidance for Procedures after TOR & Interacting with Family/Loved Ones:

- Refer to the Determination of Death, Resuscitation Termination and Do Not Resuscitate (DNR) Policy in the BioTel CPGs

Transporting a Deceased Patient to the Dallas County Medical Examiner's (ME's) Office:

- In rare circumstances, EMS Professionals encounter patients who meet UTSW/Parkland BioTel criteria for determination of death or amended criteria above for termination of resuscitation, yet who cannot or should not be left on scene.
- In such circumstances, the patient is either determined to be dead by paramedics on-scene or pronounced dead by a Medical Control Physician through BioTel.
- Following determination or pronouncement of death, if EMS Professionals believe it is unsafe or not appropriate to leave the deceased patient on scene, OR if the patient has already been loaded into the ambulance, the patient MAY be transported to the Dallas County Medical Examiner's Office if BOTH of the following criteria are met:
  - BioTel must be contacted and a BioTel Physician pronounces the patient dead; AND
  - BioTel contacts the Medical Examiner's Office to confirm that they have sufficient staff available to receive the patient.

[1]Reported or documented positive test result only; NOT a pending or unknown testing result.
[2]Fever greater than or equal to 100.0°F, cough, shortness of breath, sore throat, muscle aches, vomiting and/or diarrhea.

See the next two pages for COVID-19 Modified Cardiac Arrest Management Algorithm

UTSW/Parkland BioTel EMS Professionals may contact BioTel or the EMS Medical Direction Team at any time with questions or concerns about this EMS Alert

References:

1. Shao F, Xu S, Ma X, Xu Z, Lyu J, Ng M, Cui H, Yu C, Zhang Q, Sun P, Tang Z, In-hospital cardiac arrest outcomes among patients with COVID-19 pneumonia in Wuhan, China, Resuscitation 2020. doi: 10.1016/j.resuscitation.2020.04.00
2. Shibahashi K, Sugiyama K, Hamabe Y. A potential termination of resuscitation rule for EMS to implement in the field for out-of-hospital cardiac arrest: An observational cohort study. Resuscitation 2018;130:28–32. doi:10.1016/j.resuscitation.2018.06.026.
3. Grunau B, Scheuermeyer F, Kawano T, Helmer JS, Gu B, Haig S, et al. North American validation of the Bokutoh criteria for withholding professional resuscitation in non-traumatic out-of-hospital cardiac arrest. Resuscitation 2019;135:51–6. doi:10.1016/j.resuscitation.2019.01.008.
    a. This is a secondary analysis of the Resuscitation Outcome Consortium's (ROC) *Trial of Continuous or Interrupted Chest Compressions during CPR* including Dallas Fire-Rescue, Irving Fire Department and Mesquite Fire Department patients

COVID-19 Modified Cardiac Arrest Management

MEDICAL Cardiac Arrest

Pulseless, Apneic, Asystole[1]
AND
Rigor, Lividity, OR Valid DNR

Yes → Do not initiate resuscitation

No

Initiate resuscitation

Note: If patient meets termination of resuscitation criteria AND:
- Already in the ambulance, OR
- Must be removed from scene due to safety consideration or public place

Contact BioTel for pronouncement and possible transport to Medical Examiner

ANY of the following met?
- Patient already present in ambulance
- Pediatric (less than 18 years of age)
- Visibly or reportedly pregnant
- Persistent/ recurrent VF or pulseless VT
- Narrow-complex rhythm greater than 40 bpm
- Any neurological signs of life
- ROSC 2 or more times, or greater than 5 min total
- Cardiac arrest in the setting of hypothermia
- Drug overdose or toxicological exposure
- Crowded public setting (excluding nursing home or long-term care facility)

Yes →
Field Termination not permitted unless authorized by BioTel

Resuscitate on-scene for a minimum of 10 minutes (unless unsafe scene)

Transport to closest appropriate hospital

No

Patient shall be managed on scene, DO NOT load or initiate transport UNLESS:
- Directed by BioTel OR
- Unsafe scene

****If EMS-witnessed arrest, must work for at least 30 minutes****

EMS Professionals are NOT required to continue resuscitation efforts initiated by other persons on-scene if criteria to withhold resuscitation are met

10 minutes of resuscitation[2] without ROSC

Either Set of Criteria Met?

All of the following present?
- Confirmed[3] COVID-19 (+) within last 14 days, OR
COVID-19 (+) household contact & patient with symptoms[4]
- Asystole
- Unwitnessed by bystanders

Yes → **Contact BioTel for possible termination of resuscitation**

OR

75 years of age or older, **AND**
Asystole OR PEA less than 40 bpm, **AND**
Unwitnessed by bystanders

Yes →

No

20 minutes of resuscitation[2] without ROSC

18 years of age or older, **AND**
Initial rhythm of asystole AND no rhythm change, **AND**
$EtCO_2$ 20 mmHg or less

Yes → **NO BioTel contact required, terminate resuscitation**

No

30 minutes of resuscitation[2] without ROSC

18 years of age or older, **AND**
Remains in asystole or PEA less than 40 beats per minute, **AND**
$EtCO_2$ 30 mmHg or less

Yes →

No

For all other scenarios not covered, contact BioTel for further guidance

Clinical Pearls for Modified Cardiac Arrest Management

ALL team members must don PPE prior to assessment or starting resuscitation

"Full PPE" includes goggles/face shield, N95, gown, and gloves

Minimize aerosol-generating procedures

Limit unnecessary equipment within 6 feet from the head of the patient

Use mechanical CPR device if available

Secure the airway early and use a viral or HEPA filter to prevent viral aerosolization

Avoid use of bag-valve mask ventilations before advanced airway insertion unless absolutely necessary

For BVM, maintain a 2-handed seal and use minimal volume/force to achieve chest rise

The vast majority of cardiac arrests are NOT related to COVID-19 and should be treated with the same standard of care as outlined in the CPGs

[1]Must confirm asystole with rhythm strip except for OBVIOUS significant decomposition

[2]High-quality CPR, effective ventilation confirmed (SGA or ETT preferred, BVM acceptable), IV or IO access established, and monitoring of waveform capnography. Address all reversible causes (i.e. Hs and Ts).

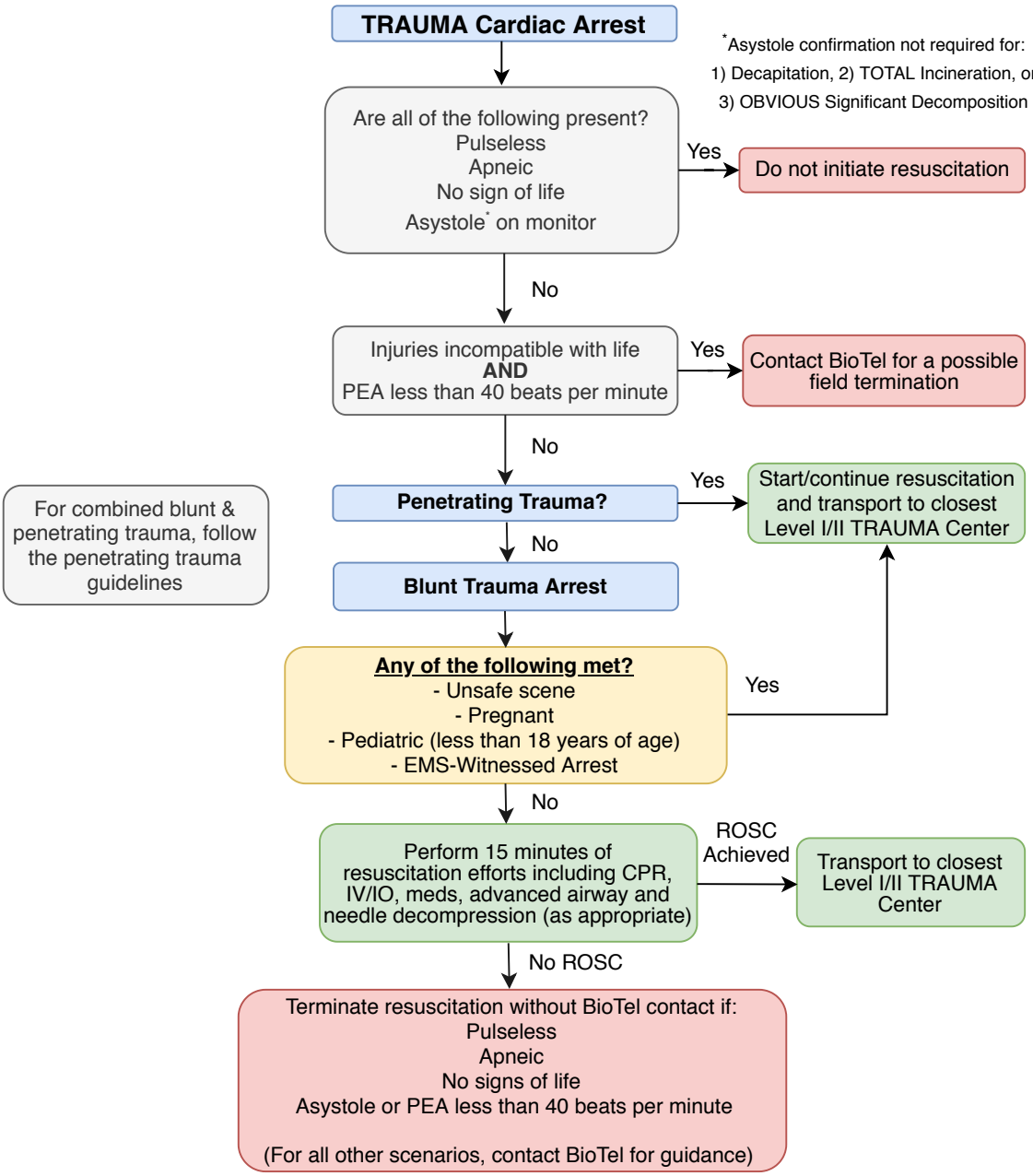
[3]Reported or documented positive test result only; NOT a pending or unknown testing result

[4]Cardiac arrest patient had symptoms suggestive of COVID-19 prior to cardiac arrest, such as fever >100.0°F, cough, shortness of breath, sore throat, muscle aches, vomiting and/or diarrhea

This algorithm is designed to assist paramedics with issues related to resuscitation during the COVID-19 pandemic. If at any time a paramedic feels resuscitation should be continued outside of these guidelines, use your best clinical judgment and follow the current BioTel Clinical Practice Guidelines. Paramedics may contact BioTel for guidance at any time.

UT SOUTHWESTERN MEDICAL CENTER
Emergency Medical Services
Office of the Medical Director

COVID-19 Modified Cardiac Arrest Management



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