Another #FOAMEd production by

CEM 2014 Conference

DAY ONE

Tuesday 9th September


Exeter Cathedral

Sharing the learning...

Brought to you by the intrepid reporters of Team Bangor EM and friends from across the UK - viva la #FOAMEd!

www.mountainmedicine.co.uk

Edited & designed by Dr Linda Dykes

v 1.0 - 13th Oct 2014

Introduction - Report of Day 1

Welcome to our report of the 2014 College of Emergency Medicine Scientific Conference, which took place in Exeter, England, on 9-11th September.

This is now the fourth conference we have covered in this way - you can find reports from 2013 EMS Expo, 2014 CEM Spring CPD event and Retrieval 2014 in our Conference Report collection at Scribd website - www.scribd.com/BangorED.

For the first time, our tiny band of 1-3 intrepid reporters has been boosted by a large number of guest contributors, to whom we are very grateful. Some are former members of Team Bangor ED (i.e. students & former junior docs) who knew they'd be helping, but we also roped in many innocent bystanders either in person or via Twitter, and discovered some really talented reporters in the process! The result is far more comprehensive coverage of the event than we could have imagined - you'll find *most* (but not quite all) of the major Day One talks in here.

It does take many hours to turn hastily-scribbled notes into this magazine-style format (the editor/designer is having a nervous breakdown, as the report is about twice the size we anticipated!) so please forgive us whilst we tackle one day at a time over the autumn and keep an eye on our Bangor ED Scribd page and please do bear in mind this is an all-volunteer production!

We must make an important disclaimer. Whilst we try to make our reports 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 & discussion.

Linda Dykes & Alison Walker
(Chief Reporters, on behalf of the Intrepid Reporter Team)

Just some of your reporting team from Exeter 2014: L to R - Alison Walker, Lynn Roberts, Charlotte Doughty, Helen Cosgrove & Linda Dykes

Twitter: #CEMExeter14

There was great Twitter activity running throughout the conference - over 2000 tweets by over 405 participants.

If you haven't yet entered the world of Twitter, make #CEMExeter2014 one of your first search terms!

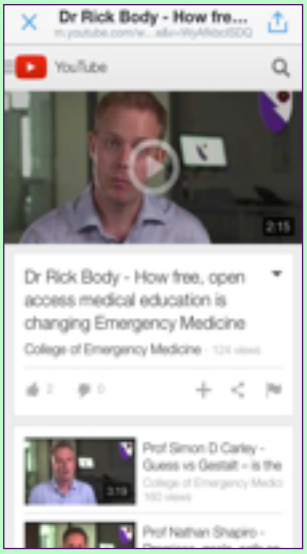
Reflection for your CPD

We've flagged up further reading (and some topics for reflection) in these snazzy green boxes, and included links to relevant papers, abstracts and websites.

This is a mixture of material that **we** have looked up and found, and also material/papers/reports mentioned by the speakers.

Contents - Day 1

See the speakers!



After delivering their keynote presentations, the speakers of the major sessions were asked to summarise their key messages in a video clip.

Visit the College of Emergency Medicine's Youtube Channel to see them, plus campaign videos on many aspects of UK EM.

APPEAL:

Tusk Trust

We created this report because we're passionate about FOAMed. 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 poaching.

Please visit our Just Giving page by clicking HERE to donate

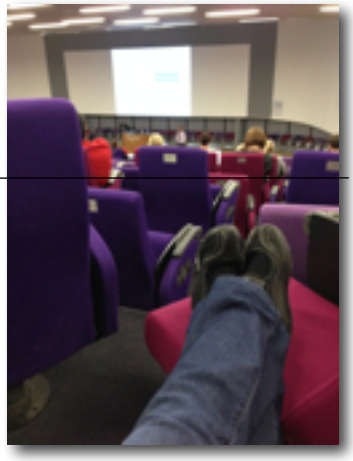
Arterial Blood Gases - Rest in Peace?

- Professor Anne-Maree Kelly

Reported by Linda Dykes

Anne-Maree Kelly used to work in the UK but is now a Professor in Australia, and is currently Director of the Joseph Epstein Centre for Emergency Medicine Research at Western Health. Her talk on ABGs was the opening keynote of the conference, and having listened to the conversations afterwards, I know I wasn't the only delegate who entered the lecture theatre to hear Anne-Maree's talk feeling slightly smug… you know, *"yeah yeah, I've switched almost entirely to VBGs, no need to use an ABG unless we need to accurately ascertain the pCO2 or pO2*". Well, as we heard, it ain't necessarily so. In fact, following the talk, I know that my use of ABGs is about to go back up again.

Whilst it's this kind of talk that can instantly change your practice, it's also slightly depressing to realise many Emergency Physicians – including me - have probably spent the past year or two blithely travelling too far down the path of trying to reduce use of ABGs. Ooops.



Fantastic facilities in the main lecture theatre - complete with swivelling chairs and plugs

Anne-Maree opened her talk by explaining that, when considering whether we can use VBG results instead of ABGs, the outcome of interest is how closely venous and arterial values *agree*, and not how well they *correlate*. The "weighted mean difference" gives an estimate of the *accuracy* between the two measures, and "95% limits of agreement" (LoA) give information about their *precision*. She then took us through the various main components of a blood gas analysis, and considered with each of them whether (or not) a VBG could replace an ABG.

pH

Pooling results of 13 studies (2009 patients) found a weighted mean difference of 0.033 pH units, and 95% limits of agreement generally within +/- 0.1 pH units. This is probably close enough for clinical purposes in DKA, acute respiratory failure, and isolated metabolic acidosis… but is **not** necessarily good enough in toxicology, shocked patients or mixed disease.

pCO2

Pooling results of 8 studies (965 patients) found a weighted mean differences of 6.2mmHg (0.83kPa), but 95% limits of agreements -17.4 to +23.9 mmHg (-2.3 to +3.2 kPa), with a majority of studies reporting a level of agreement band exceeding 2.7kPa.
This means that agreement between arterial and venous pCO2 is **not** good enough to regard them as inter-changeable clinically.

However, all is not entirely lost: pCO2 on a VBG is "adequate" as a screening test for clinically significant hypercarbia, and, in conjunction with clinical assessment, changes in pH (and pCO2) *may* have some use in monitoring progress: for both pH and pCO2, in most cases the direction of change is the same as shown on an ABG, although the magnitude of the change is variable *[Note this message was different to that in Anne-Maree's summary slide, reproduced on next page - Ed]*.

Potassium

There are two studies in DKA comparing VBG with serum K+, and both showed that serum K+ is usually higher than blood gas K+, with serum results around 1mmol/l higher. This probably doesn't matter if the blood gas machine is reporting a potassium of 3, but it might if it tells you the potassium is 5.

The take-home message about potassium was "be cautious" and always get a formal serum potassium if the patient has a condition where potassium derangement is possible.

Reflection for your CPD

Check out Anne-Maree's meta-analysis of VBGs in COPD from this link - was this the paper that set us off on the VBG bandwagon, but many of us didn't question how widely we could apply this new trick?

Arterial Blood Gases (contd) - Professor Anne-Maree Kelly

Bicarbonate
There's less evidence about bicarb… only one study in DKA (23 patients) showing a weighted mean difference of 1.88 mmol/litre, and 95% LoA of -2.8 to +0.9 mmol/l. There are two studies in patients with COPD – 643 patients in total – with a weighted mean difference of -1.34mmol/l, but no 95% LoA reported.

Anne-Maree advised that, whilst data is sparse, there's probably enough agreement between venous and arterial values to classify VBG bicarb into "high", "low" or "normal", but clinical acceptability may be context-specific.

Base excess
There are only two studies examining Base excess in venous rather than arterial blood gas samples, and it's bad news for the VBG fans.

The first study of 103 patients (various conditions) reported a mean difference of 0.089 with 95% LoA of -0.974 to +0.552. The problem is the second study – 326 trauma patients – where the mean difference was -0.3 base excess units, but with a 95% LoA of a whopping -4.4 to +3.9 BE units, and 20% did not fall within the pre-defined clinician-defined "clinician equivalence threshold".

Lactate
Having already had one shock about the base excess, when the talk moved on to lactate, I suspect some of the audience wanted to weep. There is, once again, limited data, but a systematic review by Bloom found a mean difference (venous/arterial) of 0.25mmol/l but a 95% LoA of -2 to +2.3mmol/l, and therefore, depending on where the cut-off for clinical importance is set, there is a significant misclassification rate.

And just to put the nail in the coffin, there is no data regarding the accuracy of monitoring the *trend* in lactate via venous blood gases, either.

Grey areas
Anne-Maree wrapped up her talk by reminding the audience that there are still areas where we don't understand the implications of differences between venous and arterial blood gas results – there's some data to suggest that AV agreement deteriorates in shock states (so the sicker your patient, the more important the use of an arterial blood gas), there's limited data in toxicological conditions, and no data in mixed acid-base disorders.

Questions from the audience:

1. Is there any data about whether tourniquet time affects agreement between ABG and VBG results? - *A: there are a couple of unpublished studies looking at venous gases only, but they found no difference*
2. Do the limits of agreement change in a predictable way in a particular patient? - *A: No*
3. And a comment on lactate from the audience - *"much ITU data is on venous lactates, not arterial"*.

So where does this leave us regarding lactate clearance in

Reflection for your CPD

Parameter	Take home messages
pH & bicarb	• Probably close enough agreement for clinical purposes in DKA, acute respiratory failure, and isolated metabolic acidosis. • More work needed in toxicology, shock, and mixed disease
pCO2	• **Not** enough agreement for clinical purposes, either as a one-off or to monitor change *[NB - slightly different message from the talk itself]* • Data suggests that venous pCO2 is useful as a screening test
Base excess	• Agreement unclear
Potassium	• Beware the error margin at the extremes of the normal range
Lactate	• LoA wide and **unclear** if safe to use VBG lactate for trend

Anne-Maree's summary slide

So, if you're one of those now in a quandry, how about a little fun... try Life In The Fast Lane's ABG resources!

Finally, please please use local anaesthetic when taking ABGs - Anne-Maree pointed out that some young people with DKA and asthma avoid presenting to hospital till they are desperately ill due to fear of a very painful ABG. If you don't already do it, make it your new resolution!

The Frail-Friendly Emergency Dept

- Prof Suzanne Mason & Dr Simon Conroy

Reported by Debbie Godden

Professor Suzanne Mason from Sheffield, and Dr Simon Conroy (a Geriatrician from Leicester) are both passionate about embedding evidence-based medicine into clinical practice. Simon's research encompasses evaluation of different models of care for frail older people


Photo - S Mason

The elderly are frequent visitors to our departments, but do less well and spend longer with us. Typical emergency presentations of elderly patients include falls, acute confusion, other physical deterioration and end-of-life care.

They are very likely to be discharged in the last 20 minutes of a 4-hour stay in the ED, and the likelihood of admission increases with age (as does the length of the ensuing hospital stay).

*"Action **must be taken** to address **underlying issues** as **each fall** can be associated with a fracture or other significant morbidity..."*

Arrival by ambulance virtually guarantees admission in this group, and as we all know, admission is not necessarily the best answer, but sometimes it is the only (practical) answer. So what can we do when considering how to provide better care for elderly, frail patients in our Emergency Departments?

Tailor-made strategies to suit individual departments/hospitals are required. Having a senior decision maker early on in the patient journey may head off inappropriate investigations, or help to get a workable, safe plan in place.

It's also been suggested that we bring increasing skill in geriatric medicine closer to the front door, by having subspecialty-trained elderly care ED physician, or acute geriatrician, embedded within the ED.

Care of the Elderly colleagues advocate a model known as the "Comprehensive Geriatric Assessment" (CGA). Triggered by an elderly patient's attendance, this is a multidimensional assessment, which uses a brief frailty screen (using the AMT 4/Falls score) plus addressing any issues identified to produce an overview/problem list, and developing/communicating a care plan.

This approach has been shown to produce a 10% increase in discharge rate in the inpatient setting, but the evidence of effectiveness from within the ED is limited, although benefit has been shown in some specific conditions. A helpful tip was to consider patients requiring this assessment as "like ambulatory care, but with a bit more input", and that a discrete area in which to

The audience were asked...

"What would you do with an 89-year old, found on the floor - normally independent and self-caring. No evidence head, hip, or other injury. No urinary symptoms"

Options to consider

1. Trimethoprim home if mobile (traditional – but no evidence to support doing so in cognitively intact patient with no urinary symptoms)
2. Admit for Ix (may not be necessary if basic screening unremarkable)
3. Discharge with falls clinic follow-up (depends on the time-frame to access this service locally)
4. Assessment for other frailty issues+/- intermediate care access

Somewhat tellingly, and indicative of the lack of true seven-day working outside the ED, the audience pointed out that their approach would depend what time of day they were seeing the patient... clearly the phenomenon of cunning plans being easier to initiate Monday to Thursday, before 1pm, is fairly universal!

The Frail-Friendly Emergency Dept - contd

- Prof Suzanne Mason & Dr Simon Conroy


Photo - S Mason

To date, there is no evidence supporting triage direct to Care of the Elderly, although Caplan's 2004 RCT (the DEED-II study) looked at use of the CGA *after discharge* from ED and found fewer readmissions, both in the 30 days and 18 months following the ED visit.

Some teams are attempting to reduce unplanned attendances of frail elderly patients by working *forward* of the hospital, with projects in nursing and residential homes, or by up-skilling paramedics.

An RCT led by Suzanne Mason and published in the BMJ in 2007 randomised 4000 elderly patients to either "standard care" (mainly ambulance conveyance to ED) or to assessment at home by a paramedic practitioner, and treatment in situ if possible. The findings were that the paramedic practitioner arm demonstrated reduced ED attendances by 25% and admission by 6%.

This sounds promising, and many areas of the UK now have paramedic practitioners (variously called Advanced Paramedic Practitioners, Emergency Care Practitioners etc.) although Simon Conroy expressed the view that he still believed work in the community would add less value than introducing the CGA model into Emergency Medicine.

Fascia iliacus block vs. 3-in-1 femoral nerve block

- Professor Jason Smith

This "bonus lecture" wasn't even on the programme, but included at the end of the "Frail elderly" talk.

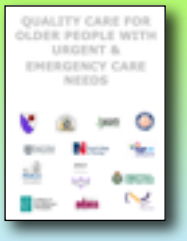
There are 75,000 hip fractures every year, and Jason described a parellel group trial that was conducted comparing the pain outcomes of a Fascia ilacus block (FIB) (anatomical technique) and a traditional 3-in-1 femoral nerve block.

FIB was found to be as good as the 3-in-1 block at relieving pain when pain scores at 30 and 60 mins, and analgesia requirements in the following 24 hours, were assessed. There was no evidence type of fracture had any impact on effectiveness of the FIB.

Conclusion

- Fascia Iliacus block is safe easy to teach.
- It can be done with anatomical method- i.e. no USS is required.
- 50-60% of the audience already using the technique (and congratulated themselves!)

Reflection for your CPD



The famous "Silver Book" - includes information on frailty syndromes. Click here if you haven't read it!

The Comprehensive Geriatric Assessment is described on the British Geriatrics Society website - an excellent resource that is worth a browse.

Challenges in stroke thrombolysis:
Basilar artery occlusion - Dr Jason Kendall

Reported by Aaron Owen

Dr. Kendall delivered this intense talk with flair, humour and plenty of puns! It was mostly engaging, although verging on dry in parts. A lot of information was covered, but luckily I was loaded with coffee from the keynote address! - *Aaron*

The Speaker: *Dr Kendall graduated in 1988 from the University of Birmingham. He has been a Consultant in Emergency Medicine at NBT since 1998 and has a special interest in acute reperfusion medicine.*

Jason opened his talk with three examples of basilar artery occlusion from his own practice. One of the cases had a poor outcome, the other two had a good outcome, and he highlighted that this ratio painted a "rosy picture" of basilar artery occlusion, as these types of stroke usually have a high mortality of 40-70%, with the worst outlook in those that present in coma, patients in whom the diagnosis of basilar artery occlusion is delayed or missed, and those who do not achieve re-canalisation of their basilar artery via thrombolysis or radiological intervention.

*"Think **Basil Fawlty**..."*

Dr. Kendall was particularly keen to get across his key message that re-canalisation for these patients **is** worthwhile, but the difficulty often lies with misdiagnosis of this condition due to its very wide varied presentation. An obvious Monty Python fan, he went on to say that, "…it is often the sickest patients who have the widest differentials", with a picture of Basil Fawlty in the background. This wasn't just a play on words *[geddit? – Ed]* but also alluded to the fact that the Basil Fawlty character displayed the characteristics of "Top of the Basilar Syndrome" with altered behaviour, memory and alertness, oculomotor disturbance and motor disturbance.

Dr. Kendall then described some of the common barriers that typically result in missed diagnosis of basilar artery infarct, explaining that "immediate management concerns can distract from the underlying pathology", and "conventional screening assessments for stroke such as FAST, NIHSS, and ROSIER don't work for posterior circulation stroke". Hence, if these pre-assessments miss the possibility of stroke as the cause of the symptoms, these patients will not go on to receive an urgent CT scan, leading to missed diagnosis and high mortality.

Basilar artery occlusion (contd) - Dr Jason Kendall

Next, the audience were transported back to medical school days in order to revise the anatomy of the Circle of Willis – which is the key in explaining why the presentation of basilar infarct is so varied, because it supplies the occipital lobes, medial lobes, brain stem and cerebellum, giving a lot of scope for varied symptoms. However, *all* basilar infarct patients seem to experience vertigo, nausea and vomiting, diplopia, headache and drowsiness/drop in their GCS. Furthermore, up to 75% have bulbar/pseudobulbar symptoms, and 70% have a motor deficit.

On the opposite end of the spectrum, he mentioned the terrifying "locked in syndrome" - where consciousness is preserved- which is caused by a bilateral infarct of the basal pons, but with sparing of the medial pontine tegmentum, thus preserving sensation and consciousness.

He briefly referred to the book "The diving bell and the butterfly", written by the French Journalist Jean-Dominique Bauby, who went on to have a basilar infarct leading to locked-in syndrome. His account of his experiences of being "locked in" was painstakingly written over a period of 10 months when he was able to only blink his left eye.

Jason's final key clinical tip was the critical role of the CT scan – a key investigation, not only for diagnosis, but also to help determine management. The all-important "hyperdensity of the basilar artery" (HDBA) is the key feature to look out for on CT, the *presence* of which conveys a 98% specificity for basilar artery occlusion, although its absence giving a less impressive 71% sensitivity. Hence, there is a need for angiography if the CT is negative.

The talk then became somewhat more academic and technical with a discussion of the literature concerning interventions. In summary, the findings from 3 main papers were discussed: The BASICS paper (Lancet 2009), a paper published in Stroke 2006, and a case series published in Stroke 2013. The key messages were:

- Reperfusion therapy for basilar artery occlusion is superior to aspirin therapy.
- There is not much difference between IV Thrombolysis and intra-arterial thrombectomy: they both achieve re-canalisation.
- IV Thrombolysis is still effective 12-48 hours from onset of symptoms *provided there is no established infarct*, with 42% achieving a good functional outcome.

***"Impaired consciousness** is a **key feature of basilar artery occlusion**, whereas it is **rare** in anterior circulation*

Reflection for your CPD

The Diving Bell & The Butterfly is both a book and a DVD - available on Amazon.

As usual, the ever-mean Lancet hides its full-text articles between a paywall, although the abstract of the BASICS paper is here. However a subsequent secondary analysis of the BASICS data is available in full from the journal Stroke.

If your only exposure to intra-arterial reperfusion therapy was via a particularly cool episode of ER years ago, check out this Stroke article from 2007 - it gives a brief overview.

Getting the most from junior doctors

- Assoc Professor Karen Mattick

Reported by Linda Dykes

Karen, the Associate Professor of Medical Education at the University of Exeter, centered her talk around three recent qualitative studies about foundation-programme doctors, and what they think of the system - and us, their seniors. We were reminded that the Foundation Programme began in 2005, in a deliberate to replace "apprentice-type training" with more structured experience as the EWTD bit into the time available for training. The Collin's report (2010) about the Foundation Programme was largely positive, except for Workplace Based Assessments (WPBA) - which have now been replaced by Structured Learning Events (SLEs).

What do juniors grapple with?

- Challenges of new responsibilities
- Decision-making and prioritisation
- Prescribing
- Out of Hours working
- Acting independently vs. patient safety
- Preparedness

Study 1: Decision-making by junior doctors

20 x F1 doctors at 5 hospital sites were observed whilst working independently, and then questioned about their decisions.

They talked a lot about "inherited decisions" made by their bosses... which made me wonder whether I could do better in explaining my rationale to a junior I have allocated a task to.

Study 2: Junior doctors decisions about anti-microbial prescribing

33 participants were asked to recall "memorable" antimicrobial prescribing events, and despite the obvious problem of recall bias, some themes emerged.
Issues identified by the juniors included variation between wards (which came a surprise, in the days of hospital antibiotic policies!), continuity of care including handovers, out of hours working and communications, and time pressures and inefficiencies.

The juniors valued support for prescribing, and their comments suggested that juniors in surgical specialties may be taking higher-level decisions regarding antibiotics than their counterparts in medicine, as juniors commented their registrars "weren't interested" in the "medical stuff"!

Study 3: Was the shift from WPBAs to SLEs helpful?

110 foundation trainers and trainees reported that, despite the change in emphasis, there was still a lack of helpful feedback to trainees - which takes time.

Trainees and trainers both reported they knew this and needed to take responsibility for tackling it, but admitted they will delay doing so.

Key messages:

- Juniors provide a significant proportion of "front line"care and are the largest group of prescribers in the hospital.
- Better insight into the challenges facing them may enable us to support them better with benefits for patients, juniors, and those of us supervising them!

Reflection for your CPD

Want to read the studies?

1. "Junior Doctor Decision making: isn't that an oxymoron?" (2013)
2. We were unable to find a link to the second study on line but we found a video of Karen Mattick presenting about it instead!
3. We couldn't find this one either (Rees, Cleland *et al*, 2013, A Qualitative Evaluation of Foundation Programme supervised learning events. Final report to the Academy of Medical Royal Colleges) but we did find this presentation about SLEs.
4. The Collins Report

Revalidation: where are we and where are we going?
- Gillian Bryce, CEM Director of Revalidation

Reported by Charlotte Doughty

All seems to be going smoothly in Emergency Medicine: very few questions are being asked of Gillian in her capacity as Director of Revalidation, and in comparison to GPs (whose Royal College are handling five queries per day) we have only generated 25 in total. It's not clear why we seem to be so untroubled by it in EM!

A top tip was that the GMC have a very useful toolkit for revalidation.

Q -What about the middle grade doctor who can blast through minors, is ok on majors but shaky in resus?
A - They can revalidate within their scope of practice, which admittedly limits the flexibility of your work force, but enables a valued member of the team to revalidate

Q - What about CPD?
A - *It's not just a numbers game, it is important to demonstrate the quality of the CPD.*

Also at CEM Exeter 2014...

The exit block campaign launch
- Dr Cliff Mann, CEM President

Reported by Alison Walker

The College of Emergency Medicine

Patron: HRH The Princess Royal

7-9 Bream's Buildings
London
EC4A 1DT

Tel +44 (0)207 404 1999
Fax +44 (0)207 067 1267
www.collemergencymed.ac.uk

PRESS STATEMENT

Under Strict Embargo until 10.30 am
09 September 2014

Blocked emergency departments put patients at risk

The College of Emergency Medicine, the body that speaks for doctors and consultants working in A&E departments in the UK, is today calling for urgent action to address blocked A&E departments.

A new condition called 'exit block' is harming patients: they are put at risk when 'exit block' occurs. This happens where you can't get patients from A&E into a hospital in patient bed. This is explained in more detail in this video: *Exit Block: What it is and why it is dangerous*

Over 500,000 patients a year are affected. The College of Emergency Medicine says that this is unacceptable.

The College is calling on hospital Chief Executives and their Boards to make sure that this issue is on their agenda. To help with tackling this issue the College has issued guidance: *Crowding In Emergency Departments*. NHS England and Monitor, the Trust Development Association have endorsed this in their own winter planning guidance for this coming winter. In Somerset, Musgrove Park Hospital, has taken up the challenge of tackling Exit Block. They are working on a range of the solutions we featured in our College guidance. Their approach is shown in this video: *Exit Block: Tackling exit block.*

President of the College of Emergency Medicine Dr Clifford Mann said:

"We are concerned with patient safety. When the A&E becomes crowded because of Exit Block we know that patients do less well. We know that crowding kills.

This is such an important issue. It is about the flow of patients from ambulances, through A&Es and into hospital wards. The simple fact is that crowding kills. It is simply not acceptable to let this situation continue which is why we are speaking out to urge hospital Chief Executives and their Boards to make sure they have plans to deal with this issue."

College President Cliff Mann opened the conference in the first session.

He started by reminding us all of the "CEM 10", and the good news of a solid increase in trainee recruitment into ACCS (EM) - and how the challenge now morphs into retention of this future EM talent.

Cliff then launched the latest CEM campaign on "Exit Block" and didn't mince his words...
"ED crowding increases mortality - crowding kills. We know this from peer reviewed studies in 2006, 2009 and 2011.
Crowding is associated with an increased length of stay throughout the hospital... it's a self-perpetuating problem."

He went on, *"We know the cure. It's completely unacceptable to have exit block in our hospitals in 2014."*

See the videos - there are two & they're fab!

To see the CEM video explaining what Exit Block is, click here.
To see the second one, explaining how Taunton tackled Exit Block, click here.

Top papers in Emergency Medicine in 2013
- Professor Kevin Mackway-Jones

Reported by Michael Stewart

Kevin Mackway-Jones is Professor of Emergency Medicine at Manchester Metropolitan University, Consultant in Emergency Medicine at Manchester, and co-created the 'BestBETS' concept. Utilising the collective knowledge and opinions of the growing number of UK Professors in Emergency Medicine (and apologising to the anonymous recent appointee he didn't know about at the time!) he presented the top eight EM-relevant papers from 2013...

Kevin started by explaining his methodology. Using an accelerated two-round Delphi process, where participants were first asked to nominate their personal top five papers, then vote for their preferred ten from the list produced. A selection of papers were nominated, containing some predictable entries, but also one or two surprises.

It was noted that four of the top five papers were essentially negative – they showed no benefit to previously used treatments – but the investigation of conventional wisdom is clearly just as important as investigating new ground. So, here they are, as chosen by the UK EM Professoriate...

1. Targeted Temperature Management at 33°C versus 36°C after Cardiac Arrest *(TTM Trial Investigators, NEJM)*	Read the full paper and the UK Resus Council notes about it
Cooling after VF arrest is now the standard of care – so it was something of a surprise that this trial showed that 33°C was no better than 36°C. Three times as many patients were recruited as were included in the original trials that were considered influential enough to change practice, so is it time to abandon cooling? Probably not – both groups had active cooling techniques used, and it appears that avoiding pyrexia is probably the key. The target may change, but active temperature management is likely to stay with us.	

2. Mechanical Chest Compressions and Simultaneous Defibrillation vs Conventional Cardiopulmonary Resuscitation in Out-of-Hospital Cardiac Arrest: The LINC Randomized Trial *(Rubertsson et al., JAMA)*	Hurrah for JAMA - full article, no paywall - read the full paper here
2589 patients with out of hospital cardiac arrest were randomised to mechanical CPR with a LUCAS device and defibrillation with ongoing compressions, or standard CPR performed by the ambulance crew. Patients were followed up for six months, with survival and the Cerebral Performance Category (CPC) Score recorded at four hours, ITU discharge, hospital discharge, one month, and six months. There was no significant difference found in survival or favourable outcome (CPC 1 or 2) between the groups at any time point. Most of those who survived to six months did so with a good neurological recovery. However the study was powered to detect *superiority,* not *equivalence*: there could still be a 3% difference favouring either method. The interpretation of the results varied dramatically between professors – comments included 'Great! I don't have to spend money on them!' and 'No problem with continuing to introduce them in our [ambulance] service.' Apparently even a clear result doesn't necessarily always influence practice in the same way!	

Top papers in Emergency Medicine in 2013

- Professor Kevin Mackway-Jones

3. Intravenous or nebulised magnesium sulphate versus standard therapy for severe acute asthma (3Mg trial): a double-blind, randomised controlled trial *(3Mg research team, Lancet)*	Like most Lancet papers, there's no free link to the full paper (boo, hiss!) but here's the abstract.
1109 adult patients with severe (but not life-threatening) asthma were randomised to 2g IV magnesium, three 500mg nebulised doses, or placebo. The power calculation indicated 1200 were needed, but a lack of funding led to an early end for the study. IV magnesium showed a non-significant trend towards reducing hospital admission and subjective breathlessness. Nebulised doses made no difference. The authors conclude that nebulised magnesium has no role in managing acute severe asthma, and IV magnesium has a limited role at best. The question of whether magnesium via either route has a place in treating patients with life-threatening asthma is still to be answered.	

4. A Randomized Trial of Protocol-Based Care for Early Septic Shock *(ProCESS Investigators, NEJM)*	Just the abstract again,that's a pity, NEJM!
The recognition and management of sepsis is recognised as an important part of emergency care. The reduction in mortality with early goal directed therapy was startling, and there are major trials underway to replicate these findings. PROCESS is the first of these to publish, and holds both a surprise and a reassurance. 1341 patients were randomised to standard care, EGDT, or protocolised care without routine use of central line or inotropes. There was no significant difference in mortality at 60 days, 90 days, or one year. The reassuring result was that overall mortality was around 20% - far lower than in the original Rivers study. Hopefully this means we have got better at recognising and treating these patients, regardless of what protocol is followed.	

5. Effect of Emergency Department Crowding on Outcomes of Admitted Patients *(Sun et al., Annals of Emergency Medicine)*	And the Annals only give us the abstract, too..
Retrospective study of acute hospitals in California. The model of care isn't identical to the UK, but the findings were stark. 995379 ED attendances were in the dataset. Patients admitted to hospital on days when the ED was crowded had 5% greater odds of inpatient death, 0.8% longer hospital length of stay, and 1% greater cost of care. The study highlights just why the College campaign to address exit block is so vital.	

6. Age-Adjusted D-Dimer Cutoff Levels to Rule Out Pulmonary Embolism: The ADJUST-PE Study *(Righini et al., JAMA)*	Hurrah! Another full paper with no paywall...
D-dimer tends to increase with age; this study aimed to find a reliable way of increasing the cut-off level with age to improve the specificity of the test for ruling out pulmonary embolism. With 3346 patients recruited and PE prevalence of 19%, they found that an age-adjusted cut-off (10 x age, measured in μg/L) would permit 29.7% of patients with low Wells score to have PE ruled out without CT, compared to 6.4% using the standard cut-off level.	

Top papers in Emergency Medicine in 2013

- Professor Kevin Mackway-Jones

7. **MAGNEsium Trial In Children (MAGNETIC): a randomised, placebo controlled trial and economic evaluation of nebulised magnesium sulphate in acute severe asthma in children** *(Powell et al., Health Technol Assess)*	Another one with full paper available free - thanks HTA (part of NHS Institute for Health Research)

Another paper looking at nebulised magnesium in severe asthma, this time in children. The results were published in the Lancet, but this paper also included an economic evaluation. 508 children were randomised to standard care with three salbutamol and ipratropium nebulisers at twenty minute intervals, or the same nebulisers with the addition of 151mg of nebulised magnesium.

There was no overall benefit seen, but subgroup analysis of the most severe cases and those with duration under six hours did show a benefit. At the £20000 per QALY gained threshold, magnesium was calculated to have a 60% chance of being cost effective.

8. Reduction of adverse effects from intravenous acetylcysteine treatment for paracetamol poisoning: a randomised controlled trial *(Bateman et al., Lancet)*	Oh, it's the Lancet again - abstract only, I'm afraid...

Patients needing treatment for paracetamol overdose were randomised to the standard NAC regime or a modified 12 hour infusion (with or without Ondansetron pre-treatment). Total dose was the same, but the maximum infusion rate was 50mg/kg/hour.

There were significant reductions in the incidence of vomiting, anaphylactoid reactions, and need for pauses in treatment with the modified group. The proportion of patients with >50% rise in ALT did not significantly differ between groups.

While this is promising, it was noted that the trial was not powered to detect non-inferiority of efficacy – so while no significant difference was found, it's not yet certain that the modified protocol works as well.

So, what was the conference like as an attendee?

The venue was the University of Exeter, which had an absolutely superb main lecture theatre. Most of the other rooms were fine, although some became rather cramped and all were much less comfortable than the main lecture theatre. The layout of did involve quite a lot of traipsing to and fro and, it must be said, rather poor signposting. Some signposting on the campus would also have been appreciated - there were plenty of flustered-looking almost-late arrivals on Day 1!

The catering was great, with good seating, including and even a rooftop patio to enjoy the wonderful sunshine we had throughout the conference! Poster area was spacious and well attended, and for once, Bangor wasn't the only contributor of colourful posters!

Overall, an excellent conference - well done to the organisers.

The Conference app was a hit, and - amid much hilarity - delegates were told that the first app that comes up if you search the iphone App Store for "CEM" was not, in fact, the one they were looking for!

Workshop: Research in Emergency Depts

- Dr James Gagg

Reported by Alison Walker

James gave an overview of the benefits of doing research in the ED.

Why do it?

- It's in the NHS constitution (did you know it's been updated?).
- The NIHR says research-active institutions have better patient outcomes than those which are research-inactive.
- Patients like it too: in a MORI poll 72% wanted the opportunity to be involved in research, and only 7% said they wouldn't like to be involved in a trial.
- It improves practice, answers clinical questions and generates income.
- Furthermore, research isn't just for large hospitals: you need the evidence that applies to your own population.

Why in the ED?

- EDs have a large patient base, 20 million people come through EDs each year.
- Trusts can generate income from NIHR studies, it should be core business for Trusts according to Foundation Trust information.

So... if you're interested in getting involved in ED research:

- Approach local R&D CTU (Clinical Trials Unit) for support. You *can* set up in the ED only - rather than with the Trust R&D system - but then you'd need to find all administrative support, employ any research nurse etc etc ... and that's usually more difficult than working with a CTU.
- Start small, grow in size and in partnership with the CTU.
- Arrange a meeting with the R&D Clinical director to talk about the options, they will welcome the interest!

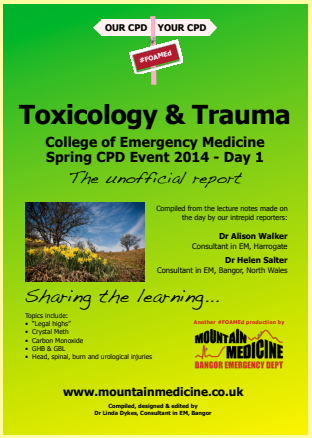
What makes a good study for the ED?

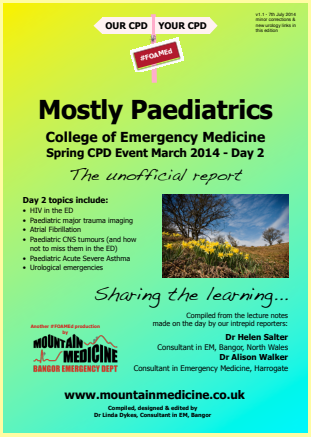
- Look at Recruitment - a good rate or low rate with more engagement helps.
- There are pros and cons for medical and nursing staff in being involved in research, consider them all when starting - unfortunately your reporter had to leave before hearing James expand on this!

Resources & Tips

- Use the NIHR portfolio to look for studies - for example, the REVERT study used the SW EM collaboration to engage EDs to participate.
- You can log onto the website for some studies and express an interest e.g. for the HALT-IT study for TXA in GI bleeds, use the NIHR portfolio link on the NIHR website.
- The REVERT study used the Southwest EM collaboration to engage EDs.
- Use the Injuries and Emergencies section on the NIHR portfolio and look for studies being set up and recruiting.
- But be aware that not all studies that *could* be done in the ED setting are in the "emergencies and injuries" section. For example, the C4C study on clindamycin in cellulitis.
- There are also some commercial studies.

Missed the 2014 CEM CPD Event in Cardiff?





Catch up with the Bangor ED conference reports: **full coverage of all three days of the Cardiff CPD event** - plus others - at our Scribd Conference Collection site.

The future of Urgent & Emergency Care in England - Professor Jonathan Benger

Reported by Michael Stewart

Professor Jonathan Benger is the National Clinical Director for Urgent Care, NHS England as well as a Consultant in Emergency Medicine in Bristol. He presented an overview of some of the current challenges facing urgent care, and the work underway to address these and reconfigure the system. Some of the conclusions from the data may be (and in other sessions were) challenged, but the session offered a look at how policy is currently being shaped.

On a poll of those in the room, 63% thought that the state of Emergency Care in the UK was getting worse. Politicians were the preferred option to blame for the increasing pressure on the system, with 52% of the room selecting them as most responsible, although GPs, 111, and patients also had some votes against them.

General Practice is heading towards a recruitment crisis of its own, and may be the next major workplace challenge after Emergency Medicine. It was pointed out that reduced access to GPs correlated with increased Emergency Department use by a population – while there may be system issues, the access to a good GP helps to reduce the chance of admission.

Recent figures for the 111 service were presented. About 10% of calls end in a transfer to the 999 system, 7% are advised to attend ED, 64% go to GP or community care. However, the large number of calls received ensures that the 17% that enter the Emergency Care system are a small proportion *but still represent a numerically large number of patients*.

While there have been large annual increases in ED attendance since the change in the GP contract in 2004, much of this has been driven by walk-in centres. The increase in attendance at type 1 and 2 departments has been slower, and early indications are that it has flattened out from 2012/13 to 2013/14.

It was noted that this is a national average, and contains within it a lot of variation between individual centres.

Alongside this rise, there has been a steady rise in emergency ambulance calls and emergency admissions, but the big change that has caused problems with exit block is the reduction in available acute beds.

In 1988 there were close to 300,000 beds, but by 2013 fewer than 150,000 remained. While reducing admissions and length of stay was described as an "important goal", it was maintained that the only safe way to do this was to reduce the average (and peak) occupancy, and only when this was reliably achieved to close beds – demand reduction should drive the bed reduction, not attempting to make this work the other way round.

With respect to number of beds: "... demand reduction should drive the bed reduction, ***not the other way round****..."*

Future plans

The philosophy is to ensure that the right care is given at the right place, by those with the right skills, the first time a patient accesses care.

Plans include:

- Increasing community provision to identify and avert emergencies whenever possible
- Reduce admissions: change the philosophy with the acutely unwell to assessment at home and only transferring to hospital those who cannot be managed in the community
- Increased integration of mental health and social care with the rest of the healthcare system
- Reviewing the workforce size and constituents, including the use of non-medical practitioners
- Setting up 'whole system' networks, with Specialist Emergency Centres (previously called Major Emergency Centres) working with smaller Emergency Centres to provide the full range of services at a network level.

Reflection for your CPD

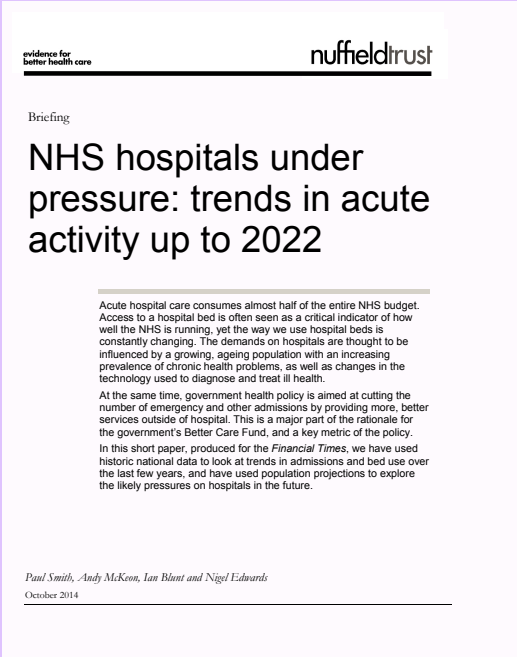
Have you read the stuff?

Being based in Wales (with a devolved NHS and a whole different set of politics, good bits and bad bits compared with England!) the Bangor ED team must confess that, prior to preparing this conference report, we had not actually read the Keogh Report, or Professor Benger's comments related via the NHS England website.

Slightly red-faced, but there you go.

The scale of the challenge

Published after the conference, but very applicable to the topics raised in Jonathan's talk, we recommend reading this Nuffield Trust report:



evidence for better health care — nuffieldtrust

Briefing

NHS hospitals under pressure: trends in acute activity up to 2022

Acute hospital care consumes almost half of the entire NHS budget. Access to a hospital bed is often seen as a critical indicator of how well the NHS is running, yet the way we use hospital beds is constantly changing. The demands on hospitals are thought to be influenced by a growing, ageing population with an increasing prevalence of chronic health problems, as well as changes in the technology used to diagnose and treat ill health.

At the same time, government health policy is aimed at cutting the number of emergency and other admissions by providing more, better services outside of hospital. This is a major part of the rationale for the government's Better Care Fund, and a key metric of the policy.

In this short paper, produced for the *Financial Times*, we have used historic national data to look at trends in admissions and bed use over the last few years, and have used population projections to explore the likely pressures on hospitals in the future.

Paul Smith, Andy McKeon, Ian Blunt and Nigel Edwards

October 2014

It makes somewhat sobering reading:

"if admission rates continue to rise, the growing and ageing population alone means that the NHS will need at least an additional 6.2 million bed days by 2022. This is equivalent to approximately 17,000 beds, which equates to about 22 hospitals with 800 beds each..."

However, the Nuffield Trust are quite clear that "more hospitals are not the answer" and recommends the NHS make three key changes:

- Increase the use of services specifically designed for patients who only need to stay in hospital for a few hours
- "Substantially improve the way that all departments (and services outside the hospital) work together to ensure patients do not stay in hospital any longer than they absolutely need to..."
- "Widen the range of alternative intermediate services available in community or social care, including making use of beds in nursing homes, hotels or indeed patients' own homes..."

The crashing asthmatic - Dr Simon Chapman

Reported by Charlotte Doughty

Simon's talk was subtitled "when the st hits the fan" - a very apt description of one of the most scary scenarios in EM. The talk had four themes: do the basics well, optimise the therapy you are giving, understand the potential complication and know your drills (and your plan) should a patient have a severely asthmatic patient arrest on you.**

The airway physiology of acute severe asthma - bronchospasm, airway oedema & increased mucus production - is well known to most of us, but how often have you thought about the cardiovascular sequelae? Hyperinflation results in auto-PEEP, as accessory muscles are used to try to get air out of the lungs, which raises intrathoracic pressure and decreases venous return.

How are we doing?

The recently-published National Review of Asthma Deaths (pictured right) reviewed 195 deaths from asthma in a one-year study period, and found substantial room for improvement in UK medical practice: when we later looked at the report we were startled to find that 45% of the asthma fatalities died either without seeking help or prior to the arrival of medical assistance, but also that in 25% of deaths the "management of the fatal asthma attack was inadequate".

Treating the acute attack: get the basics right

Simon reminded delegates that they should keep sats above 94%, give beta-agonists via spacers when possible but use back-to-back nebs if necessary, and that steroids can be given orally instead of IV (no difference in effectiveness).

As for intravenous treatment, Cochrane hath spoken about aminophylline (use it no more!) but beta agonists *can* be given intravenously if inhaled therapy is not reliable.

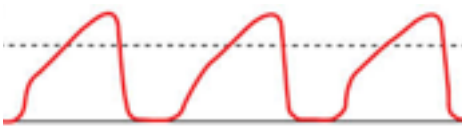
Hunting for a pneumothorax is important, but CXR will miss small ones - ultrasound is better. And don't forget the possibility of anaphylaxis masquerading as asthma *[this is why paramedics are allowed to give IM adrenaline to asthmatics at the bottom of their algorithm - Ed]*

There was a hint of "dogmalysis" in the air when Simon pointed out that there may be a role for NIPPV in asthma and some evidence to support its use in Acute Severe asthma, but there are potential problems - agitation may be precipitated by the mask, and it may result in a delayed decision to intubate.

Anticipate the crash

Poorly asthmatics need watching like hawks - "It's S.H.I.T. - **S**hout **H**elp **I**n **T**ime"

CO2 retention can be screened for using venous blood gasses, but Simon also advocated using nasal capnography and watching the waveform: the classic appearance in asthma being this "shark's fin" appearance.



The crashing asthmatic - Dr Simon Chapman

Knowing when it's time to tube

- The *absolute* indications for intubation in asthma are well recognised - respiratory arrest or a GCS under 13.
- The *relative* indications are a bit more woolly: respiratory acidosis, rising pCO2, slowing RR, worsening agitation or fatigue.

And if you need to crack on...

- **Don't** try to lie the patient flat - and don't forget to explain to the patient what you are doing.
- **Do** use an ETT that's at least 8.0mm diameter.

*"Ketamine is the **drug of choice** if you need to anaesthetise a crashing asthmatic - and 1-2 mg/kg helps bronchodilate"*

- **Do** use ketamine - it's also a bronchodilator at a 1-2mg/kg induction dose
- **Don't** use atracurium, which can worsen bronchospasm - stick with sux or rocuronium
- **Do** be careful ventilating the patient once the ETT is down: be sure to allow adequate time for exhalation, and use a Mapleson C circuit with caution as it can generate very high airway pressures.
- **Do** use permissive hypercapnia (unless in a post-arrest situation!): a pCO2 of up to 10 is acceptable, and you can aim for a pH down to 7.2 - this will improve V/Q mis-matching
- **Do** consider phosphodiesterase inhibitors ("like aminophylline but more selective")

"If a crashing asthmatic arrests, do bilateral thoracostomies..."

And if it's CRASH TIME...

- When dealing with a very sick asthmatic patient, be prepared for the possibility of arrest - and plan for it
- Monitor ETCO2, and watch the pulse and art line
- Perform bilateral thoracostomies - yes, just like in a traumatic cardiac arrest
- Give some volume replacement
- Disconnect the ventilator during chest compressions to stop breaths stacking

Reflection for your CPD

Have you read the stuff?

The British Guidelines on Asthma Management are produced jointly between the BTS and SIGN.

Have you ever actually read them, or just used the table in the BNF?

According to the BTS website, an update is due in October 2014 so keep your eyes open.

Shock it or drug it? AF in the ED

- Dr Cliff Mann

Reported by Debbie Godden & Alison Walker

If AF in the ED was a Mastermind topic we reckon CEM President Dr Cliff Mann would win, and, since his last talk to a national CEM CPD event (the Spring CPD Event - reports available from our Scribd.com page) the NICE guidelines update has been published.

Unfortunately, it is a hefty 403-page tome, and so Cliff - being one of us and therefore knowing that Emergency docs aren't really into 403 pages of anything - kindly undertook to distill the essence of the guidelines using some illustrative cases.

Which is probably the kind of pragmatism that made us vote him in as our leader!

"Drugs can be dangerous, AF can be dangerous, and dangerous + dangerous = MDU". Cross that with a paucity of evidence for management of AF in the ED setting and the stage is set for some potentially high octane decisions.

Cliff started by reminding us why AF is dangerous: the risks of AF showed up in the Framingham study: the longer you are in AF the more likely you are to die, and the risk increases steadily over the following 10-year period.

It is known that early cardioversion is better, and more likely to be successful: after 12 months in AF it becomes very difficult to cardiovert, partly due to remodelling of the conduction systems.

AF & stroke

- Assessment of stroke risk is important in all patients with AF
- Stroke risk is 5x that of an age-matched population
- Strokes in those with AF seem to be more severe - only 25% of people being independent a year later.
- Warfarin significantly reduces mortality, but aspirin is no use... efficacy is increased by adding dipyridamole, but adverse events massively increase too.
- the CHADVASC score in AF will guide you as to risk of action, but the bottom line is that over-65s with a risk factor for stroke should be on an oral anticoagulant, but under-65s with no additional risk factors don't need warfarin.

Think you'd prefer this view from the office? OOPT in rural EM

Photo - Joss Images

ST4-6 in a city deanery? If you'd like to experience rural EM in North West Wales (or like the look of living within minutes of the mountains of Snowdonia, beaches of Anglesey or watersports playground of the Menai Straits?) in a friendly department with plenty of major trauma & high-acuity patients, and enthusiastic trainers, talk to us about OOPT - see www.mountainmedicine.co.uk

Shock it or drug it? AF - Dr Cliff Mann

Management of newly-diagnosed AF in the ED population

Sometimes - but not always - more than one answer. And there's even an ABCDE of options...

- A - amiodarone
- B - beta blockers
- C - calcium channel blockers
- D - digoxin
- E - electricity
- F - flecanide

Case	Story	Recommended Rx	Rationale
1	Fit 35yo, 2-hour history of palpitations AF 120-150 bpm	Flecanide or DC cardioversion	
2	26 yo marine, presyncopal AF 220 bpm	DC cardioversion (with sedation)	• Do not give adenosine if there is an accessory pathway - it will block the accessory pathway, unblock the AV node and may prove fatal. • Amiodarone is too slow • Flecanide is a but of a gamble
3	Retired general surgeon with AAA, PE, COPD and on warfarin. New AF on background of these multiple comorbidities. On sotalol for ?PAF	Use an extra dose of his sotalol - an extra 80mg put him back into SR, and he's already anticoagulated	• Rate control more important than rhythm control in this patient.
4	70yo male, usually well. Few weeks of dizziness and falls. BP OK, AF 130-150 bpm	beta-blocker (bisoprolol 5mg)	• Uncertain duration of AF, therefore cardioversion has associated risks • Occasional palpitations or up to 5 hours of AF per month has zero increased risk of stroke
5	60 yo swimmer 2 years of PAF episodes, uses bisoprolol prn Sudden onset of symptoms overnight	Anything you like to cardiovert as clear history of recent-onset	• Flecanide has recent evidence supporting use up to age 60 so long as nothing to suggest "structural heart disease" • If you opted to beta-block and follow-up in clinic for cardioversion later, you miss the window for maximising the chance of success.
6	51 yo female on citalopram Symptoms for less than 48 hours, HR 150 bpm - Atrial flutter	DC cardioversion (with sedation)	• Atrial flutter is more resistant to drugs

We're looking for a new consultant colleague in Bangor...


Photo - Dafydd Williams

Approaching CCT, or fed up with life in the rat race and want a move? Take a look at our unofficial website - www.mountainmedicine.co.uk - and see whether you like the sound of our team. If you like to work hard and play hard, in a relaxed and friendly department (egos are left at the door here), get in touch. Even better, from 2015 there is the opportunity of PHEM sessions. And getting paid to fly over the magnificent scenery of Snowdonia National Park as part of your day job is, let's face it, simply awesome.

Research in the resus room: EBM at the sharp end (PE) - Prof Alisdair Gray

Reported by Alison Walker

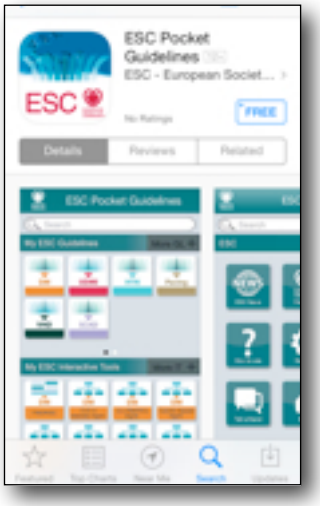
Alisdair gave a thought-provoking talk entitled "Thrombolysis in PE: a wolf in sheep's clothing?"

Reflection for your CPD

This report contains multiple links to the papers and guidelines quoted - we have left them in the main text for you to read as you go...

"EBM is the cross over of research evidence, patient preference and clinical experience - a lot of us practice medicine by our last good or bad experience, but patient preference is vital, especially for thombolysis in stroke or PE, where there are benefits *and* risks."

The European Society of Cardiology recently published new PE guidelines 2014.



The European Society for cardiology have developed a free APP - just search for "ESC Guidelines" so far found on the Apple & Android - we don't know about Blackberries!

Sometimes it's clear what to do e.g. a case of a recent ankle fracture with clinically massive PE (i.e. sustained hypotension less than 90 mmHg, or 40 mmHg less than normal for their age) with no clear alternative cause, where the patient is nearly dead.

How common is *massive* PE?

It's 3-5% of all PE in EDs, so uncommon, but not rare and these patients *look sick*. There is no evidence to support the use of an anticoagulant in early management, but unfractionated heparin maybe advantageous.

The rationale for thrombolysis is that there is a mortality benefit, it reduces recurrence and it improves symptoms... but the evidence base is not large. There is evidence of a number needed to treat (NNT) of 10 to prevent recurrent PE or death, but beware... the number needed to *harm* (NNH) for massive haemorrhage is 8.

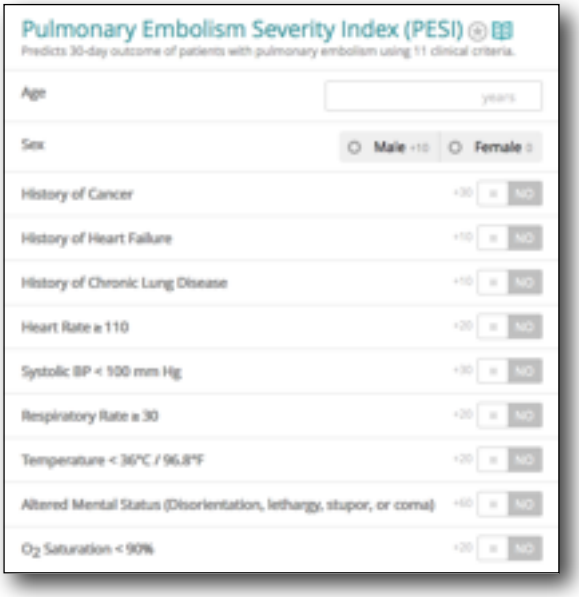
Patients receiving lysis in massive PE

A large USA study by Stein & Matta (2013) showed a reduction in mortality, and suggested giving lysis unless the risk is too high.

Alisdair added, "if you can get the patient to CT - do it. But if they are too sick and there is an ECHO with evidence of PE, that's enough to make the decision to thrombolyse."

Risk stratification for PE

Using a low/medium/high classification, 30-40% fall into medium risk. Jimenez et al's 2013 "PROTECT" study (that's the somewhat cumbersomely named **PRO**gnos**T**ic valu**E** of **CT**) and other papers including 2010 Jimenez paper with a PESI (Pulmonary Embolism Severity Index) Score system. Patients with a normal PESI score and no troponin rise, can be safely anticoagulated and treated as outpatients.



The PESI score is widely available on line (this is a screenshot from mdcalc.com) and in various apps, such as Medcalc.

Research in the resus room: EBM at the sharp end (PE) - Professor Alisdair Gray

Over the other side of the pond, the American Heart Association (AHA) 2011 guidelines for submassive PE reckon that thrombolysis doesn't save lives, but those who are *not* thrombolysed often have functional limitation at 6 months that is probably related to their PE 6 months previously. NNT was 33 for the primary outcomes (reduced death and haemodynamic compromise) *but* event rates in both arms were very small.

The clinical bottom line is that we can "probably wait to see if they decompensate before thrombolysing" because those thrombolysed had significantly more bleeding than the heparin alone arm of the trial.

The 2013 MOPETT trial looked at 121 patients with "moderately" severe PEs, randomised to try using half-dose - "safe dose" - thombolysis. This trial used a haemodynamic outcome rather than a clinical one. Half-dose TPA improved haemodynamics (but they gave no functional outcome information), and there was no bleeding in either arm.

Overall, Alisdair felt that for submassive PE (where there is a benefit vs risk decision to be made), it may be better to wait to see how the clinical course goes for the patient.

A recent JAMA paper (June 2014) by Chatterjee *et al* is one of the most recent studies, but the outcomes were difficult to weigh up *[...not half...even the JAMA summary more or less said that...Ed]*

So...after all that, there is still uncertainty around:

- What dose of thombolysis? (MOPETT trial)
- Which one? TNK or TPA - but there may be less bleeding with TPA.
- Alternatives? Embolectomy is still out of reach of most EDs
- Is there a submassive subgroup that would benefit from thombolysis? No certainty yet.

To summarise

"We should probably should be doing more for the non-massive PE group: they probably should go to a HDU bed, and if they decompensate, then thrombolyse."

Nearly as good as being there...

Catch up with more conference reports like this from Bangor ED: visit our Scribd Conference Collection website.

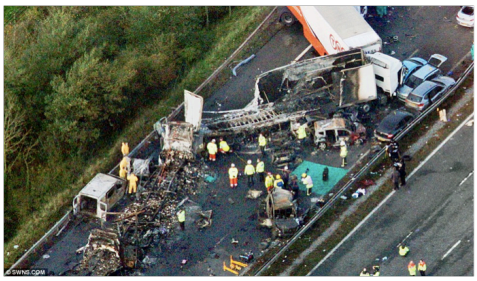
Major incidents & mass casualties: the regional experience

Reported by Sarah Black

Just in case you thought the South West was predominately about cream teas and coastline … the afternoon sessions in The Sanctuary provided a flavour of some recent major incidents from the region.

This fast paced session moved from a very personal account of the M5 crash, explored lessons learned from a narrow escape with a bomb in the centre of Exeter, through to the weird and wonderful experiences to be had delivering cover from the 'Big Ground' Medical Centre at Glastonbury Festival of the Performing Arts.

The M5 crash



Dr James Hickman was looking forward to supping local ale on the evening of November 4th 2011, when he received a call at 20:30 from South Western Ambulance Service to respond to a major road traffic collision nearby. Dr Hickman, a local GP and Chair of BASICS South West, had no idea when he left his pint un-poured that he was about to become the first medical responder at the scene of the largest RTC in the UK for 20 years.

Setting the scene, James described being taken aback by the size of the fire that became apparent as soon as he arrived on the slip road at Junction 25. In total 34 vehicles were involved, including 6 HGVs.

As Medical Commander James played tribute to the other Emergency Services at the scene, humbly describing himself as a 'small cog' in the very efficient multi-disciplinary team on duty that night.

In 15 minutes he shared his experience of the event, describing how his major incident training took over and appropriate areas for triage and assessment of casualties were established. The incident occurred prior to the roll out of the major trauma system across the region, the most serious casualties conveyed to nearby Musgrove Park Hospital in Taunton. James recalled how he kept sending patients and the staff at MPH worked to ensure they had capacity, even though at one point there were 6 active resuscitations being undertaken in the ED.
There were also 21 less severely injured patients taken to Yeovil District hospital nearly 30 miles away.

In the end, the incident left 7 dead, and injured 51. In summary, James shared some key lessons on the management of the incident, including:

- Importance of logging all volunteer medics on scene
- Don't underestimate the value of good notes
- It may have it's detractors – but "Hooray" for MIMMS
- Flow of casualties was vital to keeping numbers
- Solving access and egress issues was key

Finally, as sobering as the event was, he shared with us his slight embarrassment at being thrust into the media spotlight the morning after, especially as he wasn't quite as well groomed as usual!

Major incidents & mass casualties: the regional experience

The Exeter Bomber

Next up was **Dr Tony Hudson**, Lead Consultant at the Royal Devon and Exeter Hospital ED.

Tony was recalling the day in May 2008 when a vulnerable, self radicalised man from Plymouth hopped on a coach to Exeter's city centre with two home made nail bombs in his rucksack. *[For reference – although there is a fair amount of football rivalry between Plymouth Argyle and Exeter City – we are assured this isn't a usual occurrence! - Ed].*

The Princesshay area of the Exeter is home to a large shopping mall and there are several choice places to eat, some of which conference delegates may have enjoyed! It was from one of these restaurants that the first emergency calls came through at 12:50, suggesting injuries due to an explosion.

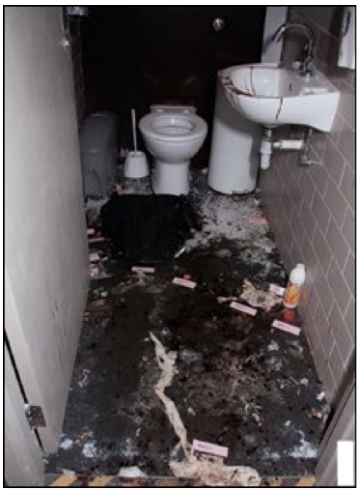
Tony described how the team at RDE immediately rolled out their major incident plan, but there was initially little information about the type of incident they might be faced with or the number of casualties involved.

By 13:00 the area around the restaurant had been cordoned off, and the team at RDE were considering their decontamination plan in addition to assessing capacity.

As it turned out, the would be bomber was the only person injured in the incident, one of his devices having been activated whist he was locked in the restaurant toilet. He was admitted to the hospital that afternoon, and discharged 4 days later into police custody.

Interestingly, although Tony's lessons from the day reiterated the importance of being familiar with your major incident and decontamination procedures, one unexpected learning point involved patient confidentiality.

It became apparent that the patients' medical records had been accessed on a number of occasions that were not directly related to his care. These 'unauthorised' views have resulted in a stepping up of the process around patient record management within the Trust amidst an awareness that a major incident can result in patients gaining a "celebrity" status.



Bomb versus bog....

Major incidents & mass casualties: the regional experience

Glasto greatest hits

The afternoon session ended with **John Heyworth** sharing some of the colourful experiences involved in delivering medical cover to the largest festival in the UK.

Glastonbury Festival of Contemporary Performing Arts has been running for 44 years, although today the population crowding on to the 900 acre site is a staggering 198,500 more than graced the fields in 1970, where the 1500 party goers paid £1 each and got free milk!

These days the dubious experience of the 5000 'long drop' loos are easily forgotten with line ups which include Dolly Parton (the 2014 highlight I'm told!) and a host of other sights that you'll see nowhere else as frequently in one weekend as you will at Worthy Farm!

Although there is still a whole space dedicated to 'alternative therapies' at Glasto John's aim was to share what it's like to support and deliver medical cover to 200,000 people, often in muddy wet conditions (there were lots of mud references!).

In addition to three walk in centres, two fully stocked pharmacies a team of paramedics and two first aid posts, the festival hospital is sited in a tent known as 'Big Ground'.

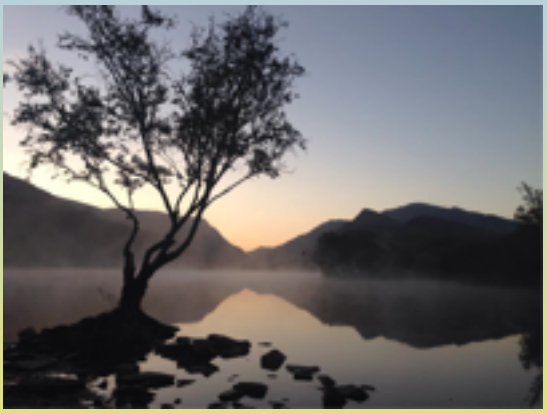
This isn't just any old canvas structure though, we're not talking Scout Jamboree here – this tent has the facility for x-ray, physiotherapy, podiatry and dental services, as well as psychiatric and substance misuse support.

John shared with us a cross section of patient interactions, which included:

- A big sick patient with had taken an MDMA overdose
- A patient with refractory SVT
- A delivery (NB – midwifery services are not on the list above!)
- A psychotic and very aggressive rugby player … who apparently was quite the opposite the following day, returning to see the team and thank them, apologising for his behaviour!

This last was a good example of a notable Glasto phenomenon, the differential diagnosis known as the 'caked and baked'!

... but if you don't fancy PHEM, we have other options!



We know that some post-ACCS trainees want a productive "year out" after ST3 (or as OOPE later), but don't fancy PHEM.

So we came up with some other options... 80% rural EM and 20% of whatever you like, although our suggestions are MedEd/Simulation, or Medical Management/Quality Improvement, for which we've negotiated access to the very highest levels of NHS Wales.

6 to 12 month posts, flexible starting dates.

See www.mountainmedicine.co.uk

Sepsis: how far have we come?

- Professor Nathan Shapiro, Boston, USA

Reported by Alison Walker

"... as the physicians say it happens in hectic fever, that in the beginning of the malady it is easy to cure but difficult to detect, but in the course of time, not having been either detected or treated in the beginning, it becomes easy to detect but difficult to cure"

— Niccolò Machiavelli, The Prince

Prof Shapiro covered the reasons for hypoxia in patients: macro-circulatory (oxygen supply), micro-circulatory (oxygen use) failure & mitochondrial dysfunction (oxygen use).

He also told us about a new gadget for a bedside view of the micro-circulation flow in the sublingual area and pointed out that therapy for sepsis had been historically disappointing pre-2000s.

Early appropriate antibiotics are still the best treatment, but so far there have been no large trials, just numerous studies. The process of care for the patient historically has been systematic clinical failures and late administration of antibiotics.

Some theories: busted!

- Activated protein C - doesn't work
- Steroids - don't work, may be a small role only.
- Intensive insulin therapy - was based on harm from hyperglycaemia now used as moderate therapy only.
- *Early* goal directed therapy (EGDT) evidence - such as the 1988 Shoemaker study - probably too good to be true when it came to hyperoxaemia, and eventually evidence showed harm.
- The famous Rivers trial focussed on fluid, red cells, dobutamine & hyperoxia... but also the *study* team were involved in the treatment arm of the study and not in the other arm. But, after this study more fluids were given in EDs.

The three EGDT trials

ProCESS USA, ARISE Australia, ProMISE England.

The ProCESS trial involved 1341 patients, who were hypotensive or had a lactate above 4. They had 2 hours to be enrolled in the trial and were given a fluid bolus *before* the protocol started. ProCESS compared a sepsis team plus EGDT protocol *vs.* usual ED care, and showed no mortality differences.

Before the start of the protocol phase, all patients got about 2 litres of fluid, and "usual care" was more aggressive (about half of sick patients still got CVP lines). All patients benefited from:

- Early identification of sepsis
- Aggressive fluid resuscitation
- Early antibiotics 97% in all groups.
- Other care elements provided.

*"We can't return to the care we gave in 2000, we were missing these patients **until it was too late**".*

Reflection for your CPD

This report contains multiple links to the papers and guidelines quoted - we have left some in the main text for you to read as you go...

However, this ACEP "quasi editorial" reviews the history of GDT and is recommended.

Sepsis: how far have we come?

- Professor Nathan Shapiro, Boston, USA

OAF - the key components

- Oxygen
- Antibiotics
- Fluid protocol(and now may include lactate clearance, so "LOAF")

How much fluid?

We've all asked ourselves "should I give more fluids? Will it increase the cardiac output?" and Nathan (a bit unhelpfully, it has to be said) reminded delegates to"give fluids to the top of the Starling Curve - then stop"

There are nifty devices available to monitor cardiac output in the ED setting -
they're called "NICOM" (non-invasive cardiac output monitors) although your reporters reflected on the other, cheaper methods of estimating filling, such as IVC filling and use of the passive leg raise test.

*"There is still probably a debate on fluids, with **differences between USA and UK** fluid administration."*

One to watch out for...

The COMMIT study is due to be published soon.
It is an RCT run in eight EDs, good pilot data from preshock patients with lactate 2-4. The investigators used 5ml/kg fluid boluses and if the CO increased by 10%, they continued with up to 4 boluses.

There was no increase in adverse outcomes and the SOFA score http://www.mdcalc.com/sequential-organ-failure-assessment-sofa-score/ reduced by 1 or more.
It is worth noting that this trial appears to have been sponsored by the manufacturers of the aforementioned nifty NICOM device.

Take home messages about sepsis...

- Give fluids and antibiotics early
- Manage sepsis cases as if they were are time-critical as a STEMI or stroke

The Twitter report

The #CEMExeter2014 Influencers

Top 10 by Mentions

@cempresident	153
@emmanchester	152
@mmbangor	137
@richardbody	128
@cemexeter2014	122
@cliffreid	99
@acmedr	68
@4hremergencydoc	
@ukemtrauma	61
@stemlyns	59

Top 10 by Tweets

@mmbangor	133
@pam007nelmes	72
@slr_ed	72
@ukemtrauma	70
@acmedr	54
@mjs_gradmedic	51
@sarahhuggy	50
@stejc	49
@damian_roland	49
@cianmcdermott	45

Top 10 by Impressions

@pam007nelmes	
@emergencymedbmj	
@emmanchester	
@cliffreid	152,710
@damian_roland	
@mmbangor	84,316
@4hremergencydoc	
@richardbody	50,135
@themattmak	43,350
@_nmay	41,840

The Numbers

2,207,996 Impressions

2,009 Tweets

405 Participants

21 Avg Tweets/Hour

5 Avg Tweets/Participant

Tweet 0

Share Analytics

Tweet 0

Temperature control after cardiac arrest: Where are we now? - Dr Jerry Nolan

Reported by Alison Walker

So, just as it felt like the whole world was happily cooling patients post-cardiac arrest - and it even made it into the ALS manual - last years TTM trial (the one that found that patients did better if their temperature wasn't allowed to rise above 36 degrees, compared to those cooled to 33 degrees) threw a curved ball into the arena, so many delegates were eager to hear Jerry Nolan's take on the matter!

Reflection for your CPD

Most of the links here are in the main text, but there's a review of neurological outcome in cooled CA patients here.

Jerry emphasised that cooling (actually, now renamed "temperature control") is only one aspect of caring for these patients. There are four phases - cooling to 33˚C, maintenance (24 hours), rewarming, then normothermia.

So, what's the evidence? A 2011 paper by Silas and Colbourne looked at the outcomes for rats and suggested early temperature control gave best results, but a subsequent 2014 JAMA paper (Kim *et al*) reporting a RCT of prehospital *vs.* in-hospital treatment showed no difference in outcomes. There is a possibility that there were more re-arrests during transport: two litres of ice-cold fluid were given in this study protocol and the jury is still out on giving ice cold fluid.

In a 2011 Critical Care paper Haugk *et al* found more rapid cooling may have worsened outcomes.

So, if ice-cold fluids are a bit dodgy, what is the best way to temperature control your post-arrest patient? There are a variety of systems being used, the best ones have an autofeedback system.
There's a new "Rhinochill" system - which uses an intra-nasal cooling system - this is still being evaluated. You can see a video here.

Moving on to how long to keep your patient cool for, Jerry advised "it may be better if the cooling is for longer....based on more rat study info, which showed that 48 hours was more effective that 24 hours..."

Meanwhile, cooling is not without complications - although some are just the entirely normal physiological effects of cooling:

- Shivering may be a good sign.
- Bradycardia may also be sign of better outcome.
- However, cooling will increase incidence of pneumonia (2.5x higher if cooled) and so the ensuing sepsis may alter outcomes too.

The TTM trial looked at out of hospital cardiac arrests in all rhythms, and was a RCT where patient were cooled on arrival to 33 or 36 degrees. Published in 2013, it found no significant difference in outcomes, but variations in the time from arrest to ROSC may affect outcomes and ideal temperature. Bleeding from insertion sites and pneumonia was more common in lower temperature group and a later paper suggested higher mortality in the 33 degree group. However, be aware that the TTM trial did not include unwitnessed asystole and had short times to CPR.

Bernard 2002 and the HACA Trial 2002 showed better outcomes for the cooled group *but* many of the control patients had significant fevers.

In Jerry's unit in Bath they are still using 33˚C but considering 36˚C. All TTM sites now use 36˚C. The current ILCOR recommendation is that "either 33 or 36 degrees can be used" *[jolly helpful...Ed]*

Prognosis after cooling: you need to allow time for full recovery to best neurological status before measuring the outcome.

Breaking news!

Unmonitored, cooled prehospital fluid probably should not be used: there's a guideline coming out that will probably say that.
It may be harmful.

RSI for all occasions: does one size fit all?

- Cliff Reid

Reported by Linda Dykes

Aussie-based British EM consultant Dr Cliff Reid is a bit of a legend in EM, and with over 6300 followers on twitter (@cliffreid) he is also a major participant in the FOAMed movement. Cliff also doesn't mince his words, and his forthright opinions about the lack of utility of cricoid pressure in RSI have led to some very lively exchanges on social media!

Delegates were therefore expecting - and received - a cracking talk from a master of the trade about getting the basics right in ED RSI. Here are some of the key points.

Cliff opened his talk by explaining that *"... there is value in having a standardised approached to RSI, from which you can deviate if required…"* and then proceeded to talk the delegates through his RSI practice.

Throughout his talk, he emphasized that the characteristics of an ED-safe RSI system is training, drills, SOPs, & team rehearsal.

Get it right first time...

- The aim is success at the first pass of the tube.
- Ear-to-sternal notch (see right) positioning of patient is now thought better thought than "sniffing the morning air" – and may take more than one pillow (in fact it may require *many* more than one pillow in obese patients!).
- Trauma patients deserve special mention, and Cliff emphasized that a patient *"on a spinal board without a pillow is not in a neutral position... you typically need 2-4cm behind the head, and this change the view [at laryngoscopy] from bad to acceptable..."*

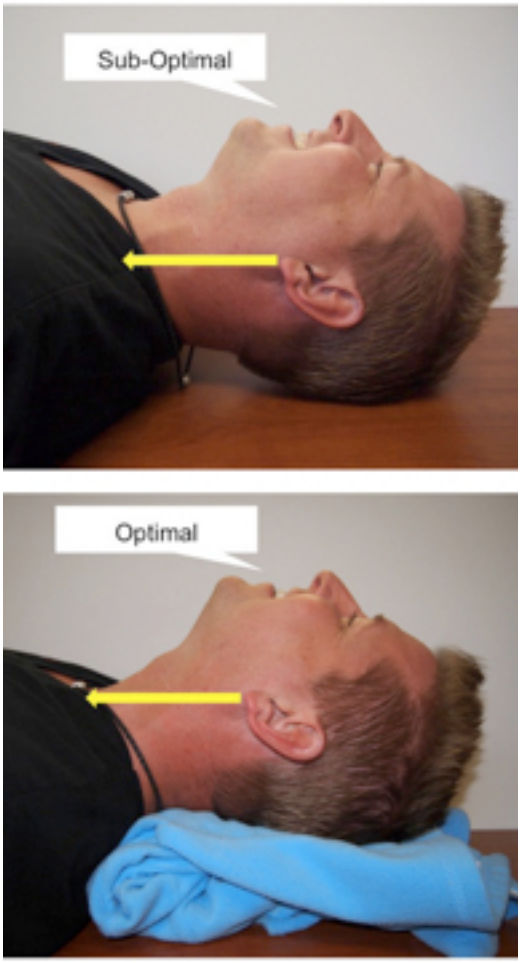


Photo courtesy of Dr Richard Levitan, @airwaycam - worth following on Twitter!

The traditional three-minute pre-oxygenation sequence may not be enough...

Just like the speaker who followed him onto the podium with a talk on apnoeic oxygenation and the benefits of high-flow oxygen via nasal cannulae (Ed Gold, see pages 33/34 of this report) Cliff emphasized the need to plan an "oxygenation strategy":

- Turn your NRB mask up beyond 15 litres, or get a good seal with BVM *plus a PEEP valve.*
- In some patients, you just won't get their Sats above 95% ... they have shunt, they need higher mean airway pressures, and they will desaturate very quickly. These are the patients who most need PEEP (hence PEEP value on BVM)
- Use Nasal cannulae for apnoeic oxygenation *[see next talk – Ed]*
- Sit the patient up as far as you can (helps even in healthy people)

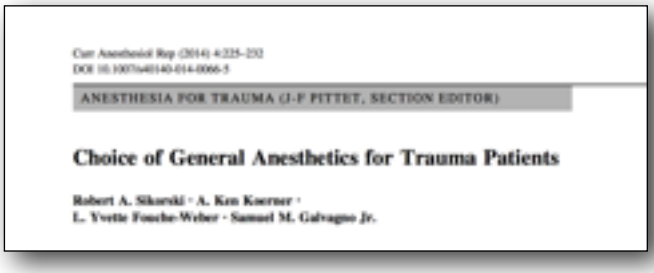
RSI for all occasions: does one size fit all?

- Cliff Reid

Which drugs?

Basically, Cliff likes ketamine.... *"Propofol has little use in EM, unless you can use it safely, and most people can't use it safely.... You are talking **10-20%** of the usual dose. And even that may be too much…"*

In fact, it was very clear that Cliff really, really hates Propofol for EM RSI (your reporter was left feeling pretty sure that he definitely doesn't buy into the oft-heard argument that "the best induction agent is the one the operator is most familiar with"!) - he went onto show a quote from a recent review by Sikorski *et al*, and highlight the quote from within:


Curr Anesthesiol Rep (2014) 4:225–232
DOI 10.1007/s40140-014-0066-5

ANESTHESIA FOR TRAUMA (J-F PITTET, SECTION EDITOR)

Choice of General Anesthetics for Trauma Patients

Robert A. Sikorski · A. Ken Koerner · L. Yvette Fouche-Weber · Samuel M. Galvagno Jr.

*"Propofol reduces systemic vascular resistance, has myocardial depressant effects, and therefore, must be used with **extreme caution** in patients with the potential for hemodynamic instability. Reduced dosing alone in hypovolemic patients **may not be sufficient** to maintain adequate mean arterial pressure and cerebral perfusion pressure."*

What about laryngoscopy?

- Use bimanual laryngoscopy – it's easier to line up the axis - and have a bougie handy.
- Cricoid pressure: there's no evidence it works, plenty of potential harms *[Cliff doesn't use it, but was remarkably restrained in this presentation – Ed]*
- No joy? Go back to two-handed BVM if no joy, or use a supra-glottic airway
- If surgical airway needed, cognitively you must not think of it as a "failure": it's an "alternative"

Getting your system safe

- When writing an SOP, remember that your goal is to have *"everyone thinking the same thing when a particular word is said…"*
- Cognitive aids such as checklists are useful, and "cognitive aid does not imply cognitive impairment in the user.."!
- Audit *every* RSI for major airway complications

Train your team

- Train your team in the ED, with your own equipment and familiar teams
- Remember that not all ED patients are difficult airways... patients who are post-ictal, have taken overdoses etc are potentially good training cases.
- When training, the trainees need to learn to troubleshoot: don't just take over the minute they start to struggle.

Reflection for your CPD

If you haven't visited Cliff's blog, Resus ME, you should, and for more on the cricoid pressure debate (sadly the best medical rant EVER has now been taken down) click here.

And if you haven't yet seen John Hind's "Cricolol" talk from SMACC Gold's conference videos, you really, really must. Here it is - start at 2 minutes in, and enjoy. It's brilliant, and very funny!

Apnoeic oxygenation: Extra time, no penalties - Dr Ed Gold

Reported by Michael Stewart & Linda Dykes

Ed Gold is an ED Consultant and HEMS doctor with the East Anglian Air Ambulance. To judge purely by Twitter, apnoeic oxygenation is the standard of care by "those in the know", especially in Australia, but we've personally not seen it in routine use so were looking forward to hearing a UK proponent of the technique.

This lecture was all about the magical properties of high-flow oxygen delivered via nasal cannulae: - which can help to keep an apnoeic patient oxygenated, of use to the very sick, the very fat and the very small, and a technique that brings with it the potential for advanced airway manouevres and RSIs in resus to be just a little less stressful.

"Nasal cannulae: a cheap lifesaving device..."

The physiology underpinning apneoic oxygenation is not new – it has been recognised for over a century, and is routinely used in (among other areas) testing for brain-stem death.

More recently, it has been gaining ground as one of a collection of measures to delay critical desaturation during intubation of critically ill patients. The aim is to "keep off the slope of doom" – it (usually) takes a while for oxygen saturations to drop to 90%, but once there, further desaturation to critical levels occurs rapidly.

Remember how we laughed at nasal cannulae on TV dramas, until the BTS oxygen guidelines came out and we actually started using them in ED?

Well, we've overlooked this simple little device for too long...

OK, so remind us how it works?

During apnoea, around 250ml of oxygen passes from the alveoli to the blood every minute while only 20ml of carbon dioxide passes the other way. This results in a sub-atmospheric pressure in the alveoli, and provided an open airway is maintained, generates a constant flow of fresh gas into the lungs, *independent of breathing*. If high-flow oxygen is also administered via nasal cannulae, a high oxygen concentration will be maintained in the pharynx, and will greatly delay desaturation. CO_2 will, of course, accumulate but the typical rise is 1.5kPa in the first minute and 0.5kPa/minute thereafter – in the short-term this is not a major issue.

Augmenting pre-oxygenation prior to RSI

Nasal oxygen is also of use during preoxygenation. Most of the available potential oxygen reservoir is in the lungs - not the circulation - so the aim is to completely fill the Functional Residual Capacity (FRC) with oxygen.

At the same time, we want to overcome any shunt. This is where PEEP valves on our BVMs can help a little, but by definition (i.e. 'End Expiratory') PEEP valves can add no pressure during inspiration or apnoea.

CPAP (*Continuous* Positive Airway Pressure) is needed – and with the addition of a constant oxygen flow via the nose (at 15 litres/min +), a PEEP valve on your BVM can maintain 8cmH_2O of pressure *throughout* the respiratory cycle, optimising pre-oxygenation. As a note of caution, don't overdo the PEEP – excessive pressure can impair the circulation, causing reduced capillary flow and oxygen uptake locally, and decreased venous return to the heart and systemic haemodynamic effects.

Apnoeic oxygenation - Dr Ed Gold

Does it really work?

In healthy volunteers undergoing elective surgery, these techniques have maintained SpO2 above 90% for more than half an hour in an apnoeic patient - impressive, non?

The hypercatabolic resus patient may not manage anything like that, but will still do better than they would otherwise, and all the while buying time to intubate and secure the airway.

Pre-oxygenation is a procedure...

We are condition to thinking about intubation as the procedure, with pre-oxygenation bring part of the preparation for that procedure.

But a key point of Ed's talk - along with several other speakers at the conference - was that we should consider pre-oxygenation a procedure in its own right. For example, when preparing to intubate a distressed or agitated patient, sedation to enable effective pre-oxygenation is a valid option, and the use of 1-2mg/kg of ketamine by slow IV push will dissociate the patient enough to allow pre-oxygenation while maintaining their airway reflexes and respiratory drive.

For a summary of Ed's recommendations see table, above right.

Don't forget kids

Ed completed his talk with a word about children. Their oxygen requirement is approximately double that of adults, and they have a fixed tidal volume (so are dependent on increasing respiratory rate to increase uptake), fatigue easily, and have a small FRC (and so desaturate rapidly).

As a result, they can desaturate scarily quickly during apneoa, so any advantage to delaying this is helpful!

10L/min of nasal oxygenation will generate 5cmH_2O of CPAP to support pre-oxygenation and help to delay desaturation whilst the airway is being secured.

Pre-oxygenating the hypoxic agitated patient
• Ketamine (1-2 mg/kg)
• Oxygenate: 15 litres/min NRB
• If shunting: CPAP (max PEEP 15) via BVM with PEEP value
• Turn up nasal cannulae ti 15+ litres/minute (NB - some authorities suggest 4 litres/min until patient is sedated and then crank it up)
• Wait 2-3 minutes = O2 reservoir = FRC
• Give sux/roc - keep the nasal cannulae in situ and the airway patent
• Intubate

Reflection for your CPD

With this technique not yet in routine use in many UK Emergency Departments, there's a significant educational requirement - we don't need to just enlighten our EM colleagues, but potentially anaesthetists and ODPs as well.

The brilliant "Life in the Fast Lane" has an excellent summary of apneoic oxygenation covering much of the material presented by Ed in his lecture, plus some useful little videos (including an extract from a SMACC conference talk) plus references/links.

For an overview more scholarly in style,check out the Weingart & Levitan 2012 paper "Preoxygenation and prevention of desaturaton during emergency airway mamagement" from the Annals of EM - available full text and free here.

For some podcasts and video containing the same material, Life in the Fast Lane obliges again in their "Own The Oxygen" page.

EM Crit Blog has yet more resources and also reminds us of the term "NO DESAT" - **N**asal **O**xygen **D**uring **E**fforts **S**ecuring **A** **T**ube - plus more about BVM PEEP vales.

Finally, if you haven't actually considering respiratory physiology since MCEM Part A or - for those of us who pre-date MCEM, since whatever Part I we used to access MRCE Ed (A&E) - there's a Powerpoint presentation here!

The US Opiate Pain Medication Epidemic - Dr Jeffrey Pothof

Reported by Linda Dykes

Dr Pothof hardly paused for breath (literally… this guy talks *fast*!) during his rapid-fire presentation that held delegates enthralled and appalled in equal measure. We've all seen House popping pills, and most of us are vaguely aware that the USA has a problem with abuse of opiate-based medications, but the sheer scale of the problem outlined by Dr Pothof was astounding…

The scale of the problem

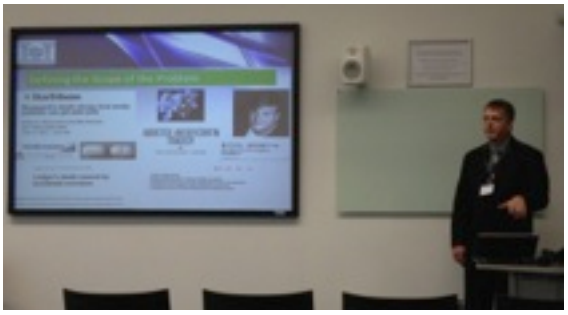
American contains 4.6% of global population but consumes 88% of the world producition of oxycodone and 99% of hydrocodone, and yet research suggests that the US medical profession is not good at treating pain.

The sheer scale of non-medical usage of opiates is astonishing, with different states usage varying from 3.5-6.5%. But it is in young people where the problem is most startling: the worst-affected US state has 15% of 18-25 year olds abusing opiate-based medications, and even in the best states, it is 8% of individuals in this age group.

To put this in context, the prevelance of non-medical opiate use in the rest of the world is only 0.6%. Wow.

The impact on EM

Between 2004 and 2011, ED visits related to non-medical use of pharmaceuticals increased by 132%, and in 2011, there were 1.2 million ED visits for this reason.



So where are people obtaining these prescription only medications?

14% is obtained from ERs, some from friends and family, but mostly the drugs are being prescribed by family doctors. This costs insurance companies a lot of money: $72.5 billion, including $14k dollars per year for those that use opiates non-medically

"Since 2009, more Americans have died annually from opiate poisoning than from MVCs"

How did it happen?

The first root cause of the current problem is that opiate-based medications are effective at relieving pain, and, according to Dr Pothof, American patients "expect to be pain free" after even minor injuries. So, for example, a simple ankle sprain would often be treated with strong opiate analgesics.

The second underlying cause is that these drugs are addictive, with particular concerns about oxycodone.

And the third is a complex mixture of good intentions crossed with the financial power of pharma...

In 2001, the "Joint Commission" (a body that accredits and certifies more than 20,500 health care services) published pain management standards, including a requirement for health services to screen for pain and have a policy for managing pain. This was on a background of lots of studies showing US doctors were not managing pain well, and also literature claiming that the side effects of these opiate medications were not as bad as previously thought. So far, so good.

The US Opiate Pain Medication Epidemic

- Dr Jeffrey Pothof

Unfortunately, major pain education programmes were sponsored by the pharmaceutical industry including the manufacturers of the drugs that are now causing such a problem. To make matters worse, the pharmaceutical industry was bank-rolling patient pressure groups, such as the American Pain Foundation.

How has EM in the USA responded?

Most American EDs now have specific guidelines for opiate prescribing, and these "rules" are posted clearly for patients to see - see box.

On another level, the prescribing of opiate medications is, increasingly, tightly controlled. There are prescription drug monitoring programmes which allow physicians to look at their opiate prescribing rates against other doctors, and at state level, the dispensing of drugs to individual patients is traceable.

The legal status of the drugs is changing too, with hydrocodone now a Schedule 2 drugs, which is the "last step before being illegal".

Example ED opiate rules

- Opiate pain medication is not given for chronic pain managed by another physician
- Prescriptions for methadone or suboxone are not given by the ED
- Lost or stolen prescriptions are not refilled in the ED
- Prescriptions for long-acting opioids are not prescribed in the ED

Reflection for your CPD

We haven't found much additional reading, but for the story of the big-Pharma scandal, see this article from the Milwaukee Journal Sentinel.

And a recent Radio 4 edition of "Inside Health" included the opiate addiction problem - click here to listen.

So, what's in your home medicine cabinet?

Most of us have paracetamol and ibuprofen, and maybe some cocodamol. We actually have some tramadol in our house, but that was prescribed for an arthritic dog.

Having heard Dr Pothof's talk, I asked an American friend (who falls off horses regularly) what she has in her medicine cabinet and here it is... just as described, meds containing hydrocodone and oxycodone, all prescribed in the US for simple MSK injuries.

My friend also commented that "American ERs give you such a lot of the tablets, too", so there's "always some left over" after your painful ankle has healed.

- Linda Dykes

Social media, FOAMed & the future of medical education - Simon Carley & Rick Brody

Reported by Linda Dykes - @mmbangor

Simon and Rick's presentations dovetailed with each other (which is why we have reported them together here) to provide a thought-provoking slant on how the Free Open Access Medical Education ("FOAMEd") movement and social media are changing how clinicians keep in touch with the fast-moving world of evidence-based medicine.

Simon opened the session by stating that social media is merely, "a new tool for an old pyramidal structure of educational delivery", and includes anything that can be share across the web: it is not restricted to Google, Facebook and Twitter.

The term "FOAMed", however, *is* fairly new – and it originates within Emergency Medicine. It was coined in Dublin at ICEM 2012 (over a pint of Guiness, naturally) because "learning via social media" sounded a tad unprofessional to the uninitiated.

*"FOAMed **alerts you** to areas of knowledge where you are unconsciously incompetent..."*

Of course, the concept of sharing medical knowledge freely to anyone wishing to learn isn't new - Hippocrates advocated doing so around 400 BC (see box, right). But web-based platforms have several key advantages over both meetings and paper-based media.

".. I will teach them my art without reward or agreement..."
Hippocratic Oath

Benefits of FOAMed

1. **Speed of sharing messages -** Traditionally, the mean delay from trials reporting to full inclusion into mainstream textbooks has been 14 years, although given Simon's example of TXA in trauma ("some places in the world aren't using it yet") it's clear this had improved pre-FOAMed, as the CRASH-2 trial reported in 2010 and many hospitals were using TXA within a year.

Nevertheless, FOAMed can cut this lag time to days or even hours - see pink box at the bottom of the page for an example.

2. **Alerting you to stuff you don't know -** Remember Donald Rumsfeld and his "known knowns/unknown unknowns" quote?

Well, FOAMed alerts you to areas of knowledge about which you are unconsciously incompetent – so you can do something about it!

How your reporter from Bangor ED learned about the TTM trial:
an example of the power of twitter to disseminate research findings

- Within a day - heard about the TTM paper on Twitter.
- Within 24-48 hours - read two critiques of the paper from clever people whose opinion I value, including, interestingly they came to different opinions...
- Within a week - saw a patient eligible for cooling, decided to concentrate on limiting temp to 36 whilst in ED and ITU could do whatever they liked afterwards
- 10 months later - heard about TTM again in the "Top Eight Papers" session at this conference.
- Still have senior colleagues in my hospital who are unaware of the TTM trial results.

Social media, FOAMed & the future of medical education -

Simon Carley & Rick Brody

3. Widened networks and sphere of influence -
It really is true that, using a tool such as Twitter, you can access world experts for a quick question. And they don't mind. Yes, even the specialty's people-we-bow-down-to people who write the textbooks.

4. Beat the curse of shift work -
A new phrase for the day came from Simon - a "chronologically diverse workforce" – that's what we do in the ED. Physically trying to arrange for people to attend meetings at the same time can be logistically challenging, and social media may be a better way of generating team ethos. This is how the famous St Emlyn's blog/website started- for Senior Emergency Medicine trainees in Manchester (sorry, Virchester!).

"FOAMEd is where the best quality stuff is being discussed and brought to you in an accelerated fashion. ***It's where the learning is****..."*

5. But is it reliable?
We have unjustified faith in traditional journals and their pre-publication peer review process, despite evidence it doesn't work. The bottom line is that engagement with social media gets you feedback within minutes. If you've published something wrong or rubbish, someone will tell you, quickly. Even the cynics - including one within CEM who famously referred to medical blogs as "medical grafitti with a spell checker" - are now coming on board.

6. It's a filter
You remember those pictures of tottering piles of paper journals, and how, a few months before exams, you made a vow to start reading journals regularly?

For most of us that's as far as it ever goes, which is why Simon and Rick suggested to get on Twitter and "… follow some real keenies [in your field] who will ping relevant stuff towards you"

So you *don't* need to trawl though journals, flicking through for papers that might be relevant… you can check your twitter feed before getting out of bed and see what's new. Once you've built up a good base of people to follow, there's not much chance that any major developments will get past you.

7. But won't it get me into trouble with the GMC?
No. "Just don't be an arse."

So, are you ready to give it a go?

If you've dipped a toe into Twitter and "just didn't get it" (and don't worry, many people say that the first time they look) don't panic. Follow the tips here, and start by following a few key people.... if you search for @EMManchester (that's Simon Carley), @cliffreid, @AndyNeill, @LasVegasEM, @CEMPresident, and @stemlyns you'll soon start picking up useful stuff and find new people to follow.

Final thought from the talk:

"Think of yourself as a computer. Once upon a time, a software update took all day and you'd be feeding floppy disks in one at a time. Theses days it just downloads, and new software is installed with minimal effort. ***FOAMed is like software updates for your brain...****"*

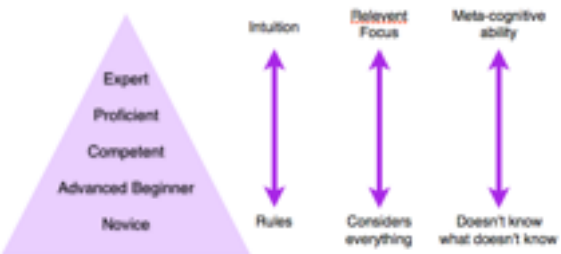
Guess or Gestalt? - Professor Simon Carley

Reported by Pam Nelmes & Linda Dykes

With such a packed conference Day One, it was difficult making a decision to select one session over the many others on offer! Professor Simon Carley was a busy man at CEM 2014: having already presented the value of "Tweets and Pokes" to EM education, he was now offering another intriguingly titled presentation "Guess versus Gestalt". We admit to being somewhat biased in our decision to attend, having a keen interest in decision-making, but also being avid followers of Simon on Twitter (he's @EMManchester) and nudged (subliminally) by pre-session eye-catching tweets asking "Are you awesome?"

Plus, one of your reporters was interested, having kicked off a lively Twitter thread earlier in the summer by asking what on earth is the "Gestalt" that everyone is suddenly talking about?

Starting with the familiar "Novice to Expert" model of skills acquisition, Simon prompted thinking and debate by suggesting that many physicians, "… don't progress beyond competent", and he urged the audience to strive to progress beyond that and strive to become true experts.

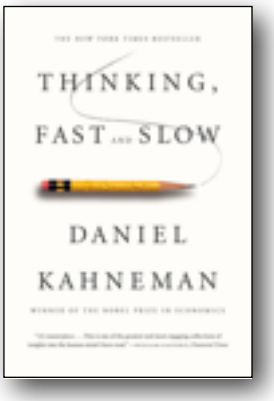


He then moved on to psychology, mentioning Daniel Kahneman's best-selling book "Thinking Fast & Slow" as he gave a brief overview of "dual process theory": System 1 and System 2 thinking, where System 1 is the sports car and System 2 the slower, more methodical, and harder-working vehicle.

He also mentioned other "models of thinking", from the military and fire service, but the take-home message was that cognitive problems are responsible for two-thirds of medical errors.

Given this, perhaps slow-thinking is good when the stakes are high, the margin for error low and someone's life depends on the accuracy of our decision-making.

But, System 1 thinking has served our ancestors well. This intuitive response, this "gut feeling", is a highly sensitive cognitive process involving cue recognition and pattern matching.



This is where Simon took the audience from "Guess" to "Gestalt" – Gestalt is linked to pattern recognition, and its how the mind "fills in the gaps".

The definition of Gestalt provided on a slide ("A structure, configuration, or pattern of physiological biological or psychological phenomena so integrated as to constitute a functional unit with properties not derivable by summation of it's parts") didn't quite hit the spot *[you're not kidding – Ed]* but Simon likened it to walking through the Emergency Department, seeing a row of patients and immediately knowing what is going on… that moment when you walk past someone, glance at them, and turn on your heels before you've even realised why, because you've clocked something that tells you they're really, really sick.

This is Gestalt - "perception without processing" - and we don't yet know whether it is possible to teach it.

Guess or Gestalt? - Simon Carley

Simon illustrated this to the audience with a remarkable time-lapse video of an animated head (plus its physiological parameters) going through the sequence of events leading to death following a stabbing – apparently, the moment experienced clinicians clock that it's all going pear-shaped, is at the first bead of sweat on the man's brow.

Turning then to the question of whether cognitive drills can develop clinical judgment, Simon recommended asking the following questions when debriefing a case:

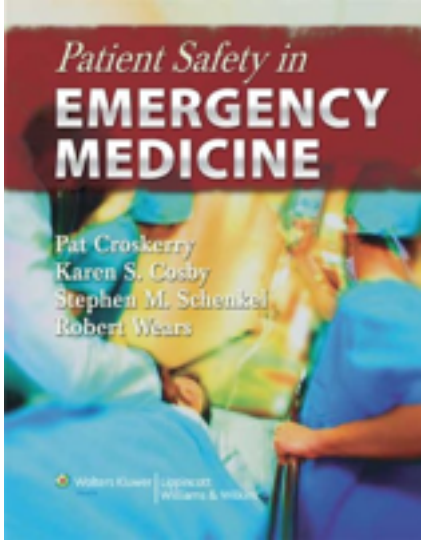
- What were you thinking?
- Why did this seem to be the right idea at the time
- How did you/we decide that
- What else were you thinking about?

He also suggested taking trainees into a room to assess a patient with all clues hidden (turn monitors around, hide the chart) to focus on clinical and sensory perception. Summarising, it is evident we should understand "meta-cognition", "thinking about thinking", and "knowing about knowing". Furthermore, the capacity to switch between System 1 and System 2 thinking is critical to maintain a global view of your patient, especially when the ED is a "natural laboratory for error".

"Few specialties are judged on the basis of their practitioners' immediate impressions ..."
- Karen Crosby & Pat Croskerry

But did we come away thinking we knew what "Gestalt" actually is?

In all honesty, not really – one of us (LD) still thinks it's its sounds awfully like a pseudo-scientific description of we used to call old-fashioned "clinical nounce" (note, *not* "nuance"…) in NE England, but we totally agree that "Gestalt" definitely sounds better than saying something along the lines of "my gut feeling that's been educated by my subconscious plus a lot of experience".



It definitely counts as a tome, but it's worth having on the shelf to dip into when required.

EM:time critical, information light"

Reflection for your CPD

If you've never really delved into the cognitive psychology of decision making (and diagnostics), then you've got a choice from easy-reading pop psychology (Why we make Mistakes, or Blink) to the valuable but heavy-going Thinking Fast & Slow, and finally the proper tome of our specialty - Pat Croskerry's Patient Safety in Emergency Medicine.

You can start your search of the academic literature with such papers as this one on "Recognition-Primed Decision Making" (Bond & Cooper, 2006) and, better still, this full-text article by Peter Brindley (2010) entitled "Patient Safety and acute care medicine: lessons for the future, insights from the past".

Snowdonia's ER

Photo: Joss Images

Bangor, North Wales:

Where EM is still fun!

Clinical Fellows - unique middle-grade posts, 6-12 months

Our acclaimed **Clinical Fellow** posts, primarily designed for post-ACCS trainees wanting a productive "year out" from formal training posts, were the first to offer **20% Pre-Hospital Emergency Medicine** in the job plan.

- The perfect "prep school" for PHEM sub-specialty training, we welcome PHEM beginners
- PHEM shifts are undertaken with Welsh Ambulance (ground assets & Helimed) plus experience of SAR
- 6 to 12 months posts available, flexible start dates between now & August 2015

NEW: two new variants of our popular Clinical Fellow posts: **20% Medical Education/Simulation** *or* **Quality Improvement/Medical Management (QIMM)**.

Both options include relevant courses (e.g. PGCertMedEd) and unusual opportunities. For example, MedEd options include paramedic training, and QIMM posts provide insights into the very heart of NHS Wales, at regional & national level. Call us, or visit our website, to learn more.

Consultant - Locum or Substantive

Come and join Team Bangor ED!
We are seeking a new colleague, and happy to consider locum-with-a-view.

Or why not come to us and try rural EM on sabbatical from your own ED like a colleague from NZ did this summer?

- Civilised 1-in-7 rota, 4-day week if full time... or work LTFT and enjoy the playground of Snowdonia even more!
- We have a track record of supporting new consultants in their first post
- Fantastic friendly department
- Plenty of major trauma (minimal bypass from scene) & high-acuity medicine
- ENPs handle much of the Minor Injury stream, and we are co-located with our GP OOH service
- Plus the satisfaction & challenges of working 100-miles away from our tertiary referral centres

Advertising this autumn on NHS Jobs, but to find our more, visit mountainmedicine.co.uk, email Linda.Dykes@wales.nhs.uk or Rob.Perry@wales.nhs.uk (ED Consultants) tweet us @mmbangor, or call our secretary on 01248 384003 and ask her to track one of us down!

Specialty doctor? Sessional work? ST4-6 interested in OOPT/OOPE?

Please contact us if interested in any of the above. We can offer OOPT in rural EM, OOPE in the Clinical Fellow posts, and well-supported middle grade posts for Specialty Doctors and sessional doctors. We also enjoy supporting returners to medicine.

Where is Bangor?

Sandwiched between the outdoor playground of Snowdonia National Park and the beautiful 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

Your conference reporting team

Dr Linda Dykes (@mmbangor) came up with the idea of reporting conferences like this, and compiles, edits, & designs the Bangor ED Conference reports, plus squirrelling out stuff for the magic green boxes.

Linda 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 & still does occasional GP (family practice) locums to keep her hand in!

Linda is seconded to Welsh Ambulance Service Trust as an Honorary Assistant Medicine Director one day a week, bringing her a small step closer to her ideal portfolio career combining EM plus EMS/primary care interface, and teaching. Her research interest is Mountain Medicine & she particularly enjoys teaching medical students.

Dr Alison Walker graduated from Cambridge University in 1995 and developed an interest in EMS by 1996. She held an EMS research post in 2002-3, and was Medical Director of Yorkshire Ambulance (i.e. the whole EMS system of one of the UK's largest counties) 2006-2013.

Alison has been a Consultant (Attending) in Emergency Medicine with a special interest in EMS since 2004, and her special interests are research and Urgent/Emergency Care systems. She recently moved to take up a new post at Harrogate hospital and this is her third conference reported in partnership with the Bangor ED team.

Dr Charlotte Doughty has been a Consultant in EM for more than 13 years now, and works at Stepping Hill Hospital, Stockport.

Charlotte's interests in ED are drugs (she has an MSc in Clinical Toxicology) & ultrasound, and at home, "mostly chutney-making at the moment, well it's that time of year"! Charlotte has a wife and two cats at home, and "supports a rubbish footie team, although they used to be good!"

Dr Michael Stewart (**@mjs_gradmedic**) graduated from Cambridge University in 2006, having seen the light & entered medical school after a degree in Physics.

After foundation years he started speciality training in Emergency Medicine in North West Deanery, where the weather came as something of a surprise to someone brought up in Devon. He was recently appointed as a Consultant in Emergency Medicine at Lancashire Teaching Hospitals.

Sarah Black (@sarahhuggy) has been Research and Audit Lead for South Western Ambulance Service NHS Foundation Trust for over ten years. She is passionate about building the evidence base, and using data to inform and improve the quality of pre hospital urgent and emergency care.

She is aiming to finish her own Doctoral studies soon, and in her spare time enjoys spending time in the mountains!

Debbie Godden is an EM Consultant in Harrogate, North Yorkshire, who has a "passion for wild/outdoor swimming"!

Pam Nelmes (@Pam007Nelmes) qualified as a nurse in the early 80s (!) working in acute, critical and intensive care at Derriford Hospital (Plymouth, Devon). A keen interest & involvement in clinical research, a desire to enable others, coupled with her own professional development through a MSc in Clinical Science, led to a post in Higher Education (2001). Pam's educational adventures are varied, with involvement in undergraduate pre-and post registration nurse & paramedic programmes. Close working relationships and a 3-year secondment to the ambulance service (SWASFT) strengthened Pam's interest in Urgent and Emergency Care, and she currently leads the BSc (Hons) Programme for Plymouth University. This unique programme has a full time intercalated pathway, popular with medical students from across the country! Not surprising as they have a tailor-made 9-month UK ED placement mentored by a Consultant!

Pam enjoys connecting students with their communities of practice and is an avid supporter of social media (and #FOAMed), has presented at Social Media Week London (2012) and shared her vision for the use of social media in healthcare through the Guardian Healthcare Network. Frequently found on Twitter, and, weather/work dependent, on the beaches of Cornwall!

Aaron Owen is a Foundation Year 1 Doctor currently working at Wirral University Teaching Hospital. Originally from North Wales, he trained at Bristol Medical School. No stranger to Snowdonia, he undertook a placement in Bangor ED, during which his project examined the EMS dispatching aspects of simulated mountain emergencies: the fruits of these research labours have been a national and an international poster presentation. An avid climbing fan and deep sea angler, Aaron takes every opportunity to get out into the mountains and coast of beautiful North Wales.

The last page...

THE END

That's it folks - the end of our report of Day One of the 2014 CEM Conference. Please tell us what you thought of what we've produced: firstly, it's all good fodder for our appraisal/revalidation folders but much more importantly, we also need to know if we have any corrections to make!

if you have any feedback/suggestions please email Linda.Dykes@wales.nhs.uk or contact us via Twitter to @mmbangor.

And if you are on Twitter or Facebook and enjoyed the report, please, please help to disseminate the link to it... this is an all-volunteer production, and many dozens of hours of precious and scarce free time have been donated by the reporting team and designer/editor to bring this to you. Seeing the number of hits rack up makes it all worth it. And finally, do bear in mind that the team who produced this are all healthcare workers, definitely not professional journalists and designers!

Please feel free to share this document widely, in the spirit of #FOAMEd, but it may not be used for commercial purposes without our express consent.

PS - Please, please make a donation to Tusk Trust! We'd love to fundraise for them but these reports take so much time and energy we haven't any time available to raise money the conventional way. Go on, even if it's just £1/$1...

Please help us fundraise for the Tusk Trust

This report hasn't cost you anything. If you have found it useful, please could you make 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? We have donated many hours of our time to preparing this report and this is a way of enabling us to fund-raise whilst helping you.

If everyone who reads this report donates even £1/$1 we could raise a substantial amount of money.

You can visit our Just Giving page by clicking here.