Another #FOAMEd production
by

MOUNTAIN MEDICINE
BANGOR EMERGENCY DEPT

OUR CPD | YOUR CPD

#FOAMEd

Highlights from

RETRIEVAL 2014

UK's National Prehospital & Critical Care Transfer Conference

Sharing the learning...

A totally unofficial report of key points noted by delegate

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PLUS a flavour of the Twitter coverage from the event

www.mountainmedicine.co.uk

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Introduction

Ever heard your colleagues talking about fantastic conferences they've been to, and wished you could have gone too? So have we! So, in Bangor ED, we encourage our staff to make notes at conferences and to share them on their return.

From there it has been a short step to deciding we'd like to share our notes with others, and this is the third such report we have shared publicly - the others are 2013 EMS Expo & Day 1 of the 2014 CEM CPD Event (Trauma and Toxicology).

This report is completely unofficial - from our CPD portfolio to yours, and nothing more. We had only one intrepid reporter at Retrieval 2014, Dr Kate Clayton (pictured right), and so this is a very brief report, limited to the lectures Kate attended and compiled from only one person's notes. Hence, this report is much less comprehensive (mainly bullet points) than our major conference reports, but we hope still interesting and useful.

However, for the first time we have included some highlights from the Twitter coverage of the event: if you haven't yet discovered Twitter for enhancing your CPD, do start now!

We must make an important disclaimer. Whilst our reporters make their notes as accurate as possible, this whole publication is based upon *notes made during the lectures* with all the attendant distractions and possibility of mis-recording the words of individual speakers. Whilst we have cross-checked data were possible, and included links to some studies cited during lecture, we can accept no responsibility for any errors or omissions we have made (or that the speakers made and we may have inadvertently propagated). **You should never change your clinical practice based solely on a report like this, but, we hope it will provide you with a springboard for learning.**

RETRIEVAL 2014

UK's National Prehospital & Critical Care Transfer Conference

Kate (our intrepid reporter) & Linda (editor/designer)

Reflection for your CPD

Some of the topics we report here are ripe for your CPD folder.

We've flagged up those that are particularly juicy with these snazzy green boxes, and included links to relevant papers, abstracts and websites.

#Retrieval 2014

There was a lively Twitter feed running throughout the conference: 356 participants, 2562 tweets and over 1.6 million impressions. We have included some Twitter comments in this report - if several people in one room tweeted the same thing, we figured that it probably made a big impact on the audience!

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Please help us support Tusk Trust!

We created this report because we're passionate about FOAMed, and wanted to share what we'd learned.

But, if you enjoy it and find it useful, could you consider making a donation to the Tusk Trust? This wonderful charity is dedicated to protecting rhino and elephant populations endangered by the greed for rhino horn and ivory - but also education and supporting communities in Africa. If everyone who reads this report donates even £1/$1, we could easily raise several thousand pounds for the Tusk Trust.

Please visit our Just Giving page by clicking HERE to donate

Pre-hospital anaesthesia - Professor David Lockey

Eagerly awaited by delegates, Dr Lockey's talk was delivered during a week when there had been empassioned debate - not always good-tempered - amongst the pre-hospital Twitter community about whether the application of cricoid pressure during RSI causes more harm than good, with one of the other speakers at Retrieval 2014, Cliff Reid, arguing for its abolition.

The Twitter feed from this talk, therefore, was particularly well followed!

Here are some highlights of David's talk.

- Aim for the same standards as for emergency anaesthesia in hospital.
- Risk:benefit analysis for every patient.
- Tight SoPs are vital, so are lots of drills and moulages.
- The first intubation attempt is the best one - optimise it
- Fentanyl/ketamine/rocuronium 3:2:1 or 1:1:2
- Pre-induction sedation is now being introduced
- Cricoid pressure not essential (Harris, Resuscitation 2010) but he does still do it
- Low-pressure ventilation at induction prevents desaturation
- Facial injuries are easy intubations
- Supraglottic airway devices suitable where airway soiling is due to blood (but not vomit)
- NEMESIS EMS database - 74,000 intubations
- Do not waste time doing a needle cricothyroidotomy - get on and do a surgical airway.

Reflection for your CPD

Curious about cricoid debate (and the current cutting-edge modifications to traditional RSI?) - check out the fantastic Australian blog Life In the Fast Lane

What they were saying on Twitter...

269/472 ptx subsequently intubated by London HEMS had airway obstruction on their arrival at scene - @WeekesLauren

Intubation without drugs hazardous (and poss risks>benefits), advanced airway management is required on scene - @_JohnWeeks_

7500 prehosp RSIs by London Air Ambulance, 99.3% success rate - @Gasdoc2857

Needle cric is a "disastrous intervention" - @philgods

Human factors/team attitude probably more important than exact technique in pre-hospital anaesthesia - @WeekesLauren

"Needle cric only allows further hypoxia and brain injury whilst u prepare to do a surgical cric" Prof Lockey on prehosp RSI. Brilliant. - @PBSherren

Intubation only one measure of success - top of iceberg e.g. hypotension etc - @WeekesLauren

Resilience on the Isle of Arran - Dr David Hogg

David - a GP and BASICS doctor on the Isle of Arran - described how this tiny island of under 5000 residents has made huge efforts to develop civil resilience - rewarded by winning the UK Resilience Team of the Year in 2013.

From making best use of all available resources, and projects such as setting up First Responder cardiac arrest teams, Arran illustrates how much can be done, despite the inherent vulnerability of an island that can be completely cut off if inclement weather prevents helicopters or ferries from functioning.

The Arran Resilience website - www.arranresilience.org.uk is well worth a read!

The Isle of Arran is just off the West coast of Scotland, UK

Arran is the 7th largest Scottish island: 167 square miles and a population of around 5000 which rises to 25,000 in summer. Inhabited since Neolithic times, the main industry today is tourism.

What they were saying on Twitter...

Arran Resilience: bringing multiple existing emergency teams together - @_JohnWeeks_

Go to Arran, it's Scotland in miniature. Cycle round it. And if you fall off your bike @ArranResilience will be there for you - @jonmcck

Rural GP, university post, roles in BASICS Scotland, RCGP and probationary member of mountain rescue team@ @davidhogg - @WeekesLauren

Teams do what they normally do: "not asking fire service to climb mountains" - @_JohnWeeks_

Total cost of 4 exercises and 21 meetings: £300. Highest costs - cars for extrication and chocolate biscuits! - @WeekesLauren

The Black Abbot - the person at a meeting who always says "aaaaah but..." we all know one! - @WeekesLauren

Preparing for the Commonwealth Games - Dr Jonny Gordon

Jonny discussed preparedness for the forthcoming Commonwealth Games, due to be held in Glasgow this summer.

"Extra-plan for the ordinary, and plan for the extra-ordinary...."

Planning has to cover the possibility of major incidents as well as provision of routine medical services for for 6500 athletes, support staff - plus first aid to the public - and all outwith the NHS.

As well as a Polyclinic to provide rapid service to athletes, there will be 350 first-aiders. many of whom have had additional training - all part of the legacy of the Games to the host city.

Retrieval Leadership - Dr Cliff Reid

British EM, pre-hospital & retrieval doctor Cliff Reid - now based in Australia - gave one of his characteristic charismatic presentations: there's no risk of death by Powerpoint when a fantastic speaker uses no slides at all!

"The essence of leadership is not seeing what is there. It is seeing what is not there, *but what should be*..."

Cliff's talk on Leadership touched on a number of areas:

- The need for leaders to have "vision"
- The need for expeditionary behaviour, and seeing a route from the current situation to where you wish to be
- and, as one would expect from a leading light of the #FOAMed movement, "the need to share SOPs and education in this digital age..."


Photo - Peter Sherren

What they were saying on Twitter...

Effective leaders focus on the system, not their own status within the system - @PHEMDoc

"Whining is the antithesis of expeditionary behaviour" and "leadership and followership are two sides of the same coin" - @_JohnWeeks_

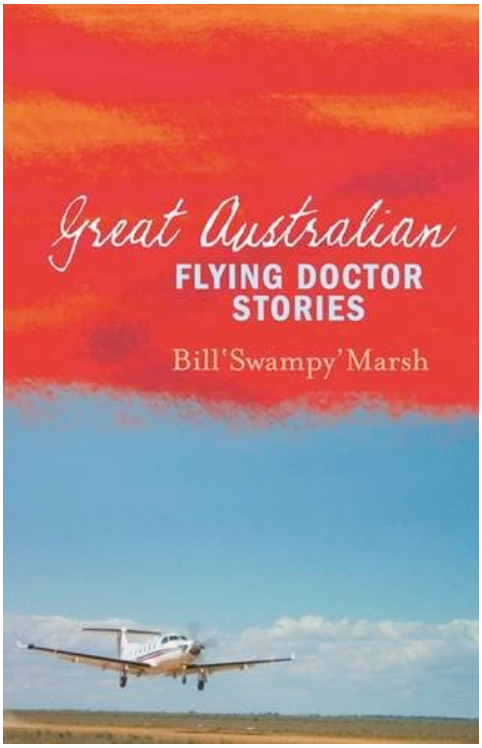
Transitional leadership... best person for the job, be sneaky, use dialogue, manage inappropriate enthusiasm - @paulgowens

Pre-hospital and retrieval jobs are excellent for training registrars - @_JohnWeeks_

Retrieval experience of resuscitation leadership improves when working in hospital. Improves CRM and assertiveness - @StephenHearns1

Good leaders know the "Boss has their back" - @alg_1972

Leadership doesn't belong to those at the top. Everyone can muck in - @PHEMDoc

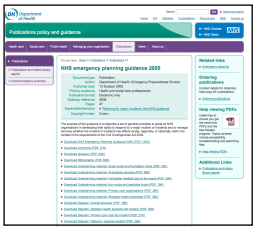


Bedtime reading as recommended by Cliff Reid - can be picked up on Amazon and even available for your Kindle at the grand price of £5.03!

Click here to link to Amazon!

MERIT teams - Darren Walter

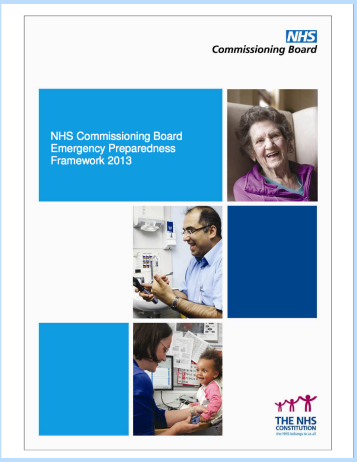
- Civil Contingencies Act requires NHS hospitals to have major incident plans in place.
- MERIT teams assumed responsibility for emergency preparedness as of 2010.
- MERIT teams are not standardised across UK ambulance services, and disputes over funding are impeding the provision of emergency preparedness and MERIT services nationally.



The 2005 NHS Emergency Preparedness document went over "how to" - this material is still visible on the National Archive website.

Interested in reading more?

Emergency Preparedness has now got its own NHS commissioning guidance - click here to have a look.



Post Traumatic Incident Stress Management - Angela Lewis

Angela Lewis from the Royal Navy talked about "TRiM" - "Traumatic Incident Management" - which has been standard practice in the UK military since 2007 and developed as part of the MoD's legal and moral obligation to staff.

"Threat, horror or loss...."

A TRiM de-brief - structured, peer-reviewed, on-site, by colleagues within the same unit - will take place 2-3 days after event, with follow up at one and three months. It is expected to use used after a first fatality, a major incident, or if a person is evidently troubled by the events they have witnessed or experienced.

Reflection for your CPD

Resources to learn more about TRiM and Post Traumatic Stress Disorder

For a simple "users overview" of TRiM, check out the army's own website: http://www.army.mod.uk/welfare-support/23245.aspx but for a more academic overview placing TRiM in context, try Greenberg *et al*'s paper from the J R.Nav.Med.Serv.,91,26-31 which is freely available as a PDF here and a similar paper led by the same author in the JR Army Med Corps 154(2): 123-126 which is also freely available.

Note the explanation in these two papers that TRiM is not intended to prevent PTSD - "probably impossible given the role of the armed forces", but to de-medicalise the fact that some events are distressing, and to identify those at increased risk of psychological injury. It is also intended to prevent military units from "...asking a mental health professional previously unknown to those involved to... deliver a most probably unhelpful "crisis intervention"."

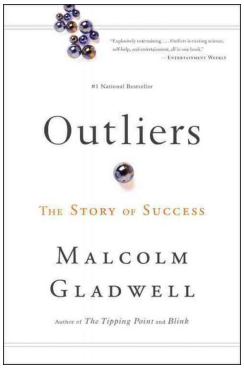
Simulation for retrieval - Dr Tim Parke

- It takes 10,000 hours to make an "expert" (Malcolm Gladwell, "Outliers")
- When de-briefing, tackle the big issue first and ensure you talk about not just *what* but *why* something happened.

Drill versus Simulation

Drill = a practice with no complex debrief.

Simulation = full mental immersion in a complex multi-player scenario using CRM skills. Full de-brief essential.



The source of the 10,000 hours quote... available from Amazon for as little as 40p!

What they were saying on Twitter...

How to be an expert by @trjparke:
1. Known stuff
2. Do stuff
3. Don't stuff up
Specific generic training to think and do - @retrieval2014

Tim Parke draws distinction between "practising stuff" (right/wrong) and true immersive simulation (bug picture) - @philgods

Training by @trjparke: #FOAMed for knowledge, DRILLS to practice technical skills, SOMULATION to practise thinking/mindset - @jonmcck

"Shit Sandwich" de-brief out! Take elephena in room at debrief and deal with it. Talk about thought processes behind action. - @WeekesLauren

Are you a nanna or a cowboy in stressful situations? Try and develop some tendancies of the opposite style - @WeekesLauren

Sim debrief: reflect on how decisions were made more than what happened. "Training thinking pre-hospital" - @Doc_Lev

Final thought: be able to do without thinking and think without doing" - @_JohnWeeks_

Critical Care education in Rural Scotland - Dr Richard Price

Scotland comprises about a third of the landmass of the UK, but with a population of around 5.25 million, less than a tenth of the population. Large areas of this beautiful country are very sparsely populated, and a long way from hospitals.

- Outreach education sessions provided by EMRS to remote healthcare providers using combination of brief Powerpoint presentations, simulation, debrief and tabletop exercises.
- BASICS training and equipment for rural GPs
- Mobile clinical skills unit containing hi-fidelity simulation equipment & video debrief equipment (faculty sourced locally).

What is EMRS? The Scottish Emergency Medical Retrieval Service provides an airborne critical care outreach service to remote and rural areas of Scotland. See www.emrs.scot.nhs.uk

What is BASICS? A network of volunteer medical professions providing pre-hospital care in their communities, in co-operation with their local ambulance service. See www.basics.org.uk

Improving outcome in OHCA - Dr Gareth Clegg

So, you're at a cardiac arrest pre-hospital, and you get a fleeting thought in your head "I wonder what all this looks like". If you work in Edinburgh, where there's some very exciting work with the TOPCAT2 project - promote the slickest cardiac arrest "pit stop" response you can imagine - you don't need to wonder any more. You'll get videoed and get to watch the performance of the team afterwards.

Why? All to improve outcome in pre-hospital cardiac arrest...

- Uses video to record pre-hospital cardiac arrests as an audit tool in Edinburgh.
- Very strict rules about the video footage: it is not to be used for assessment of individuals, only for audit. It is seen only by the audit group, stored securely, and deleted once used.
- Permission is not required to film for these purposes, but filming will stop if crews request it to cease.
- Significant improvement in cardiac arrest KPIs

What they were saying on Twitter...

"Culture grabs strategy by the hair and punches it repeatedly in the face" - Gareth Clegg quoted - @_JohnWeeks_

Twice as likely to get ROSC when research registrar turns up. ? Leadership improves time-on-chest - @WeekesLauren

Autopulse deployed with only 25 second interruption in CPR in first 2 mins. Impressive stuff from @GarethClegg and #3RU! - @Gasdoc2857

It's not just pretty pics, can get critical metrics from video - @FLTDOC1

Filming prehospital resus by 3RU has allowed the development of a Perfect10 decision flow chart in cardiac arrest. Leave scene <10 mins - @retrieval2014

TOPCAT2:

they DON'T "just die anyway"

TOPCAT2 is a scheme in Edinburgh aiming to improve survival after OHCA. There's a great video lecture by Dr Richard Lyon you can see on Vimeo from where we obtained this background information:

In 2007, the absolute survival rate for OHCA in Edinburgh was only 0.7%. TOPCAT2 tackles every part of the chain of survival and "runs it like a relay race", from 999 call centre dispatch, to improving pre-hospital crew skills in CPR, to refining the in-hospital post-ROSC care.

The "added extra" in Edinburgh is improving on-site leadership of resuscitation: their TOPCAT2 car carries paramedics who are cardiac arrest champions, with extra training in non-technical skills (including simulation sessions every second week), to drop what they are doing and whizz off to cardiac arrest calls.

The addition of a TOPCAT2 paramedic demonstrably improves quality of CPR. It's this paramedic who carries the camera on his/her person. But even before TOPCAT2 brought filming f cardiac arrests to the audit loop, Edinburgh worked hard on their quality improvement, with data collection forms filled in by crews, plus performance feedback to individual crews, via analysis of the memory card from their own defibs after a job.

Effect - ROSC improved to double the Scottish average since TOPCAT2, but survival to discharge has improved to over 11%... "not the best in Europe, but over 400 lives saved in Scotland" (2012 talk) and an obvious and spectacular improvement over the starting point of 0.7%.

CPD activity

Watch the lecture on Vimeo about TOPCAT2 - it takes less than 15 minutes and will banish any negativity you slide into about OHCA...

Paediatric Sepsis: the first hour - Professor Simon Carley

We have a confession. Our intrepid reporter didn't actually attend Simon's talk. But thanks to the wonders of Free Open Access Medical Education (FOAMed) - that doesn't actually matter. Why not? Because Simon is part of the St Emlyn's team - "a virtual hospital", and a most incredible collection of people & projects aimed at improving Emergency Medicine through free and open access medical education.

So, Simon returned from Retrieval 2014 and recorded the talk he gave to the conference... so you can watch & listen to it for yourself - better than any written report!

Click here to watch to the talk

or go to www.vimeo.com/93008608

What Simon said on Twitter...

Something a bit different - Simon's Retrieval 2014 talk had *his* tweets embedded into it - so he highlighted himself the messages he wished delegates to take away - @emmanchester

- A competent resuscitationist can, should & must be able to manage the first hour of paeds sepsis.
- Aggressive sepsis management for adults - kids too
- Early 1) recognition 2) oxygen and IV/IO access 3) antibiotics 4) fluid resus
- After 60ml/kg fluids, should be planning for inotropes +/- ventilation
- It's easy to know "WHAT" to do in first hour. Making it happen is harder - why?
- Audit data shows we miss resus targets in 60% of paeds sepsis cases
- Most sick kids are seen in non-PICU hospitals - WE must resuscitate them, but the incidence of severe sepsis is low, so it is difficult to be "expert"
- The dogma that "children are not little adults: can paralyse clinicians who fear children.
- As generalists, look for similarities between paed and adult care, as well as differences..we cannot absolve ourselves of responsibility to treat critically ill children through fear
- IV access is tough in sick kids. You're not as good as you think. 2 IV tries, then use an IO.
- Neonates - admit for obs. If still in doubt, admit. If still in doubt admit and treat for sepsis.
- Don't guess what doses to give. Use an online drug calculator. I like crashcall.net
- Saline acceptable as early resus fluid, but balanced fluids such as plasmalyte arguably better.

CPD activity

Visit spottingthesickchild.com, a super resource for all clinical staff who may be involved in the acute assessment of children.
Have a play with crashcall.net, and visit the other links on this page that Simon suggested in his talk.

Training future NHS Leaders - Dr John Connaghan

BEING a leader

- Know yourself - be authentic
- Seek to understand others
- Be aware of your impact on others
- Reflective practice
- Emotional resilience
- Building effective relationships

Counting value vs creating value: differences between leaders & managers.
@WeekesLauren

Leadership in a military critical care aeromedical environment - Graham Percival

As reported on Twitter...

RAF leader qualities: look for existing leadership skills, professional knowledge, effective intelligence, teamwork, loyalty - @WeekesLauren

Need to be able to communicate both up and down: ambiguity unacceptable - @WeekesLauren

"Don't confuse your rank with my authority" - quoted by @WeekesLauren

Direct orders last resort: negative effect on morale, less effective if default mode - @WeekesLauren

Delegate to the lowest level capable of achieving goal. Share good and bad - @WeekesLauren

Leading the team

- Know your team
- Know yourself
- Know the strategic plan
- Have a vision for the team - share it
- Incorporate individual aspirations
- Vary the tempo/intensity of work
- Delegate responsibility - take risks

Leading the team: know self/team/strategic plan, have a vision & share with team, incorporate individual aspirations - @WeekesLauren

If you don't keep people occupied, something else will, and it might not be productive - @WeekesLauren

Graham Percival talking about leadership in the military ; be an example to your colleagues and inspire them - @alg_1972

Leadership & rank are not the same - the leaders are not usually the ones at "the top" - @alg_1972

" A unique aspect of military leadership: you can *compel* others to *risk their lives*"

Mountain Rescue Leadership - Mark Leyland

With the exception of a tiny number of RAF Mountain Rescue and Police teams, the vast majority of Mountain Rescue Teams in the UK consist entirely of volunteers - there are 48 such teams in England and Wales, plus 27 teams in Scotland. All have developed since 1940s.

It is an astonishing service - thousands of keen mountaineers willing to give up their time - for both training and rescue missions - in order to help fellow mountaineers. The standard of medical care delivered by UK MRTs is also phenomenally high, including provision of opiate analgesia, as described on one of our conference poster.'

SCOTTISH MOUNTAIN RESCUE
Any Hour, Any Day, Any Weather...

- Inland Search & Rescue (SAR) in the UK falls under the auspices of the police
- Challenges faced by MRT leaders include very varied skill mix, skill fade, and management of a volunteer workforce (but massive enthusiasm) bringing with it "followership" issues... but there are no sticks available, only carrots!
- An all-volunteer service does *not* fall within UK Health & Safety legislation.
- There are both medical and technical governance issues to contend with (there's no legislation for kit, no guidance for when avalanche risk is unacceptably high) - the buck stops with the team leader
- Solutions include structured working methods, training & practice, doing simple things well, peer review and trust.

What they said on Twitter...

Carrying a casualty out needs team of 12. Helicopter is preferred exit strategy! - @WeekesLauren

Challenges come from dealing with volunteers - never know who's going to turn up, and with which skill sets, plus skill face - @WeekesLauren

Leadership more difficult "off the hill" as lots of non-sexy tasks. Needs a long term plan - @WeekesLauren

Photos on this page courtesy of Ogwen Valley Mountain Rescue Organisation

Whilst we're talking about Mountain Rescue...

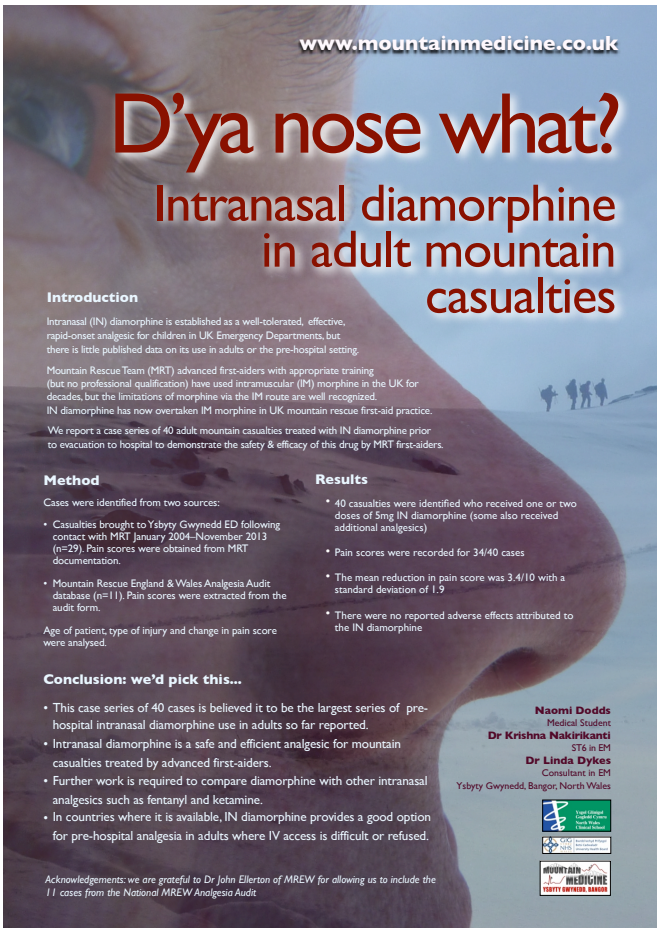
MOUNTAIN MEDICINE
BANGOR EMERGENCY DEPT

Did you spot our logo on the front cover of this report?

Bangor Emergency Department, who bring you this conference report, are proud to be associated with Mountain Rescue - we are possibly the most MRT/SAR-friendly department in the UK... we can certainly claim to be proper SAR groupies!

We took two posters to Retrieval 2014, and because they are relevant to the previous talk on Mountain Rescue - and we've put a lot of effort into preparing this conference report - we decided we'd indulge ourselves and cheekily show them here. And anyway, they help break up the pages of text a bit!

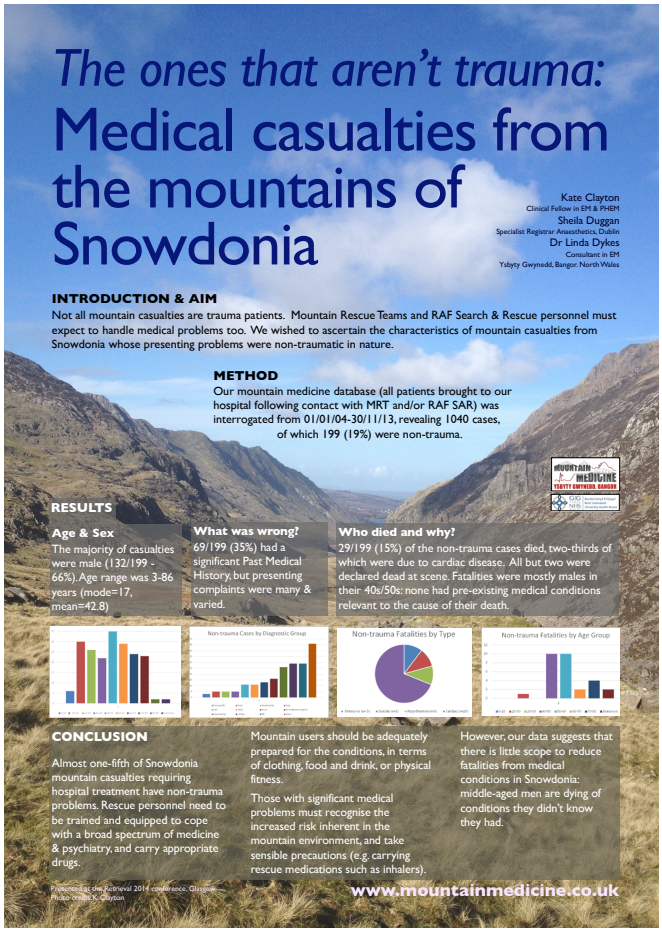
If you'd like to read them in full, you can view/download the full-size PDFs (alongside a selection of our other mountain medicine related posters) at www.scribd.com/BangorED



This poster presents a case series of 40 adult mountain casualties who received intranasal diamorphine (and yes, for our non-UK readers, that is indeed heroin!) from MRT first-aiders - 29 cases from the main Bangor Mountain Medicine database, and 11 from the Mountain Rescue England & Wales pain audit.

34/40 cases had pain scores record. The mean reduction in pain score was 3.4/10 with a standard deviation of 1.9

There were no reported adverse effects attributable to the IN diamorphine.



Our database of mountain casualties 1/1/2004 - 30/11/2013 contained details of 1040 cases, of which 199 (19%) were non-traumatic in nature.

The majority of cases (66%) were male, and age range 3-86 years. 69/199 (35%) had a significant PMHx.

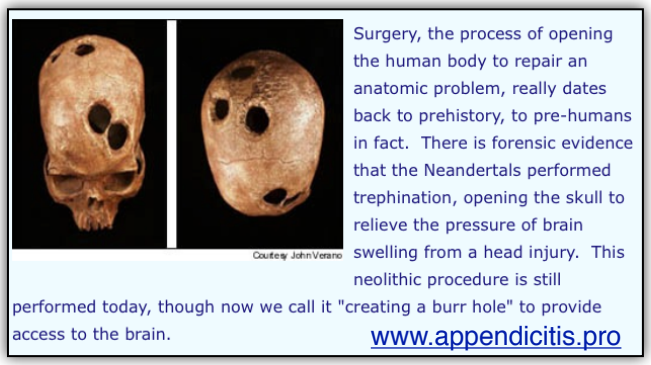
29/199 (15%) of the non-trauma cases died, two-thirds of which was due to cardiac disease.

Fatalities were mostly males in their 40s & 50s: none were known to have pre-existing medical conditions relevant to the cause of their death.

Surgical interventions

Our intrepid reporter, Kate, must have pricked up her ears at this section of the conference - her notes kind of took on an excited feel...

So here we go, with the Retrieval 2014 quartet of sexy surgical interventions that we are sure will have some of our PHEM colleagues rubbing their hands with glee...



1. Rural hospital neurosurgical procedures

Dr Mark Wilson

- Neurosurgery dates back to pre-history, and definitely took place in neolithic and medieval times
- Self-trepination reportedly undertaken for sexual gratification or to "enhance dreams/ conscious state" *[is it any wonder that LSD was invented? - Ed]*

"An extra-dural haemorrhage is like a tension pneumothorax *inside your head*"

- Burr holes are indicated if there is CT evidence of an extra dural haemorrhage, deterioration in ED and transport time exceeding 2 hours

What they said on Twitter...

Brilliant talk by Mark Wilson. Prehosp Burr Holes not as scary as might have thought. Now where did I put my drill - @Gasdoc2857

Fixed dilated pupils in extra dural? If surgery within 4 hours, good outcome in 57% - @SportsDocSkye

Still possible to get good outcomes (57%) from EDH with fixed dilated pupils - @philgods

An extradural haematoma is not a brain injury. The brain is just fine. The problem is the brain is being squished - @FLTDOC1

Mark Wilson on neurotrauma: treat an EDH with the same urgency and aggression as a tension pneuomothorax - @jonmcck

Mark Wilson: no difference in outcome with ICP monitoring in TBI. Chestnut, NEJM, Dec 2012 - @jonmcck

The NEJM paper is available in full here: http://www.ccm.pitt.edu/sites/default/files/calendar_event_articles/melhem.pdf

Want to know how to do a burr hole? Just in case? Mark's paper in the Scandanavian Journal of Trauma, Resuscitation and Critical Care is available in full text here.

We have noted with some amusement that the co-authors all work in major UK cities!

CPD activity

2. Perimortem caesarian section

Dr Phil Cowburn

- Three questions: Should we do it? Where to do it? How to do it?
- Avoid decision inertia
- Use **right** lateral tilt

What they said on Twitter...

Prehospital cardiac arrest in pregnancy: does prehospital care **get** any more challenging...? - @jonmcck

3. Prehospital thoracotomy

Dr Zane Perkins

- Open cardiac massage first described in 1874 by Moritz Schiff
- First prehospital thoracotomy survivor in 1993 (London)
- 7.5% of traumatic cardiac arrests achieve survival to discharge (in London)
- Duration of the cardiac arrest is the main factor in survival: none after 10 minutes
- Survivors of resuscitative thoracotomy often present in asystole, and mainly have right ventricle stab wound with tamponade

"There is *no point* in doing chest compressions in traumatic cardiac arrest as it *stops you treating the problem* (tamponade/tension/ hypovolaemia) "

Prehospital thoracotomy: what's involved

Indication = cardiac arrest of less than 10 minutes, due to penetrating injury.

1) Open the chest
2) Open pericardium and remove clot manually
3) Restart heart/ do compressions whilst someone maintains manual compression of aorta (do not clamp aorta prehospitally)
4) Close cardiac wound with finger/staple/suture/foley catheter
5) VF may occur with reperfusion: close the chest and shock as usual

What they said on Twitter...

Cardiac arrest in (some) trauma... results in decreased venous return. External compressions rely on VR. Open them - @SportsDocSkye

Pre-hospital Resus Thoracotomy - as soon as possible after penetrating trauma to chest & upper abdomen in cardiac arrest - @jamestooley

4. Resuscitative Endovascular Balloon Occlusion of the Aorta - Dr Jonny Morrison

"REBOA" - the new buzz word on the pre-hospital street - is probably unique in that the UK general public learned about it about the same time as many "normal" (for this, read non-London HEMS!) Emergency Physicians, because it was featured on the BBC2 documentary "An Hour to Save Your Life" and suddenly everyone seemed to be talking about it.

There's even a clip from the documentary online showing the technique - click here to see it!

- Torso haemorrhage is the main cause of potentially preventable trauma deaths
- Balloon occlusion of the aorta for trauma was first described in the Korean War, although there were no survivors.
- There is good animal/lab data on improved outcomes, but limited human data so far (case series only)

What they said on Twitter...

This REBOA stuff looks very impressive. How long till it's out there? - @Gasdoc2857 *[London HEMS have performed their first REBOA pre-hospital since this talk - Ed]*

CPD activity

There is a description of the REBOA technique in the December 2011 Journal of Trauma, Infection & Critical care - click here for the full text.

Did you know....

- If someone is ill or injured in mountains in the UK, call 999 and ask the operator for **police**, not ambulance. Then ask the police to call Mountain Rescue.
- 95% of UK mountain users don't know this - help us spread the word!
- You can make 999 calls by SMS in the UK, but you have to register first: text "register" to 999 and follow the instructions. This is potentially useful in areas of poor mobile phone reception

Pre-hospital care in challenging environments

1. Night HEMS - Dr Richard Lyon

- Careful mission planning is essential: 10-15 minutes is taken to assess possible landing sites (and the pilots have pre-surveyed hundreds of possible landing sites, all stored on an iPad, with Google Earth used to help assess ad hoc landing sites).
- Sentinel system identifies location of wires *[as in things like electricity pylons - Ed]*
- 2-pilot, both IFR rated and equipped with night vision goggles (at a cool £14,000 per pair!), a collision avoidance system, a huge searchlight - and orientation training.

What they said on Twitter...

Night HEMS costs an extra million *[pounds]* per year , but value per patient not dissimilar to daytime ops - @WeekesLauren

"Do we need night HEMS" Richard Lyon... life saving interventions are time critical. YES - @jamestooley

2. Norwegian Rescue Service - Dr Per Bredmose

- Per's talk was entitled "from water rescue to neonatal retrieval in minus 20 centigrade"... these guys are versatile! They also have to cope with long distances, difficult terrain, and a harsh winter with cold temperatures and short daylight hours.
- 24/7 service utilising both fixed and rotary wing aircraft, or car (kept near Oslo)
- 3-man crew (pilot, paramedic and nurse or doctor). All can act as co-pilot (have the theory part of private pilot's licence) and all are certified divers and MRT as well as qualified with PHTLS and MIMMS
- Neonates may be transferred on nitric oxide for respiratory failure as a bridge to potentially requiring ECMO (which 18% do)

What they said on Twitter...

Jump out of helicopter attached to static rope to effect water rescue. #ballsofsteel - @WeekesLauren

Training for water rescue improves CRM across the board - @WeekesLauren

Flight docs in Norway are anaesthesia and ICM, min 6 months neonates, can be hard to keep up to date with adult & paed ICM - @WeekesLauren

CPD activity

Never heard of nitric oxide for ventilations of neonates? This recent review article from Pediatrics will get you up to speed.

2. Winch operations - Dr Cliff Reid

In the UK, winch (hoist)-equipped helicopter capability is confined to Search & Rescue helicopters, none of which routinely carry doctors. Cliff works in Australia, and his talk offered an insight into his service, where the doctors - often registrars - are the ones at the end of the line.

- Winching is a high risk activity so is only done if there are no other options.
- Cliff's service has done 443 winch missions over 4.5 years, and one-third required interventions that only a physician could provide. Every winch op is audited for learning points & results distributed to staff monthly.
- Choice of winching patients in harness or on a stretcher
- New doctors have vertical access and simulation training.

What they said on Twitter...

Paramedics do 2-monthly training, easy to keep up to date. 45 docs at any one time - more challenging - @WeekesLauren

@cliffreid describes difficulties when adding highly technical aspect of winch retrievals with need to deliver critical care - @alg_1972

Logistically technical retrievals risk cognitive overload in critical care. Real environment simulation key - @alg_1972

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3. Maritime challenges in rescue medicine - Dr Patrick Morgan

"What can I do now, with the kit I have, to *save a life?*"

- You have to find your casualty first. Then rescue them, and only then treat them.
- Difficult conditions for rescue due to factors such as confined spaces (below decks on boats with small hatchways), rough seas etc
- There may be language barriers with crews on ships
- Kit can be a problem: tympanic thermometers are totally useless in wet patients, and scoop stretches hinges fail after three uses in

CPD activity

"Big Sick Little Sick" - a first aid system using prompt cards - enables lifeboat volunteers to function at the level of ambulance technicians with only a few days of training.

It's an incredible innovation - you can read more about it in this Wilderness Medical Society article - and recently won its inventor, Paul Savage, an OBE.

What they said on Twitter...

Submersion injury by @drpaddymorgan: UK sea temps typically not cold enough to induce protective hypothermia. Survival unlikely >30mins - @retrieval2014

Remember, submerged casualties do get worse before they get better - @Gasgalx

4. Expedition Medicine - Rodger Alcock

- Much of expedition medicine is planning before departure - screening participants is important, especially as the demographic profile of those undertaking expeditions is changing: rather than the young fit adults of the past, there are more under-18s and older adults (some of whom will have chronic health conditions) taking part.
- The biggest problems are gastroenteritis, musculoskeletal problems, and heat related illnesses. RTCs are common - but account for most deaths on expeditions.
- Overall only 5% of medical incidents require repatriation.
- There is a British Standard for "managing the risks of adventure travel" - BS8848
- If working as a doctor on an expedition, it's important to know where local health care facilities are - and that you have correct indemnity. You also need to think about what to do about treatment for locals.

CPD activity

Interested in expedition medicine? The Adventure Medic website is a great place to start, especially their resources page.

Charity appeal

Please help us support

Tusk Trust

This report hasn't cost you anything.

But if you have enjoyed it and found it useful, please, please could you consider making a donation to the Tusk Trust, a wonderful charity dedicated to protecting rhino and elephant populations endangered by poaching and the greed for rhino horn and ivory?

If everyone who reads this report donates **even £1/$1** we could raise several thousand pounds.

Visit our Just Giving page by clicking here.

Lessons learned from developing a trauma system - Professor Keith Willett

England's trauma networks (Major Trauma Centres supporting a hub-and-spoke model of Major Trauma Units) were introduced in 2012. They definitely work - preliminary data suggests a 41% increase in survival since the implementation of Major Trauma Networks.

"34% of trauma patients with an ISS>15 are in ICU within 24 hours"

- It took 25 years to get buy-in from the government to establish major trauma networks.
- Trauma deaths have fallen each year for 25 years - but the introduction of MTCs in 2012 saw a sharp and dramatic increase in survival.
- At present the only hard measure of performance is mortality: there is a need to identify and agree criteria against which quality can be assessed.

"Trauma care has been on the *too difficult* list for 25 years "

- Implementation is the hardest part of the change process, and the MTC network was expected to be delivered with a flat cash budget!
- There is a dire lack of research being conducted in the pre-hospital environment, despite funding being available, and rehabilitation is both poorly researched and poorly funded.
- In order to make sure that all the patients who need to get to an MTC, *over*-triage (3:1) is essential. Any less and you sacrifice sensitivity.
- Clinical Advisory Group comprised of people currently practicing major trauma care on a regular basis.

What they were saying on Twitter...

Clinical Advisory Groups have shop floor clinicians, not college bigwigs - @WeekesLauren

Rehabilitation must not get left behind - @WeekesLauren

Immediate CT best triage tool - @WeekesLauren

Willett: essential elements of trauma network: trauma dispatcher, deparate "H" from EMS, triage/bypass protocols, 24hour trauma team, rehab - @jonmcck

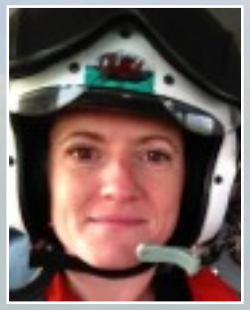
MTCs **do** work. In England, 2/5 patients who previously died now survive - @Gasdoc2857

Linking payment for performance a powerful driver for change - @WeekesLauren

Willett - couldn't get universal buy-in to NHS governance from HEMS operations in England - @WeekesLauren

Willett: establishing an MTC - data is king, financial incentivisation works, motivated pragmatic advocates needed - @jonmcck

Snowdonia's ER



Bangor, North Wales:
where EM is still fun!

Fantastic jobs (some including PHEM!)

Our **Clinical Fellow** posts, designed for post-ACCS EM/anaesthetic trainees (or as OOPE later on in training) were the first to offer pre-hospital EM as part of the job plan (20%). We take PHEM beginners, and this is the only job of this type in the UK with exposure to Search & Rescue medicine. 6 to 12 months posts available, and we can offer deferred start dates. **We have just introduced two new variants of our popular Clinical Fellow posts: Medical Education/Simulation and Quality Improvement/Medical Management (QIMM) -** advertising imminently on NHS jobs!

For **Higher Specialist Trainees (ST4-6)** who have a yearning to try rural Emergency Medicine, we can offer OOT placements using our "spare" educationally-approved registrar slot. So if you fancy a change from the city...

We have one **SHO-tier post** available August 2014-Feb 2015 (identical to our deanery-approved F2/GPS/ACCS posts) which has previously proved popular for those unsure what to do post-F2, or who are before/after a period of travel.

We also have a **Locum Consultant** vacancy from October 2014, and we may have a substantive post to follow... So please do get in touch via our website for a chat if rural EM appeals.

Medical students

We love hosting students! Our medical student programme is well established, and our rural EM electives and SSCs are extremely popular.

Many of our students have returned to us as postgraduate trainees, at every level from F2 to ACCS, GPST and ST4-6.

Where is Bangor?

Sandwiched between the outdoor playground of Snowdonia National Park and the beautiful beaches & coastline of Anglesey in North West Wales, this is the place to live and work if you like the outdoors, with everything from rock-climbing to kite-surfing on the doorstep.

We are one hour by road to Chester/M6, 3 hours from London by train, or a quick ferry ride to Dublin.

www.mountainmedicine.co.uk

The last page...

We would like to thank the many people who reported this conference on Twitter - some of their contributions are included in this report.

In particular, this report would not have been possible without the contributions of the most prolific Tweeters of the conference, namely, **Dr Lauren Weekes** (anaesthetist and pre-hospital doctor from Devon), **Dr Jon McCormack** (paediatric anaesthetist/retrievalist from Scotland), **Dr Andrew Rowland** (anaesthetist/intensivist/PHEM - from Aberdeenshire), **Dr Mike Abernathy** (PHEM & Assoc Professor of EM, Illinois, USA) and **Professor Simon Carley** (EM, Manchester).

We don't have room to list every person whose tweets we have included, but we are very grateful, and do please follow them on Twitter - you will find them by their @Twitterusername!!

Brought to you by...

Dr Linda Dykes graduated from Newcastle Medical School in 1996. She trained in Emergency Medicine in the Northern & Mersey Deaneries, and in General Practice in Wales. She has been a Consultant in Emergency Medicine since 2005 in Bangor (Wales) & does occasional GP locums to keep her hand in.

Linda has been interested in EMS since a student elective in Missouri 20 years ago. She is now involved in the paramedic training of UK military Search & Rescue winchmen, and was recently seconded to Welsh Ambulance as an Honorary Assistant Medicine Director one day a week, bring her a small step closer to her ideal portfolio career combining EM, the EMS/primary care interface, and teaching. Her research interest is Mountain Medicine.

Dr Kate Clayton is just completing a 12-month post as a Clinical Fellow in EM/PHEM, in Ysbyty Gwynedd (Bangor hospital) North Wales.

Kate originally trained as a nurse, and worked in a busy ED in London before leaving nursing to go to medical school and re-train as a doctor. She did ACCS training in London & Cambridge before coming to Bangor in August 2013.

Kate is about to take up a retrieval post in Australia.

Reflection for your CPD

If you are a UK paramedic reading this, don't forget to show evidence of reflection in your CPD portfolio.
If you can't face the Gibb's Model of Reflective Practice then try the **Driscoll/Borton** one, which is very simple:
"What?, So What?, Now What?"

THE END

Please tell us what you thought of this report: if enough people tell us they found this bullet-point format useful, we might be persuaded to do it again - it's easier than sending a team of two and blending their reports into full "magazine style" articles. We also need to know if we have any corrections to make!

Please send any feedback/suggestions to Linda.Dykes@wales.nhs.uk or via Twitter to @mmbangor.

PS - Please, please make a donation to Tusk Trust!