Approach to Out-of-Hospital Resuscitation

This session is aimed at:

- Resensitize prehospital teams to key steps and considerations for effective resuscitation in the prehospital setting
- Share knowledge and experience of resuscitation scenarios within the prehospital setting
- Share methods of improving the way we react to resuscitation scenarios
- Discuss any uncertainties related to resuscitation within the prehospital setting



Out of Hospital Chain of Survival

- Let's talk through each step
- Describe each link in your component
- How can we do it better
- What are some of the barriers

The Peri-arrest state

The critical window of time immediately before cardiac arrest. An important period in which timely intervention can mean the difference between life and death. Recognising the significance of this period is vital, as it provides an opportunity to prevent or mitigate cardiac arrest, enhance outcomes, and improve patient survival rates.

So how do we recognize Peri-Arrest?



Hypotension and weak or absent peripheral pulses Excessive sweating, pale, cold & cyanotic extremities

Respiratory Distress

Inadequate effort, irregular breathing patterns, poor oxygen saturation, gasping, labored breathing

Altered mental status

Confusion, disorientation, loss of consciousness, agitation, feeling of impending doom, lethargic



Chest pain & Abnormal heart rhythms

Myocardial ischemia and Infarction can lead to ECG changes and chest discomfort. Tachycardia, bradycardia and arrhythmias such as ventricular tachycardia or fibrillation.

Correction of reversible causes – H's and T's



Dialysis (In-hospital)

ST



Reversible measures

Warming measures must be taken to raise core temperature asap.

Rewarm using active external methods (blankets, forced warm air, warm fluids to drink) And minimally invasive methods (warm IV fluids – In-hospital)



Hypoglycaemia

Low serum blood glucose can have many negative effects on the body, and it can be associated with cardiac arrest.

Hypoglycaemia was removed from the H's but it is still important to assess In any person in cardiac arrest.



Oral Glucose Administer IV dextrose If no IV access – administer Glucagon IM

> Tension Pneumothorax

- Occurs when there's a build-up of air in the pleural space and is prevented from escaping naturally.
- Narrow QRS complexes, tachycardia, JVD, tracheal deviation, unequal breath sounds, difficulty ventilating, hypotension.

<u>Treatment:</u> Needle decompression, thoracostomy with chest tube (Inhospital)

Coronary Thrombosis

 An occlusion or blockage of blood flow within coronary artery. This causes an acute myour infarction which destroy heart muscle and lead to death.

• <u>Treatment</u>: Fibrinolytic therapy, and percutaneous coronary intervention Pulmonary Thrombus
A blockage of the main artery
of the lung which can rapidly lead to respiratory collapse and sudden death

- Physical signs include:
- Distended neck veins, positive d-dimer test (Protein fragment that's released when a blood clot breaks down) which may indicate blood clotting, prior positive test for DVT or PE.

• <u>Treatment:</u> Surgical intervention, and fibrinolytic therapy.

> Toxins

Overdose of different medications can cause pulseless arrest

- Most common include: Tricyclics, beta-blockers, calcium channel blockers.
- Common street drugs include: Cocaine, benzodiazepines, and opioids

Toxins S&S and treatment

- ECG signs of toxicity prolongation of QT interval, or a pattern that indicated bradycardia.
- Physical signs bradycardia, pupil symptoms, and other neurological changes.

<u>Treatment:</u> Support airway and circulation while an antidote or reversing agent is obtained is of utmost importance. (e.g. Naloxone)

> Tamponade

- Emergency condition in which fluids accumulates in the pericardium
- ECG signs include narrow QRS complex and rapid heart rate.
- Physical signs JVD, no pulse, difficult palpating pulse, muffled heart sounds.

• <u>Treatment</u> Pericardiocentesis (In-hospital) Let's talk about the initial approach



Basic Life Support Algorithm

RESUSCITATION COUNCIL

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The most important actions

- To ensure High- Quality CPR
- Push hard (at least 5cm) and fast (100-120) and allow complete chest recoil.
- **Minimise interruptions** in compressions.
- Avoid excessive ventilation
- Change the compressor every 2 minutes or sooner if fatigued
- If no advanced airway, **30;2** compression- ventilation ratio
- Quantitative waveform capnography. If ETCO2 is low or decreasing, reassess CPR quality

Types of Cardiac Arrest

Non-shockable

- No defib required
- Adrenaline
- Advanced Airway
- Hs and Ts

Asystole





Types of Cardiac Arrest

Shockable

- Defib required
- Adrenaline
- Amiodarone
- Advanced Airway
- Hs and Ts

Ventricular Fibrillation (VF)



Now let's look at management of Resuscitation



What changes in the trauma scenario?



Post Resuscitation Care

- Goals
- Optimize oxygenation and ventilation
- Maintain hemodynamic stability
- Transport
- Rapid transport to a facility capable of advanced care



Team Dynamics

- Importance of Teamwork
- Clear roles and responsibilities.
- Closed-loop communication.



Positions for 6-Person High-Performance Teams*

*This is a suggested team formation. Roles may be adapted to local protocol. †Roles and tasks are performed by advanced providers.

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Debriefing -Review performance after the event



- Why is this important?
- Learning from bad experiences
- How can we do it better?

When do we terminate Resuscitation efforts?

Arrest not witnessed No bystander CPR No return of spontaneous circulation (before transport) No shock was delivered (before transport) If all criteria are present, consider termination of resuscitation

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ACLS Termination of Resuscitation

Let's consider:

Context within the prehospital setting



Beyond life extension – is it time for 'Emergency Last Aid' training?

Matthew Hooper^{1,2,3} and Marius Rehn^{4,5,6*}

Call to Action

While resuscitation on a PowerPoint and in a book seems easy – how do we improve this in our space?

What are the next steps – To do and do more

The clinical leadership will focus on aspects of the resuscitation process while you are work.

Let's learn and grow together