Refractory shockable rhythms

Great North Air Ambulance Service

Further reading

Resus Council UK Guidelines 2021
CPR Compression strategy. Resuscitation 2021
Airways 2 trial. JAMA 2018

Related SOPs

Post cardiac arrest SOP	Acute coronary syndrome SOP

General Points

- There is strong evidence for a survival benefit from good quality CPR and early defibrillation, and the GNAAS team should strive to ensure these are delivered in all cases of medical arrest 'in preference' to critical care interventions.
- Other management strategies have a universally poor evidence base so whilst this document contains a plethora of interventions they should be regarded as considerations not checkboxes to be achieved. The role of a critical care team is to take the care beyond an SOP towards therapies tailored to the individual patient, treatments may be delivered later or earlier in the resuscitation depending upon case specific factors
- Should the patient remain in VF/VT the goal is to adjust something between each shock and the attached table provides suggestions as to potential options.
- An early decision should be made as to the possibility of transport with mechanical CPR. Assess whether transport in arrest is feasible and if there a therapy that can be provided by a hospital that we cannot.

During CPR

- A **working** iGel is as effective as an endotracheal tube
- Compression : Ventilation should be 30:2 regardless of the airway management device; the pressures required to ventilate against CPR (particularly mechanical compressions) are often too high.
- Consideration of Nasogastric decompression of the stomach if indicated.

Version 1 Feb 2022
For review Feb 2025

Refractory shockable rhythms

Drug Therapy

There is little to no evidence for most drug therapies in cardiac arrest. Additional options are:

- In prolonged cases consider withholding or increasing interval of adrenaline
- Lidocaine
- Magnesium
- Calcium
- Sodium bicarbonate in the context of very prolonged arrests

Hospital Triage/Diagnosis

- Disposition of patients whether in arrest or post-ROSC is complex. The diagnosis is often unclear, with primary arrythmias, pulmonary embolism and intercranial pathology accounting for a measurable proportion of arrests.
- PPCI may be helpful intra or post arrest and should be considered and discussed with the receiving service. Other acute cardiology interventions (e.g. pacing) are available sporadically throughout the patch.
- If in doubt, consider discussing and taking to an ED with an on-site interventional cardiology service.
- It is reasonable to believe that extracorporeal CPR (ECMO) is a viable future therapy but this does not reliably exist in our region.

[redacted]

If any delay reaching agreement with PPCI divert to ED.

[redacted]

Must have agreement prior to transfer.

[redacted]

If any delay reaching agreement with PPCI divert to ED.

[redacted]

If any delay reaching agreement with PPCI divert to ED.

Great North Air Ambulance Service

Version 1 Feb 2022
For review Feb 2025

Refractory shockable rhythms

Summary of Treatment Options

Defibrillation	**Pad Position**	Change to anterior-posterior or lateral pad position Use a second set of pads and consider alternating between standard and alternative pads after each shock
	Escalating Energy	Escalate energy levels for first 3 Shocks Corpuls: 120j/150j/200j Zoll: 120j/150j/200j Lifepak: 200j/300j/360j Further shocks at maximum energy
Drug Therapy	**Amiodarone**	**Ventricular Arrythmia** 300mg after 3rd shock 150mg after 5th shock
	Calcium	**Hyperkalaemia, Calcium Channel Blocker OD, Hypocalcaemia** 10ml 10% Calcium chloride
	Magnesium	**Suspected torsades, coarse VF** 2g Magnesium Sulphate
	Lidocaine	**Defibrillation and amiodarone resistant VF** 100mg: 5ml/2% Lidocaine
	Sodium Bicarbonate	**Prolonged cardiac arrest, Tricyclic/SSRI OD, hyperkalaemia** 50ml of 8.4% Sodium Bicarbonate
	Adrenaline	In **prolonged VF** consider withholding or increasing interval of adrenaline when you consider appropriate
Fluid	**0.9% Saline**	Updated ALS guideline is to restrict fluid in cardiac arrest, consider whether **additional fluid** tailored to specific patients is required. Large volume flush important when using peripheral IV cannula.
Transport	**PPCI**	Consider transport whilst in VF/VT arrest to PPCI centre - either to the ED, or direct to PCI (with agreement). Especially if there is: • High amplitude VF • Signs of brain perfusion • Transport with mechanical CPR ongoing practical
	Extra-corporeal CPR	It is reasonable to believe that E-CPR via VA ECMO is a viable future therapy but this does not yet exist routinely in our region. For hypothermic arrest discuss with RVI, JCUH or Wythenshawe.

Great North Air Ambulance Service

Version 1 Feb 2022
For review Feb 2025