Doing Prehospital Medicine – what’s it like?

John Glen
Consultant, Anaesthesia & ICM, Glan Clwyd Hospital
Clinical Lead, Helimed 61 (Caernarfon)
Not as many rules as football

- Don’t take suicidal patients into your helicopter
  - Unless you’ve given them a general anaesthetic first
- Don’t risk losing the airway in the helicopter
  - It is impossible to work in there
  - So avoid giving sedation en route
- Don’t sedate people who might aspirate on you
  - Potential full stomach etc
Red Card for me?

- Knife handle in the way
- Face bandaged
- A long way from anywhere

- So I...
- Sedated with ketamine
- Plan to paralyse in mid air
The Case

• The weather is poor
• Car crash in Newtown: lorry vs people carrier
• Potentially multiple casualties

• You Have:
  • Helicopter and car
  • ‘A&E’ equipment
  • Skilled assistant
Wait or go?

**Wait**
- Stand downs a KPI
- Expensive
- Opportunity Cost

**Go**
- Potentially time critical
EMRTS Cymru Dispatch Criteria
For use by Air Support Desk

Immediate Dispatch Criteria:
- Serious RTC
- Patient unconscious
- Major Chest/Head/Pelvic injury
- Airway Compromise
- Significant Burn
- Amputation above ankle or wrist
- Stabbings, impalements, shootings, explosions
- Fall from height (>10ft or 1 storey)
- Trapped in machinery
- Animal Incident
- Aircraft / train / coach crash
- Request from non-WAST emergency service

Interrogated Dispatch Criteria:
- Major Incident (standby/declared)
- Vehicle or pedestrian RTC
- Industrial or agricultural accidents
- Diving emergencies
- Equestrian injuries
- Coastal/beach incidents
- 999 call originating from Midwife-Led Maternity unit (see notes)
- Crew request (see notes)
- Severe haemorrhage of any sort
- Traumatic Injuries including:
  - Hangings
  - Burns/Scalds
  - Drowning
  - Electrocutions
  - Spinal Injury with paralysis
- Medical emergencies
  - Including Myocardial Infarction
  - Cardiac arrest (see notes)
  - ROSC
- Patient agitated/combatative
- Access issues
Helicopter or car?

Helicopter

- Fast (once started)
- Good over distance
- Avoids traffic

Car

- Can go anywhere
- Weather independent
- Doesn’t need landing site
En Route in the car

• Info from scene:
  • 1 casualty
  • 11 years old
  • Reduced GCS

• You are 5 minutes away.
What do you want to do now?

Go home

Cry
ETT 6 @ 17.5
17.5 cm
Endo
Rec 60
Blood 20mL
Ad 4ml
50mL bag
Pulse 4
- Side impact
- Restrained, lap belt
- In the middle back seat
- Passenger on either side, uninjured
You are now in the back of an ambulance

- 9 year old boy: large.
- Obvious head injury, ‘black eye’.
- E1 (dysconjugate gaze); V2; M4.
- Blood from ear/nose.
- No other injuries seen, obs OK.
- Hypothermic at 34.
- No airway compromise.
  - But breathing abnormal
Options - linked

WHERE WILL I GO?
• Nearest ED?
• Paeds hospital?

WHAT WILL I DO?
• Secure the airway or not?

HOW WILL I GET THERE?
• Helicopter?
• Ambulance?
Options - linked

WHERE WILL I GO?
- Nearest ED?
- Paeds hospital?

WHAT WILL I DO?
- Secure the airway or not?

HOW WILL I GET THERE?
- Helicopter?
- Ambulance?
Should this non-paediatrician give paralysing drugs to this 9 year old child in the back of an ambulance, in the middle of nowhere, with no backup?

Yes

No
I decided to give an anaesthetic

• Need to:
  • Attach to our monitors
  • Prep equipment
  • Speak to mum

• As the checklist was being completed:
  • Ventilatory efforts becoming feeble
  • Becoming bradycardic (45 & falling)
Should this non-paediatrician give paralysing drugs to this 9 year old child in the back of an ambulance, in the middle of nowhere, with no backup?

Yes  No
Did anyone change their mind?

• This will be *fraught*.
  • Trolley not in the middle of ambulance
    • Ambulance would have been moving at this point
  • People not assembled
  • Equipment not ready (e.g. suction)
  • Checklist not done

• It will be a crash intubation in an apnoeic/arrested child.

• Of course there is always a risk/benefit analysis
  • But I don’t see the logic of delaying until it is actively dangerous
  • Paramedics can intubate the dead without your help.
Intubation

- Tube cuff lodged at cords
  - Error on app (was calculated for uncuffed tube)
- Could see it clearly on video
- I was seriously concerned about CO$_2$
  - Connected up, ventilated
  - EtCO$_2$ >10 on first squeeze
  - Ventilated to CO2 <5, then changed to smaller size over bougie
Safer pre-hospital anaesthesia 2017

Association of Anaesthetists of Great Britain and Ireland


Accepted: 3 January 2017   Full publication history

https://anae.13779   View/save citation

CrossRef: 0 articles   Check for updates   Citation tools ▼

Find this article at http://www.anaesthesiacorrespondence.com

Census document produced by expert members of a Working Party established by the Association of Anaesthetists of Great Britain and Ireland. It has been seen and approved by the AAGBI Board of Directors. It has been endorsed by: the Royal College of Surgeons of England; the Royal College of Anaesthetists; the Faculty of Pre-hospital Care the Royal College of Surgeons of Edinburgh; ESSICS Scotland; the Department of Military Anaesthesia; the Department of Military Pre-hospital Emergency Medicine, College of General Practitioners.
EMRTS Commissioning Organisation: Emergency Ambulance Services Committee (EASC)

EMRTS Host Organisation: ABMU Health Board

Medical Director: Hamish Laing

External Clinical Advisory Group

- 12 UK Experts
  - Meet twice a year
  - Oversight of SOPs
  - Independent case reviews

Operational SOPs (Approx 60)

Clinical SOPs (Approx 100)

EMRTS Delivery Assurance Group

Chair: Stephen Harrhy
- Meets quarterly

EMRTS Clinical and Operational Board

Chair: National Director
- Meets bimonthly

EMRTS Clinical and Operational Board has oversight of a number of subgroups, which report to it.

Airway Subgroup
- Chair: Stuart Gill
  - Terms of Reference
  - Meets quarterly

Retrieval and Transfer Subgroup
- Chair: Owen McIntyre
  - Terms of Reference
  - Meets quarterly

Paediatric Lead
- Pete Williams
  - In liaison with other relevant subgroups

Equipment Subgroup
- Chair: Mark Winter
  - Terms of Reference
  - Meets quarterly

Research and Audit Subgroup
- Chair: James Chinery
  - Terms of Reference
  - Meets quarterly

SOP Lead
- Mike Greenway
  - Oversees yearly SOP reviews

Major Incident Lead
- John Glen
  - In liaison with other relevant subgroups
EMRTS Scrutiny

- All cases involving anaesthesia, blood use, or children
- Formal debrief
- Forensic interrogation of monitor and of radio calls
- Personal feedback on performance to include in appraisal
- Public discussion on CG day
  - Timings
  - Clinical targets (Oxygenation, CO$_2$, Blood Pressure)
  - Decisions
Do you work this way?

- Your routine intervention list (OGD/Bronch/biopsy)
- All consultants agree on a single SOP
- Recording of each case
- Every case discussed in an open forum, with guests/outsiders/trainees
  - Are you sure you should have biopsied that bit?
  - Your documentation isn’t great...
  - The xray for contrast isn’t quite right
  - That took a while didn’t it?
  - You didn’t follow the SOP for which lung to do first...
  - Did you notice the sats dropped after the midazolam?
  - I think you should have done it this way...
- Any disagreements on practice/complications referred to another hospital team for formal review
Where would you like to go?

- Liverpool Children’s
- Wrexham
- Stoke MTC
- Shrewsbury
- Birmingham Children’s
- Swansea
- Cardiff
More info...

• Neither Liverpool nor Birmingham available by air (using helimed) due to weather
• Following multiple radio messages to pilot, confirmed that, in fact, only Stoke MTC available in current weather
  • It is a paeds Trauma Unit but not a paeds MTC
Zeigarnic Effect

- Unfinished task results in residual cognitive effort
- The more incomplete tasks, the greater the cognitive burden
- Results in
  - Anxiety
  - Irritability
  - Impaired performance
During this time...

• Raining so hard I can barely hear
• Trying to ‘package’ without losing tube/lines
• Messages from pilot; paramedics pitching in with suggestions.
• I need a photo of the car.
• I need to set up a ventilator & syringe driver.
• I need to phone the hospital.
• Police want an update.
• Mum, and several other relatives, at the door of the ambulance
  • Is he going to be OK? Can I ride in the ambulance? Can I see him? Where are you going?
  • I will have to have a conversation with mum and let her be with her child
• I don’t know where I’m going.
• I don’t know how I’m going to get there.
• Trying to provide neurocritical care to a child.
  • And just had an airway scare
So what should I do?

1: Stoke by air (30mins)

2: Request SAR and go to Alder Hey/Cardiff/Swansea/Birmingham

3: Alder Hey by road (2 hours)

4: Birmingham by road (2 hours)

5: Stay local – road to Shrewsbury (30 mins)
Outcome

• Drove to Alder Hey – 90 miles
• CT brain: BOS#, cochlear#
• Extubated the next day
• Neurologically normal
Brain Impact Apnoea

• Prehospital care a relatively new specialty
• Phenomena which do not appear in textbooks
  • People become apnoeic for a short while after hitting head
    • Vicious circle leading to death
  • Pneumothoraces are actually wheezy
Reflections

• Did I do this patient any good?
  • I think so: would have arrested on way to Shrewsbury
  • Does it justify the money?
    • I don’t know
    • ‘Rescue’ concept

• Do I enjoy this job?
  • No. Or seldom anyway.
  • But maybe life is about getting out of your comfort zone.
• 1 year fellowships in North Wales
• Middle grade doctors
• 2 days ICU, 2 days ED, 1 day PHEM
• Pay equivalent to ST3 + 50%
• No prior PHEM experience needed
• Speak to me!!