



## Pre-hospital Care Standard Operating Procedure

### Haemorrhage control, vascular access and fluids

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<b>APPROVAL/ ADOPTED:</b>	PHC Policy Board	
<b>DISTRIBUTION:</b>	PHC Doctors PHC Paramedics	
<b>RELATED DOCUMENTS:</b>	SOP Packaging Equipment folder – Kendrick, Sagar, Blast bandage, CAT, pelvic splint, PASG CODE RED protocol – appendix 1	
<b>THIS DOCUMENT REFERS TO:</b>	<input checked="" type="checkbox"/> PHC Clinical Practice <input type="checkbox"/> PHC Non-clinical Practice <input type="checkbox"/> PHC Operational Procedure	Ref: CP-20

#### Aims:

- Describe the principles of haemorrhage control
- Describe the indications for fluid infusion.
- Describe position and types of venous access.

#### Background:

Every effort should be made to minimise blood loss, maximise clot formation and minimise clot disruption. It is therefore essential to consider handling and splintage and their effects on natural tamponade as a fundamental part of “volume resuscitation”. All fractured limbs should be drawn out to length and splinted. Using these techniques reduces the limb circumference and the soft tissue volume into which bleeding can take place. Similarly, careful handling will minimise clot disruption in the chest wall, peritoneum and pelvis. Appropriate cutting of clothes and “skin to scoop” packaging are essential elements of this care. Direct pressure should be used to limit visible bleeding.

This operational guideline is to be read in conjunction with the packaging, monitoring and splintage guidelines. Intravenous fluid administration is not routine and should only follow specific indications. 0.9% Sodium Chloride is the fluid of choice for London HEMS.

#### Policy:

In the multiply injured patient demonstrating shock every effort should be made to exclude a ventilatory cause for the clinical picture. Thereafter every effort should be made to maximise natural tamponade / clot production and as a “last resort” fluid transfusion should be considered.

## 1. Fracture Reduction / Splintage

- Fractured femur - draw out to length and splint with Kendrick traction splint. An ambulance service Sagar splint can be used as an alternative and is particularly useful when both femurs are fractured.
- Fractured pelvis – reduce to anatomical position and apply pelvic splint.
- Unstable pelvis and femur – reduce and splint with pneumatic anti-shock garment (PASG).
- Fractured tib/fibs – draw out to length and splint either with vacuum or box splint.
- Fractured humerus - draw out to length and splint with a vacuum splint. A Kendrick splint can be applied for mid-shaft humeral fractures
- Doctors and paramedics must make themselves familiar with manufacturers guidance for all splintage devices (see Equipment folder)

## 2. Bleeding Wounds

- Should be compressed directly.
- “Interim” suture may be considered eg scalp wounds.
- Blast bandages are carried in the Thomas pack and are effective when properly applied.
- Consider indirect pressure eg femoral artery compression, proximal to the bleeding site

## 3. Penetrating Wounds to Limbs

- If simple compression fails to control blood loss the Combat Application Tourniquet may be used.
- Time of tourniquet application must be recorded

## 4. Use of IV Fluids

When splintage & haemorrhage control has been maximised then fluids should be administered according to the following guidelines:

### Head Injury:

- Infuse 250 ml boluses of 0.9% saline to achieve systolic blood pressure of 100mmHg

### Blunt Injury (without head injury) and penetrating injury:

- Infuse 250ml boluses of 0.9% saline to achieve verbal contact which is taken to indicate adequate cerebral perfusion.
- Where verbal contact is not achievable (unconscious / ventilated patient) – infuse fluid boluses to achieve SBP of 80mmHg.
- Where patients demonstrate signs of haemodynamic compromise, the receiving Emergency Department should be so informed during the “Blue Call”, and a request for blood and clotting factors made. With blood available the decision to transfuse or not can be made by the receiving trauma team.

**CODE RED - Patients carried back to the Royal London who fulfil all of the following criteria must have a “CODE RED” request made as soon as possible from on scene.**

- **SBP < 90,**
- **Non-responder to fluid boluses**
- **Suspected or confirmed haemorrhage.**

**In the absence of prior notification to RLH ED the HEMS doctor must state “CODE RED” when making the “blue call”. This will ensure that a massive transfusion pack (blood and clotting factors) is available on arrival in RLH ED. (See appendix 1 for CODE RED protocol and guidance notes.)**

### **5. Venous Access**

- Standard access is a 14 or 16 gauge cannula in the antecubital fossa. Where possible choose an arm that is uninjured and not associated with ipsilateral chest injuries.
- Make every effort to secure the line.
- Tape as diagonal x2
- Tape as horizontal x1
- Loop the giving set through 1st web space and back along forearm. Tape x 2.
- Cling bandage where possible.

### **6. Failure to establish peripheral venous access**

- Femoral and external jugular venous access points are the first choice alternatives to peripheral access. Subclavian and internal jugular are less practical in pre-hospital care.
- Where there is likelihood of pelvic or IVC disruption, ensure there is a patent line above the diaphragm.
- Brachial, saphenous or femoral cutdowns are very rarely performed but are options. Doctors should familiarise themselves with relevant surface anatomy and techniques.
- **Intraosseous access:** This route is useful in children and can also be used in adults. It is mostly used for critically unwell children though use in adults has increased significantly in recent years. I.O access is inferior to venous access and is possibly overused in some systems. Sites for insertion include the iliac crest, tibia, distal femur, humerus and sternum. The HEMS doctor must be completely confident with the insertion techniques of the devices carried.