

Challenges in the Prehospital Field

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The delivery of advanced interventions on scene is promoted on the basis that, if left untreated until hospital arrival, some patients will die or suffer morbidity from uncorrected time-critical pathology (Lockey 2017)

....and the risk of carrying out any advanced interventions must be less than the risk of rapid transport with more basic manoeuvres

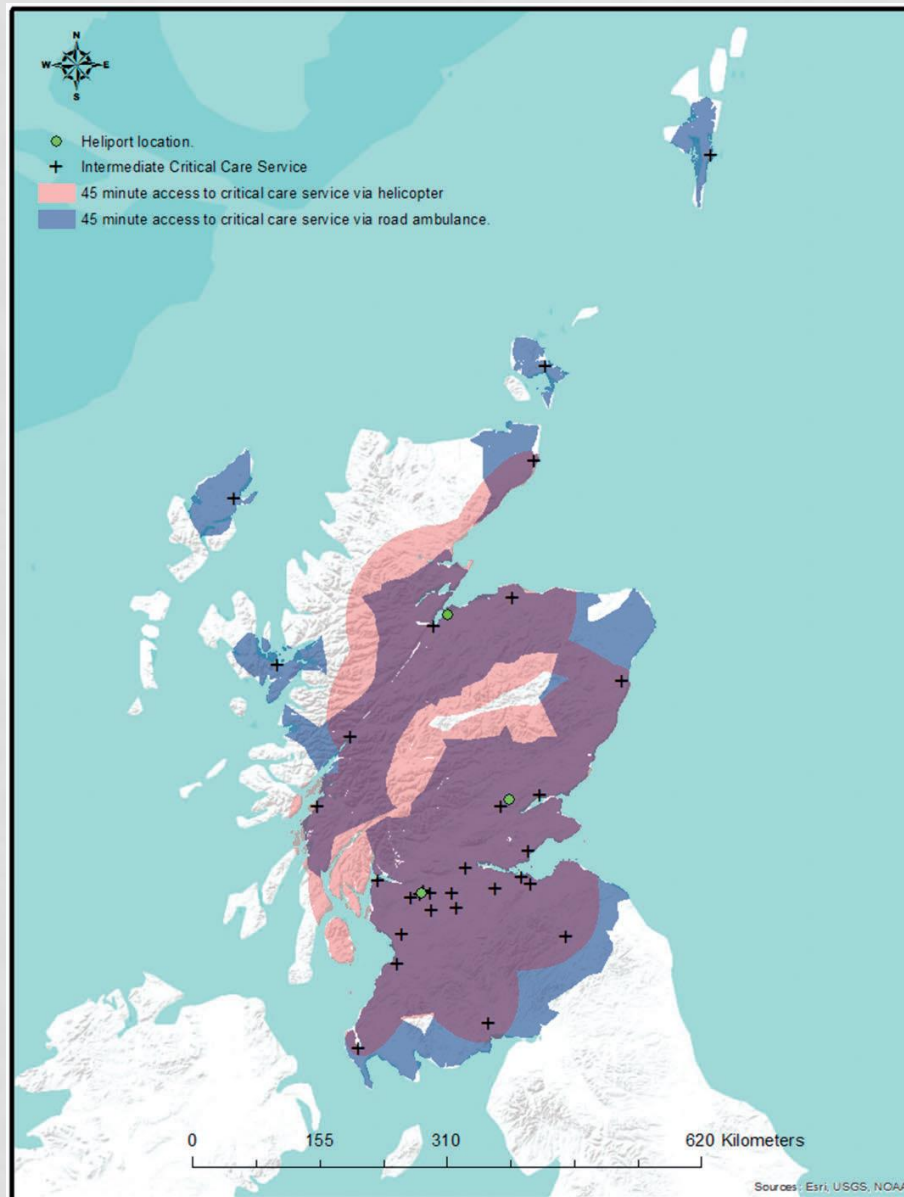
CHALLENGES

- Pragmatism in changing environments
- Geographic Equity
- Ensuring safe pre-hospital RSI
- Chest decompression





Condition	Pre-hospital intervention	Additional scene time	Definitive care	Ambulance intervention Gain
GCS 5 head injury with SDH and airway obstruction	Basic airway care, RSI	30	craniotomy	+++
Heavy bleeding from compound femur fracture	Tourniquet, splint, TXA, blood	15	Vascular control	+
Tension Pneumothorax	NCD, finger thoracostomy	10	Chest drain	++
Shock after stab wound to abdomen	TXA, blood	15	Laparotomy	+/-





PREVENTION



PRE-HOSPITAL



ACUTE



REHABILITATION



MAJOR INCIDENT PLANNING

Adult Trauma Triage Tool ≥ 16

Use this tool to Triage all Significantly Injured Patients
or Patients involved in a High Mechanism Incident

Clinical Judgement is important and valued.

If you are concerned that your patient's triage category does not reflect their needs, you require clinical or logistical advice please contact the **Trauma Desk** directly on

03333

990 211

or by airwave by placing a callback to your local area dispatcher who will arrange a callback from the Trauma Desk.



Triage Questions

Step 1

Assess your Patient's Physiology

Does your Patient have any of the following:

- Systolic blood pressure < 90 mmHg, or no radial pulse
- Glasgow Coma Scale < 14
- Respiratory Rate < 10 or > 29 breaths/min

Step 2

Assess your Patient's Injuries

Does your Patient have any of the following:

- Penetrating injury to head, neck, torso or extremities proximal to elbow or knee
- Chest Wall instability or deformity
- Two or more proximal limb fractures
- Crushed, degloved, mangled or pulseless extremity
- Amputation proximal to wrist or ankle
- Suspected Pelvic Fracture
- Open or Depressed Skull Fracture
- Paralysis

Step 3

Assess the Mechanism of Injury

Did any of the following occur:

- Fall > 20 Feet
- High Risk Vehicle Accident
 - With $> 12"$ Intrusion
 - Ejection (partial or complete)
 - Death in same passenger compartment
- Vehicle Striking Pedestrian/Cyclist at > 20 mph
- Motorcycle accident at > 20 mph

Step 4

Special Considerations

Are any of the following present:

- Age > 55 years
- Bleeding Disorder or Anticoagulant Treatment
- Isolated Burns (Liaise with Trauma Desk)
- Pregnancy > 20 weeks
- Morbid Obesity

YES
NO

Response Category

Should the airway become compromised and cannot be managed, consider conveying/diverting to the nearest locally designated Emergency Department

Major trauma centre care



Your Patient requires Major Trauma Centre (MTC) Care

- If < 45 minutes from MTC = convey to MTC
- If > 45 minutes from MTC = contact Trauma Desk



If you do not think your patient requires MTC, contact Trauma Desk

Remember to pre-alert the receiving hospital via airwave if you are managing a patient triaged to MTC

Trauma unit care



Your Patient requires Trauma Unit (TU) Care

- Convey to the nearest TU, or MTC if closer
- If > 45 minutes from TUMTC contact Trauma Desk



If you do not think your patient requires TU/MTC, contact Trauma Desk

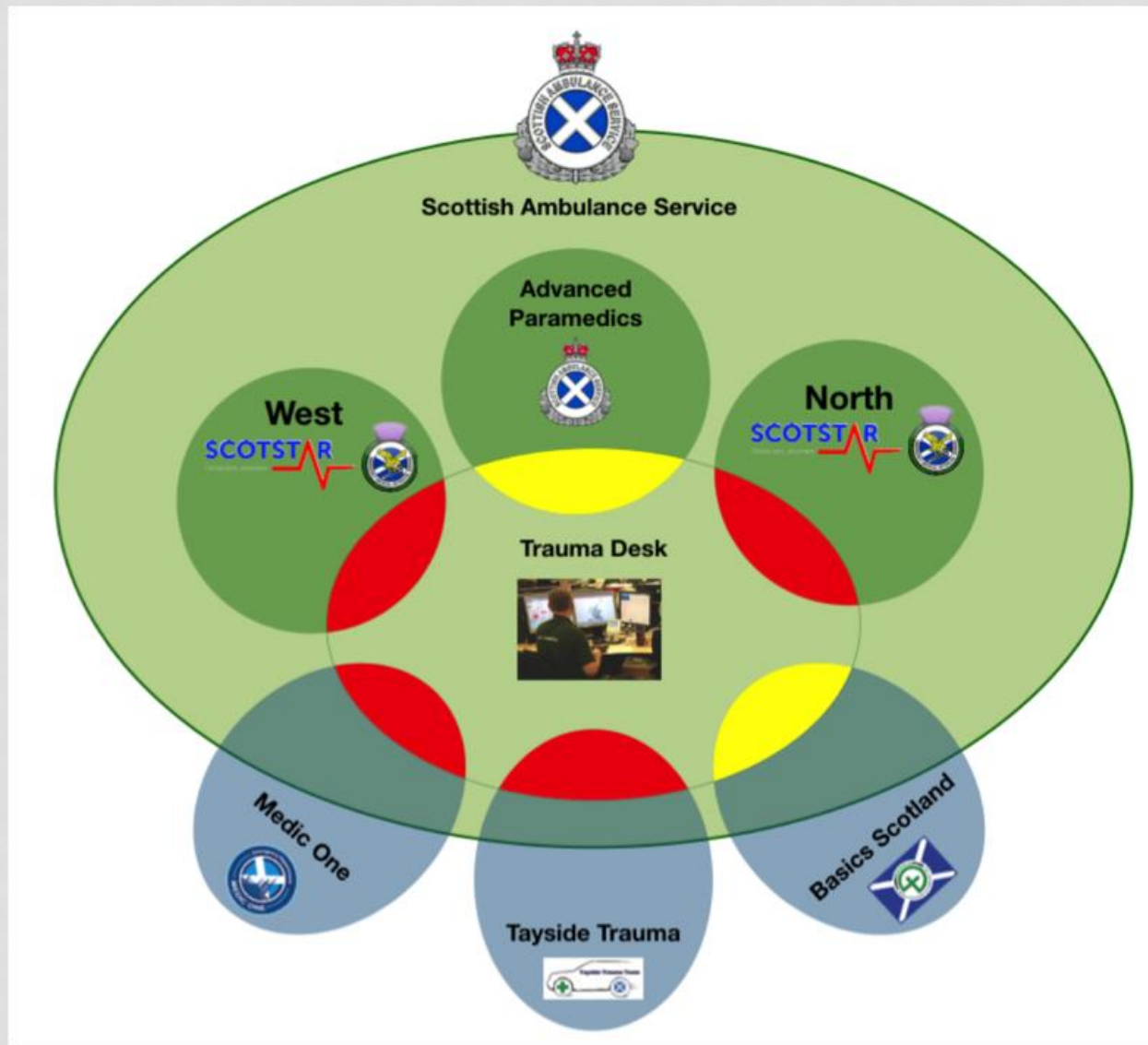
Local



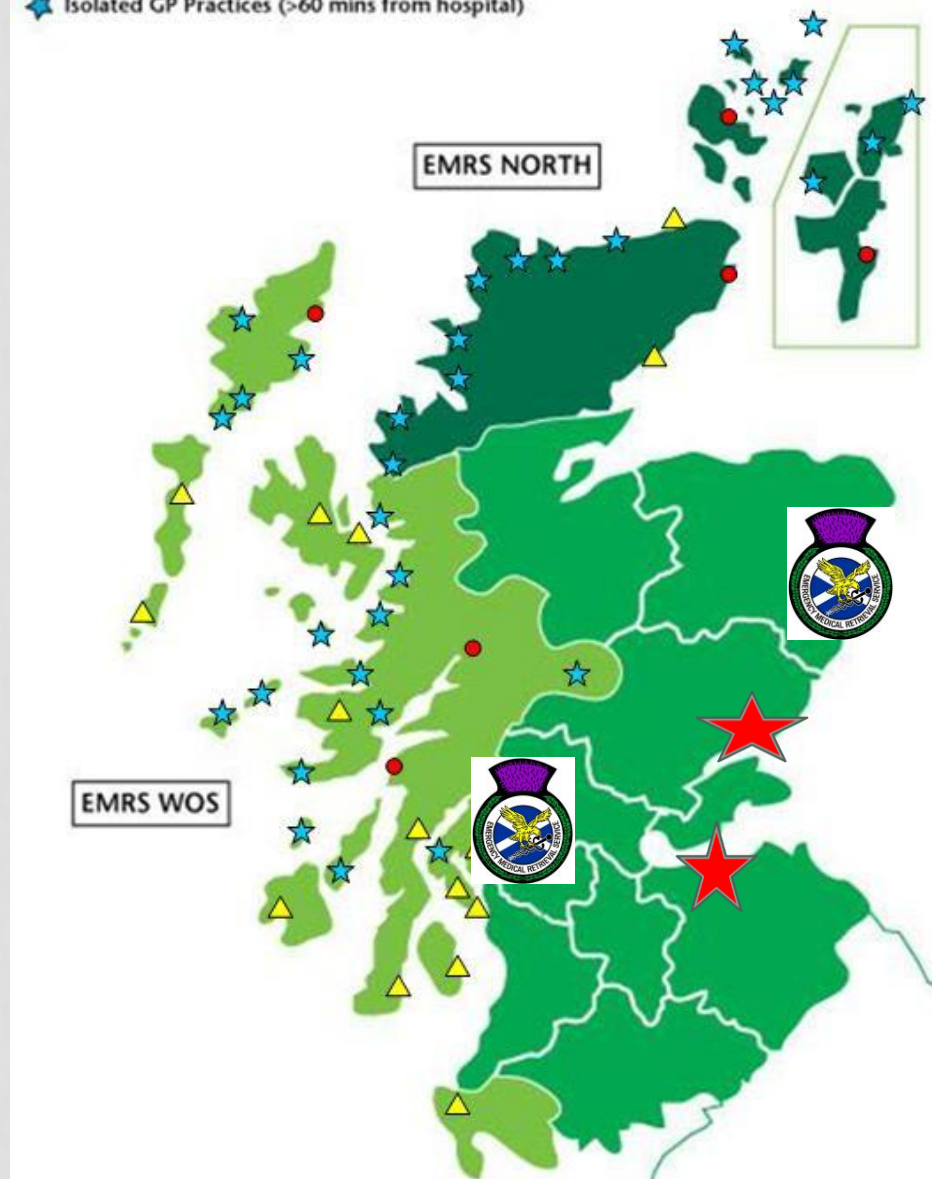
Convey your patient to the nearest Local Emergency Hospital

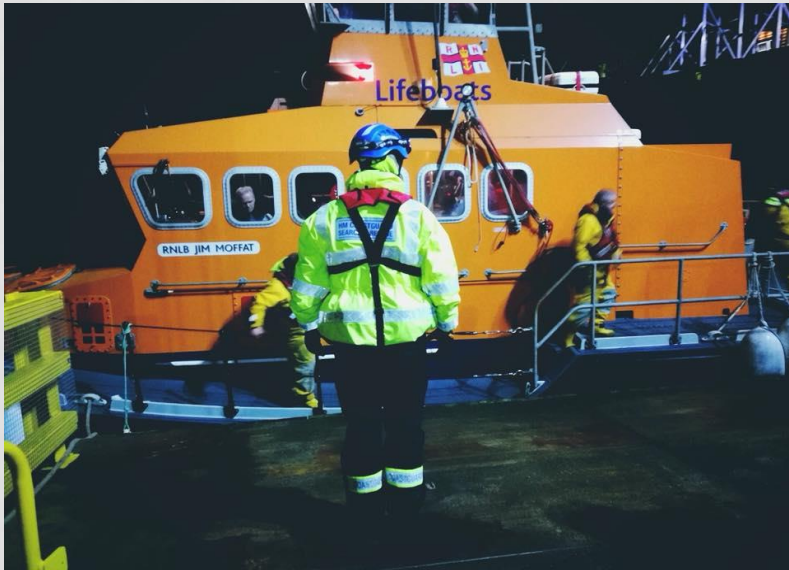


If you think your patient requires TU/MTC, contact Trauma Desk



- Rural General Hospitals
- ▲ Community Hospitals Receiving Emergencies
- ★ Isolated GP Practices (>60 mins from hospital)





ADVANCED PARAMEDIC PRACTICE

- Advanced retrieval practitioners
- Advanced paramedics
 - Cardiac arrest
 - Trauma extrications
 - Agitated delirium
- Advanced rural practitioners



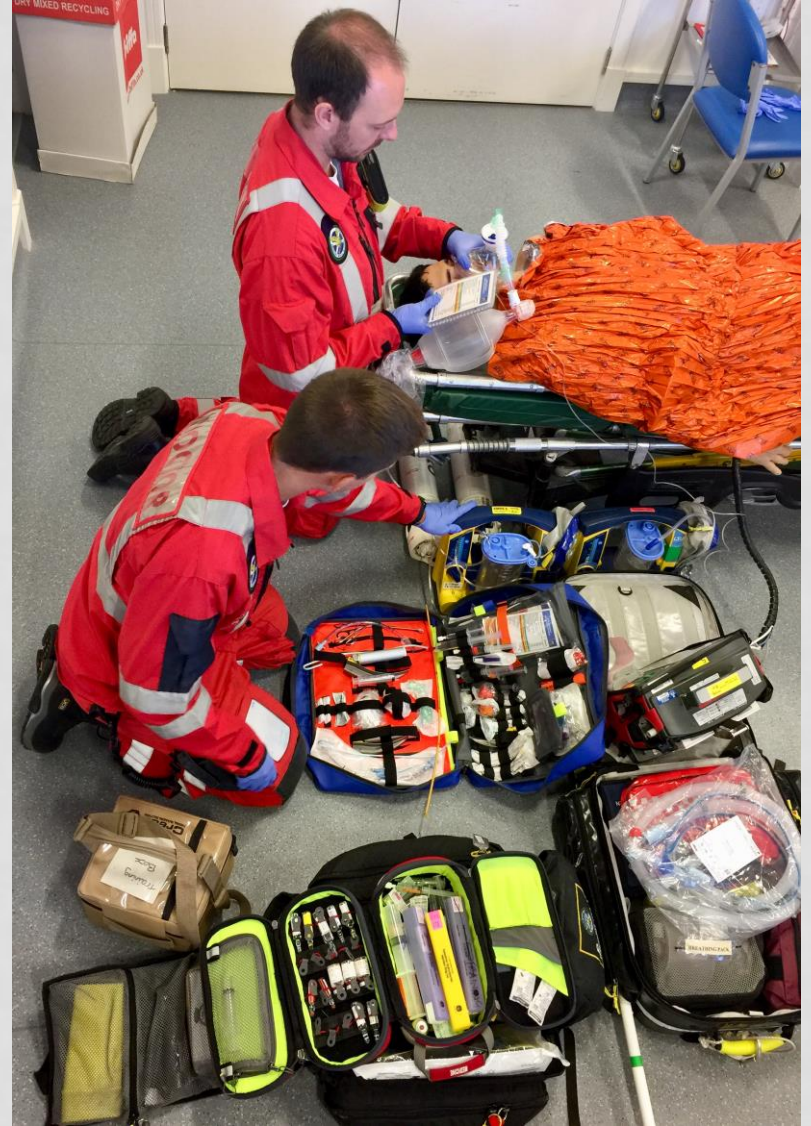
SAFETY OF PREHOSPITAL RSI

- Prehospital RSI done well probably improves outcomes in the right patients
- Prehospital RSI done badly is definitely worse than nothing




“the margin for error is so small... The inches we need are everywhere around us. They're in every break of the game, every minute, every second.” Tony D'Amato *On Any Given Sunday*





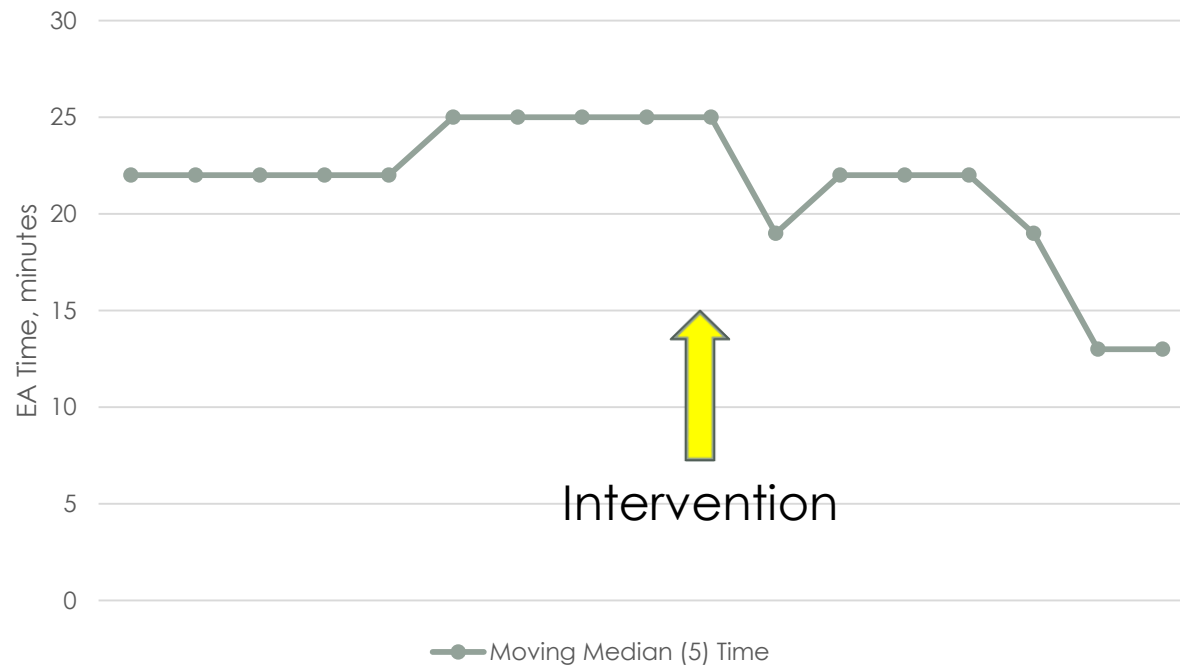
MINIMISING COGNITIVE LOAD

EMRS EMERGENCY ANAESTHESIA CHECKLIST		
"Commence Checklist"	Response	
360 degree access	Check	
BVM + Catheter Mount + Filter + ETCO ₂	Check	
O ₂ flowing to BVM and >50% full	Check	
Spare O ₂ >50% full	Check	
Suction working patient's right side	Check	
Spare suction ready	Check	
IV flushed and working	Check	
Second IV flushed and working	Check	
ETCO ₂ connected and trace on	Check	
Heart Rate, BP, O ₂ Sats	READ OUT	
Opioid	Name/Dose/Vol/None	REPEAT BACK
Induction	Name/Dose/Vol/None	REPEAT BACK
Paralysis	Name/Dose/Vol/None	REPEAT BACK
Laryngoscope	Name/Size/Check	
Spare Laryngoscope	Name/Size/Check	
Tube	Size/Check	
Spare tube	Size/Check	
Syringe for cuff	Check	
Tube tie	Check	
Bougie	Size/Check	
Stethoscope	Check	
LMA	Point / Check	
Surgical Airway	Point / Check	
Neck immobiliser ready	Check	
Cricoid pressure ready	Check	
"Checklist complete. Ready to proceed"		

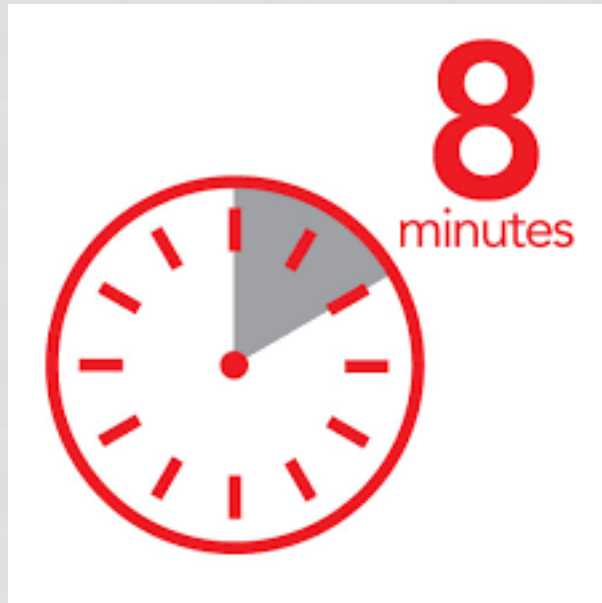
CHECKLIST

- SOP
- Kit dumps
- Standard approach
- Daily bag checks
- Skills and drills
- Pre-drawn drugs
- Checklists

Run Chart of Moving Median (5) Time from Decision
for RSI to RSI Complete (EA Time) EMRS Scotland

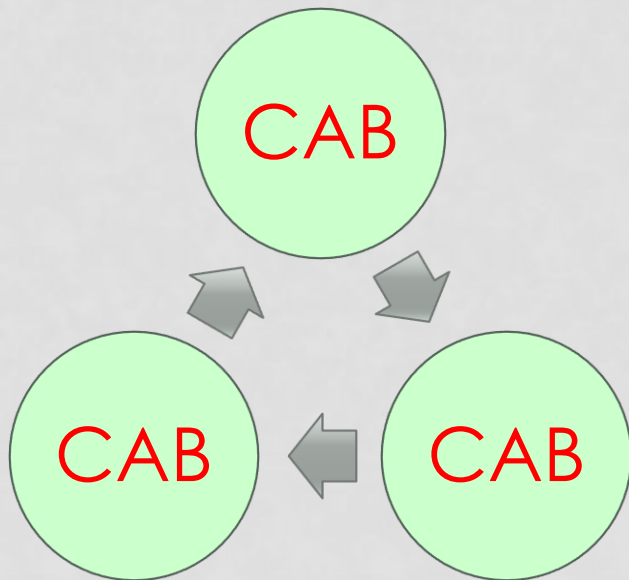


AFTER THE HIGH FIVE....



InTub8

CAB CYCLES



- 1-2 mins
 - C – external bleeding, pelvic binder
 - A- basic airway manoeuvres + O2
 - B – needle decompression
- 2-10 mins
 - C- IV/IO access, blood, TXA
 - A – consider RSI
 - B – thoracostomy
- 10 mins +
 - C – code red
 - A – bite block
 - B - Ventilator settings

INDICATIONS FOR NCD

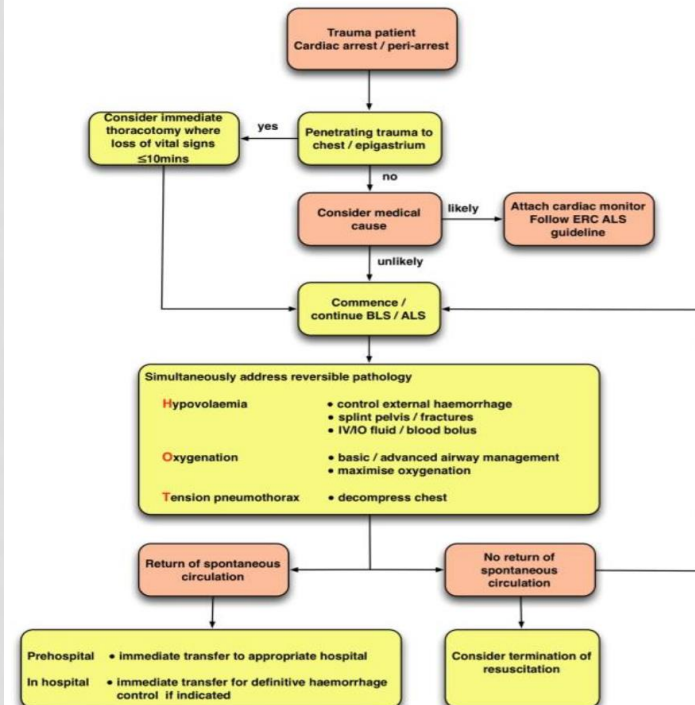
Box 7 Recommendations for immediate chest decompression in awake patients with tension pneumothorax as the suspected cause

Chest radiograph not immediately available and:

- SpO₂ < 92% on O₂
- Systolic BP < 90 mm Hg
- Respiratory rate < 10
- Decreased level of consciousness on O₂
- Cardiac arrest
 - bilateral finger or tube thoracostomy
 - not needle thoracocentesis

The London HEMS Algorithm

Traumatic cardiac arrest treatment algorithm

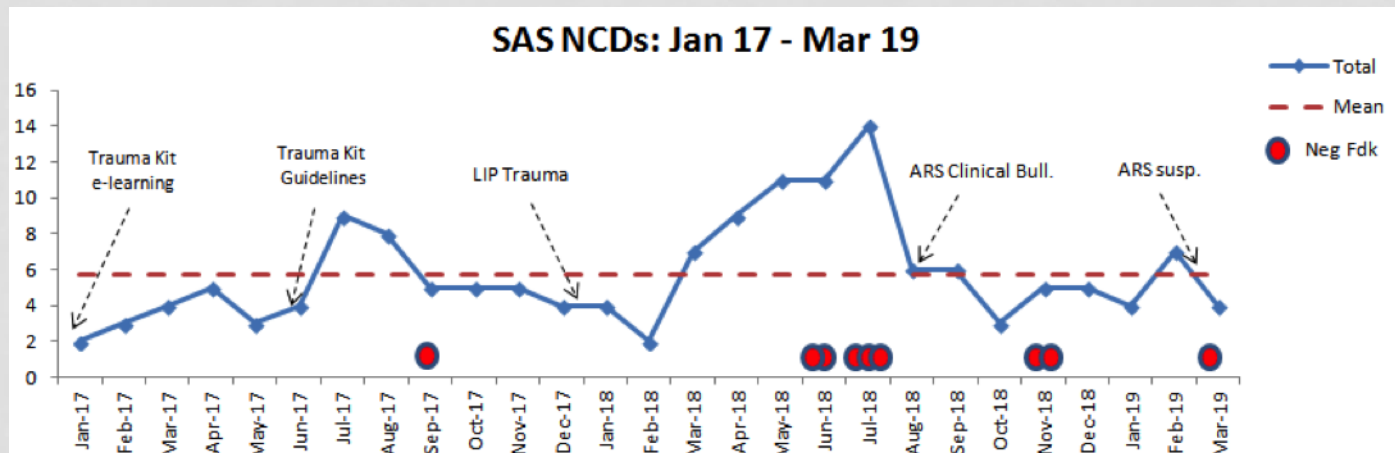


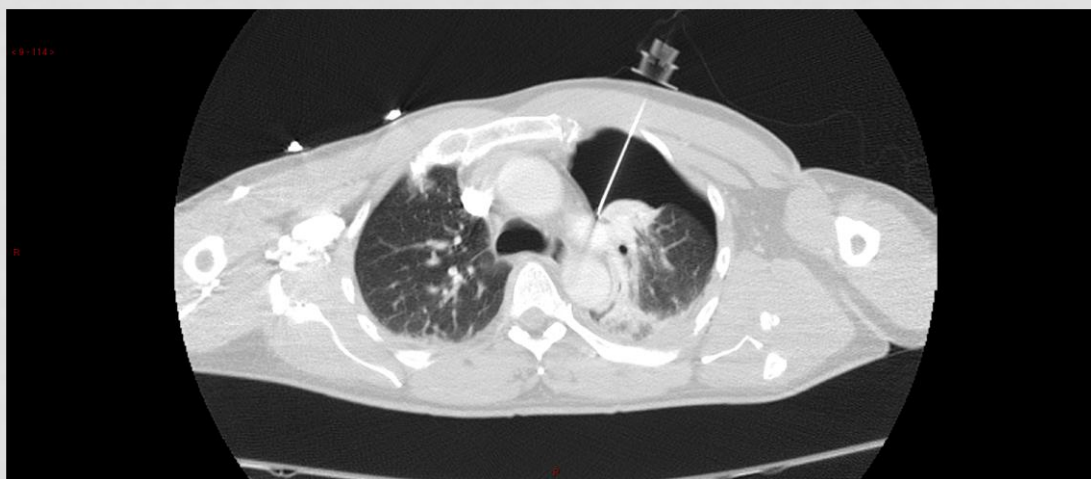
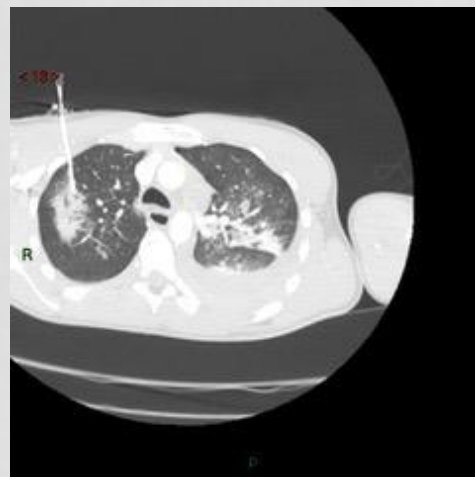
BLS: basic life support, ALS: advanced life support, ERC: European Resuscitation Council,
IV: intravenous, IO: intraosseous

Lockey et al. (2013). Development of a simple algorithm to guide the effective management of traumatic cardiac arrest. *Resuscitation*, 84(6), 738-742

DECOMPRESSION TECHNIQUES

- Standard 14G cannula
- ARS needle
- Veress needle
- Finger Thoracostomy





EQUIPOISE?

- Cannula with ARS backup option for strict indications with checklist
- Field trial of Veress type needle in selected groups paramedics
- Advanced practice thoracostomy for ventilated patient

TOP TIPS

- Paramedic always right about extrication
- Basics done well is expert prehospital care
- Balance risks/benefits of advanced interventions
- Integrate the system for geographic equity
- Standardise RSI & use checklist
- Work in CAB cycles
- Caution with needle decompression

