Brighton
UTAH

Resuscitation Standard 2021

Discussion

- As a team, if you were to respond to a cardiac arrest, what would that look like (based on your own experience)?
- What is your current success rate for Return of Spontaneous Circulation (ROSC)?
- Can we improve our chances of ROSC, thereby increasing the likelihood of survival?
- Can change really make a difference?

ARC Benchmarks for Professional Rescuers (same for AHA, slightly different terms)

- Organized TEAM approach to providing High Performance CPR
- Minimize interruptions of High-Quality Chest Compressions
- < 5 seconds off chest at any time during the arrest (except during AED analysis)
- Use age-appropriate compression depth (adult 2” - 2.4”)
- Maintain Chest Compression Fraction (CCF) of at least 60%, with a goal of 80%
- Use appropriate compression rate (adult 100-120/minute)
- Allow for FULL chest recoil
- Avoid rescuer fatigue by changing positions every 2 minutes or less

***** 1 minute delay in CPR & defibrillation = 10% decrease in survival rate *****

Feedback Manikin Study Conclusion

- Implementation of resuscitation training combined with real-time audiovisual feedback (e.g., Big Reds) was independently associated with **improved CPR quality, an increase in survival, and favorable functional outcomes after Out-of-Hospital Cardiac Arrest (OHCA)**.

-Bobrow, B.J. et al., Ann Emerg Med. 2015 Mar;65(3):344

What about rapid transport?

Studies indicate that ambulance transportation does not increase the chances of survival… and may actually decrease it due to:

- Little chance of maintaining CCP at least 80% of the time

Many studies suggest that survivors of OHCA regained ROSC in the field, not in the ambulance or ED following transport.

What about the airway?

- Layperson CPR is now being taught as “Hands Only CPR”
- Professional rescuers should still appropriately manage the airway (manual/OPA/NPA), however passive ventilation (provided by chest compressions) should be considered for the first 0 - 8 minutes of resuscitation. No pocket mask use by Brighton patrollers.
  - ➢ This includes use of “super-plugging” the patient with 1 NPA & 1 OPA, as soon as available.
- Endotracheal intubation is still the gold standard for managing an airway, however CPR <u>should never be interrupted</u> to place an endotracheal tube.

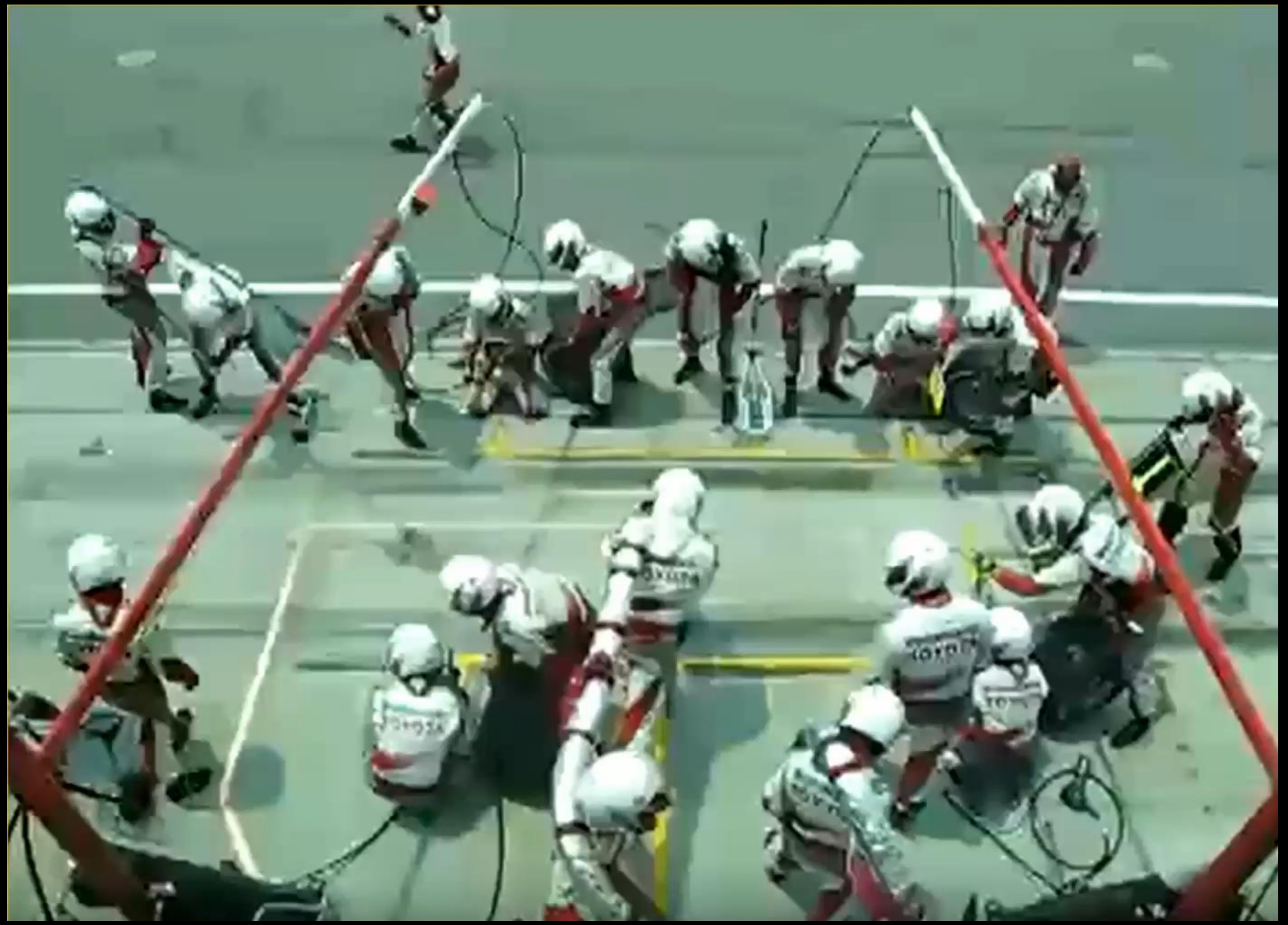
Five Pillars of Survival

1. High performance “pit-crew” style CPR
2. CPR being performed prior to EMS arrival
3. Data management
   - Review how response changes are working
4. Public access to AEDs
5. Continuing education on all the above listed pillars

Recommendations/Considerations

PLAN OF ACTION

- Train each patrol member on High Performance CPR and Resuscitation Standards
- Implement a system to review all full arrest calls
- Make internal recommendations for improvement based on the review of cases
- Consider changes in the response system to maximize CCP



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- Key Considerations
  - Effective chest compressions are CRITICAL
    - Minimize interruptions in chest compressions, **the MAJOR operational goal**.
    - Rate 100-120/min.
    - Depth: >2 inches (adult) or 1/3 of chest depth (pediatric)
    - Allow for full chest recoil after each compression
    - After each shock, immediately resume continuous chest compressions.
    - Rotate compressors every 2 minutes or less
    - When available, “super plug” the patient airway. Place 1 NPA/1 OPA.
    - Only when adequate personnel are on scene (4 patrollers minimum), begin ventilations with a BVM, employing a compression-to-ventilation ratio of 30:2 (for adult), pausing compressions no longer than 5 seconds for the ventilations.

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- Consider the “Pit Crew” model for treatment
  - Pre-defined roles, for members of an integrated team for first responders, BLS, and ALS
  - Designated individuals for chest compressions
  - Designated individuals for AED, airway management and ventilations
  - Additional roles are assigned as determined by specific agency, based on provider availability, including IO/IV access, medication administration, CPR quality monitoring, cardiac rhythm monitoring, defibrillation.
  - Consider transitions of roles as additional providers become available to ensure maximal use of resources

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- Two Rescuer Model:
  - Rescuer One – Compressions
  - Rescuer Two – Super Plug Airway/AED (switch to compressions after two minutes or less)

- Three Rescuer Model:
  - Rescuer One – Compressions
  - Rescuer Two – Super Plug Airway/AED (second to compress, ALS if PM)
  - Rescuer Three (Officer) – Scene safety/management and history if available, switch to compressions, if necessary (ALS if PM)

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- Four Rescuer Model:
  - Rescuer One – Compressions
  - Rescuer Two – Super Plug Airway/AED/Compressions (ALS if PM)
  - Rescuer Three – Help assemble equipment BVM, second to compress (ALS if PM)
  - Rescuer Four (Officer) – Scene safety/management and history if available, BVM or compressions

- Five Rescuer Model:
  - Rescuer One – Compressions
  - Rescuer Two – Super Plug Airway/AED/Compressons (ALS if PM)
  - Rescuer Three (Officer) – Scene safety/management and history if available
  - Rescuer Four (Patient Person) – ALS if PM, compressions as needed
  - Rescuer Five (Airway) – ALS if PM, compressions as needed

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- Transport Standard
  - Transportation is indicated only after Return Of Spontaneous Respirations (ROSC) **has occurred**. At that time, paramedics begin treatment and transport protocols (to LZ or base rendezvous with EMS).
  - Perform perfect CPR (by patrollers) for 45 minutes on scene, then transport to the bottom of the mountain Aid Room if ROSC has not occurred. No CPR during toboggan transport.
  - Contact On-Line Medical Control (OLMC) before terminating CPR to detail patient status.

CPR Studies Report

- 69% of OHCA patients received bystander CPR vs 49% of OHCA patients at home, with respective survival rates of 27% vs 13%. Often, OHCA patients at home do not receive CPR from family members present.

Get your friends and relatives trained and ready to use CPR!

- Bystander initiated CPR vs waiting for EMS CPR significantly improves long-term survival, 43% vs 22%.
- Ventricular fibrillation is the most common initial rhythm in OHCA (~65%). Defibrillation in 0–3 min → 74% survival, more than 3 min → 49% survival.

Postgrad Med J. 2007 Oct; 83(984): 649–654

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