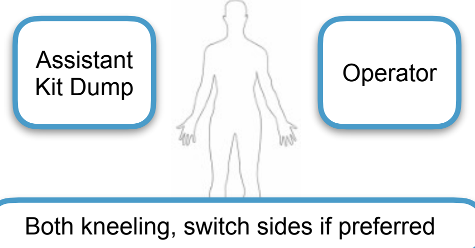
Thoracotomy

TEAM / CRM / SAFETY

DECLARE Thoracotomy needed
Brief team
ALLOCATE: Command, control, egress plan
ALLOCATE: Airway, IV access, blood
Ensure 360° access - move if required
Patient positioning - arms at 90°
SCALPEL SAFETY - hands away



YOU NEED

EYE PROTECTION
GLOVES (sterile over non-sterile)
Head torch
Suction
Orange Disposal Bag
Sharps box

Surgical Procedures Pack (trauma bag)

- Size 24 Scalpel
- Spencer Wells Forceps
- Gigli saw & handles
- Sterile Tuffcuts
- Sterile Scissors

Procedure

BILATERAL 4th ICS Thoracostomy with normal technique
INCISE left then right of chest in "W" sternum to thoracostomy to PAL
COMPLETE thoracotomy with Sterile TUFFCUTS
BLUNT dissect tissue from back of sternum
DIVIDE sternum with TUFFCUTS (or Gigli saw and forceps)
SUCTION, compress bleeding, look for tamponade
Open PERICARDIUM vertically in midline - forceps, scissors
Remove Clots, Suction, Occlude Holes, Suture, Staple
OPERATOR bimanual heart compressions
Consider assistance to COMPRESS aorta at diaphragm

Asystole

Blood, Flick ventricle, Adrenaline

VF

Hands out, pads on, close chest, Shock

ROSC

Ketamine, Rocuronium, Control haemorrhage, Package
SHARPS safety and clear up READY TO GO

TRANSPORT

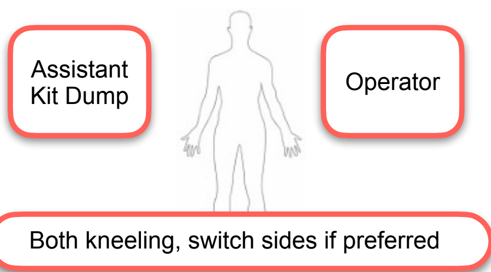
Put WRONG WAY round on trolley
Patient's head to ambulance back doors

STANDBY CALL

State: "REQUEST TRAUMA TEAM - CODE RED - THORACOTOMY - OPEN CHEST - ETA is ……"

TEAM / CRM / SAFETY

DECLARE Surgical Airway needed
Brief team
ALLOCATE: Command, control, egress plan
ALLOCATE: Airway, IV access, blood
Ensure 360˚ access - move if required
SCALPEL SAFETY - hands away



YOU NEED

EYE PROTECTION
GLOVES (sterile over non-sterile)
Head torch
Suction
Orange Disposal Bag
Sharps box

SCRAM Airway Pack

- Size TEN Scalpel
- Size SIX ET Tube
- Tracheal Dilators
- Sterile Hook
- Size TEN (MEDIUM) Bougie
- TWENTY ml Syringe for Tube Cuff

BLOOD WILL SPRAY WHEN INCISING THE TRACHEA

WEAR EYE PROTECTION

Procedure

EXTEND the neck – blankets, IV fluid bag, head off trolley
STABILISE larynx with one hand
IDENTIFY cricothyroid membrane
- consider vertical midline incision to identify cricothyroid membrane

INCISE horizontal STAB INCISION through CRICOTHYROID membrane
ROCK scalpel horizontally
Keep scalpel in place - consider need for HOOK or DILATORS
Insert BOUGIE
RAILROAD endotracheal tube over bougie - gentle rotation
Bougie out, Balloon up,
$ETCO_2$, BVM, Listen, Trace – CONFIRM
Secure tube

CONTINUE Resuscitation

Surgical Airway

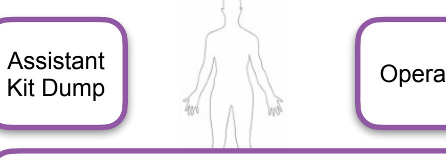
Resuscitative Hysterotomy

KEY CONSIDERATIONS

- Consider and plan for resuscitative hysterotomy as soon as CARDIAC ARREST declared in visibly pregnant patient (20 weeks - uterus at umbilicus)
- AIM to start procedure by 4 mins after cardiac arrest and complete by 5 mins
- PRIORITY is mother

TEAM / CRM / SAFETY

DECLARE Resuscitative hysterotomy
Brief team
ALLOCATE: Command, control, egress plan
ALLOCATE: Airway, IV access, blood
ALLOCATE: Displace uterus to patient's LEFT during CPR
Ensure 360˚ access - move if required
CLEAR onlookers - get privacy
SCALPEL SAFETY - hands away
IDENTIFY who takes baby



YOU NEED

EYE PROTECTION
GLOVES (sterile over non-sterile)
Head torch
Suction
Orange Disposal Bag
Sharps box

Surgical Procedures Pack (trauma bag)
- Size 24 Scalpel
- Spencer Wells Forceps
- Sterile Scissors

Dressings Pack (trauma bag)
- Wound pads / packs

Maternity Pack (SAS)

Procedure

INCISION MIDLINE Sternum to Pubis
Small Incision Lower Midline UTERUS
SCISSORS to Open Uterus Upwards VERTICALLY - DELIVER BABY
CLAMP and CUT Cord - HAND OFF Baby to Team
Placenta can be LEFT IN PLACE and tied off
BIMANUAL COMPRESSION of uterus
CONSIDER packing uterus and abdomen with gauze/towels and cover
DRUGS - TXA, Syntocinon, Misoprostol (PR or SL)

ROSC

Continue RESUSCITATION
MATERNAL ROSC - Sedation, Paralysis and Package for Transport
SHARPS safety and clear up READY TO GO

TRANSPORT

to TRAUMA CENTRE

STANDBY CALL

State: "Request TRAUMA TEAM - CODE RED - FIELD C-SECTION - OPEN ABDOMEN - ALERT PAEDS ED – ETA….."

INDICATIONS

NO OPTION to free entrapped patient

IMMEDIATE THREAT TO LIFE

outweighing time necessary to free limb

ACCESS to live patient via deceased

YOU NEED

EYE PROTECTION
GLOVES (sterile over non-sterile)
Head Torch
Suction
Orange Disposal Bag
Sharps box

Surgical Procedures Pack (trauma bag)

- Size 24 Scalpel
- Spencer Wells Forceps
- Gigli Saw and handles

Dressings Pack (trauma bag)

- Blast/Modular bandages
- Celox

TEAM / CRM / SAFETY

DECLARE Amputation needed

Think SCALPEL SAFETY: hands away

Procedure

HAEMORRHAGE CONTROL: CAT(s)

Sedation / Analgesia with Ketamine or RSI

SITE as DISTAL as practical

CONSIDER transarticular amputation - may be safer and quicker

TRANSVERSE incision across limb everything except bone

PUSH forceps through behind bone

GRAB AND PULL Gigli saw blade through

ATTACH Gigli saw handles

FORCEPS along bone to protect operators

SAW Upwards Through Bone

COMPLETE Amputation With Scalpel

CELOX & MODULAR/BLAST BANDAGE

SHARPS safety and clear up READY TO GO

Is Limb Retrievable? Wrap and Transport With Patient

TRANSPORT

to TRAUMA CENTRE

STANDBY CALL

State: “Request TRAUMA TEAM - CODE RED - FIELD AMPUTATION - ETA…..”

KEY CONSIDERATIONS

- INDICATION: Pneumothorax in a spontaneously breathing patient:
- CONSIDER deferring with unilateral simple pneumothorax WITH little/no oxygen requirement, minimal respiratory distress and GCS 15.
- CONSIDER lowering threshold with aeromedical transfer.
- Standard helicopter flights unlikely to significantly increase pneumothorax size.

TEAM / CRM / SAFETY

Ensure 360˚ access - move if required
Brief team
ALLOCATE: operator, assistant, sedation, monitoring.
Do not significantly prolong on-scene time
BEWARE of tube blocking / dislodgement

YOU NEED

WEAR	Eye protection Sterile gloves Face mask Disposable gown Head Torch
Drug Bag	Local anaesthetic Orange & green needles 10ml syringe
Chest Drain Pouch	Scalpel Spencer Wells forceps Chest tube Drainage bag 1.0 suture Large adhesive dressings
Dressing pack	Sterile swabs Adhesive tape
	Orange disposal bag Sharps bin

Procedure

IDENTIFY safe insertion site
ENSURE adequate analgesia and / or sedation
DISINFECT skin around insertion site
INFILTRATE local anaesthetic from skin to pleura
INCISION thoracostomy with scalpel
BLUNT DISSECTION with forceps down through pleura
INSERT chest tube with forceps
- ensure all holes are within thoracic cavity

NOTE depth at skin
ATTACH drainage bag to chest tube
TIE IN with skin suture
APPLY swabs and film dressing
SECURE drainage bag tubing to skin with tape
ENSURE drainage bag kept below level of chest
MINIMISE snag risk

Lateral Canthotomy

KEY CONSIDERATIONS

- INDICATION: suspected orbital compartment syndrome caused by traumatic retrobulbar haemorrhage.
- FEATURES: 5 Ps - Pressure, Proptosis, Paralysis of eye movement, Pupil response reduced, visual imPairment.
- Opening eyelids can be difficult with a periorbital haematoma - get assistance and use gauze.

TEAM / CRM / SAFETY

DECLARE Lateral canthotomy needed

Brief team

ALLOCATE procedure, assistant, analgesia/ sedation.

EQUIPMENT

- Chloraprep applicator
- Lidocaine 1% with needle and syringe
- Sterile scissors
- 12.5cm Spencer Wells forceps
- Sterile swabs

Procedure

IDENTIFY lateral canthus.

DISINFECT skin with Chloraprep.

INFILTRATE local anaesthetic with 1% lidocaine laterally from lateral canthus.

CRUSH the lateral canthus with forceps for 15 seconds.

Release forceps, then use to hold the lid.

CUT through the line of crushed tissue with scissors to orbital rim.

PULL the lower lid away from the globe with forceps or fingers.

IDENTIFY inferior crus of lateral canthal ligament

- can help to “strum” the tissue beneath lower lid with scissors.

Cut through lower ligament with scissors (inferior cantholysis).

CONSIDER repeating process for upper crus of lateral canthal ligament if orbit still tense.

Post Procedure

Re-check pupillary response.

Re-check visual acuity.

Apply chloramphenicol ointment if available.

Do not apply a pad if the eye does not close fully.

Stand-by call: consider request to ophthalmology.

<table>
<tr><th colspan="4">2. Document History</th></tr>
<tr><td>Reference Number</td><td colspan="3">CG014</td></tr>
<tr><td>Version</td><td colspan="3">2</td></tr>
<tr><td rowspan="8">Writing group
(Lead author in bold)</td><td>Ross Archibald</td><td>Emergency Physician</td><td>EMRS West</td></tr>
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<tr><td rowspan="11">Distribution</td><td colspan="2">BASICS Scotland</td><td>X</td></tr>
<tr><td colspan="2">Medic 1</td><td>✓</td></tr>
<tr><td colspan="2">Referring centres via service websites</td><td>✓</td></tr>
<tr><td colspan="2">Rural GPs Association of Scotland</td><td>X</td></tr>
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<tr><td>Neonatal</td><td>X</td></tr>
<tr><td colspan="2">Tayside Trauma Team</td><td>✓</td></tr>
</table>

3. Scope and purpose	
• Overall objectives: The aim of this guideline is to define procedure for the emergency surgical interventions of thoracotomy, surgical airway, peri-mortem Caesarean section, field amputation, surgical chest drain and lateral canthotomy/cantholysis. Each is designed as a stand-alone operational cognitive aide. • Statement of intent: This guideline is not intended to be construed or to serve as a standard of care. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. Clinicians using this guideline should work within their skill sets and usual scope of practice. • Feedback: Comments on this guideline can be sent to: sas.cpg@nhs.scot • Equality Impact Assessment: Applied to the ScotSTAR Clinical Standards group processes.	
• Guideline process endorsed by the Scottish Trauma Network Prehospital, Transfer and Retrieval group.	