Are accident and emergency senior house officers getting slower?

You sometimes hear people saying that senior house officers (SHOs) in emergency departments are not what they used to be.

We studied data collected over a five year period (1996–2001) on the number of patients seen by all SHOs who completed a six month post in our A&E department.

The 118 SHOs (62 male and 56 female) worked a full shift rota averaging 52 hours per week. The influence of the sex of the doctor and their future career plan on the number of patients they saw was also assessed.

The number of patients seen by each SHO in six months ranged from 1069 to 2659 (mean 1774, SD 346). On average the SHOs worked between the 15th and 25th weeks of the year. August 1996 and January 1999 saw 154 more patients than those working between February 1999 and July 2001 (p = 0.015; unpaired t test). Male SHOs saw on average 217.5 patients (range 1121 to 2659) more than female SHOs (range 1060 to 2644) (p = 0.001; unpaired t test). The median number of patients seen by SHOs with a surgical interest was 1831 (interquartile range 1624 to 2024), and by those with a medical interest was 1684 (interquartile range 1497 to 1847) (p = 0.002; Mann-Whitney U test).

We acknowledge that there have been changes in the delivery of emergency care over the time frame of this study. We did not study the quality of care given by the SHOs and it would be difficult to quantify this. It is possible that the slower SHOs were more thorough but our impression is that some SHOs (male or female) saw a lot of patients with a high standard of care. Our results show that A&E SHOs are seeing fewer patients than they used to. We need to be aware of this and consider the implications for the future of emergency care.

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References


What is ‘relative analgesia’?

I welcome the paper by Frampton et al describing their experiences of nurse administered nitrous oxide, which adds further evidence to the literature supporting this technique as a useful and safe method of easing the suffering of children during their attendance at an emergency department.

I feel that the use of the term ‘relative analgesia’ is somewhat confusing; this is not a term previously encountered in the literature describing sedative/analgesic techniques. The United States guidance (their reference 2) does not use this term when defining sedation levels nor do the current UK and Australasian guidance and definitions. To introduce a new term may prevent accurate comparisons of techniques in the literature.

I would also welcome description of two other outcomes measured by Frampton et al. This would find important when considering a sedative/analgesic technique: adequacy of sedation and parent/operator satisfaction. The authors do describe 10 cases (4.4%) requiring additional sedation but mention that children were adequately sedated, or inadequately sedated but the procedure was completed anyway. Nitrous oxide has two useful properties: analgesia and sedation. In the context of this study ‘relative analgesia’ could mean ‘inadequate analgesia’ or ‘sedation (without analgesia)’.

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Authors’ reply

Howes’ concern about the term “relative analgesia” pertaining to our recent description of nitrous oxide analgesia in children is noted. This is actually a term that has been used to describe nitrous oxide analgesia for many years. It first appeared in the dental literature and was used originally to describe situations where continuous flow/variable concentration nitrous oxide was administered, often via a nasal mask. Other authors looking at the risk of aspiration using nitrous oxide analgesia used the term “relative...
analgesia” when studying 50% nitrous oxide/oxygen (Entonox)." The term does not appear to have been used in any of the emergency medicine literature pertaining to nitrous oxide that we have seen.

The term continues to be used in contemporary literature " and in 2001 Lahoud et al" described relative analgesia as having the elements patient remaining conscious deliver 100% O₂ if needed. Certainly we found in our study that distinction techniques are easily done in conjunction with this method of analgesia and form an important part of it. We have used the term “relative analgesia” in our institution for many years, which is why it was included in our study. The term has also persisted in the name of the equipment used to administer continuous flow/variable concentration with the Quantiflex RA machine originally manufactured by Cyprane, Keighley, England and now by Matrix Medical, New York.

We agree with Howes that there is enough confusion in the semantics of the literature on sedation/analgesic techniques without rejuvenating old terminology. However, perhaps the term “relative analgesia” may be useful in describing analgesia by inhalational techniques alone, which are becoming more common using agents such as nitrous oxide, methoxyflurane, and nitrous oxide/sevoflurane mixtures.28 Nitrous oxide provides analgesia, amnesia, and mild amnesia obtained with maintenance of verbal contact and predominantly intact laryngeal reflexes. No other single agent does this.

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Climbie Inquiry sets new standards

King and Reid highlight a number of standards relating to child protection procedures within emergency departments. In January 2003, Lord Logan published his report of the Victoria Climbie Inquiry that contains further recommendations regarding healthcare arrangements for children and procedures for investigation of possible deliberate harm. Those relevant to emergency department practice mainly concern administrative standards, such as recording the name of the “primary carer” for each child attending the department and obtaining information on previous attendances at other hospitals when concerns about deliberate harm have been raised. The recommendations have various suggested timescales for implementation ranging from three months to two years from the publication date and we would urge all those involved with child protection to read the report summary (available at http://www.victoria-climbie-inquiry.org.uk/index.htm) and check that their practice complies with the recommendations.

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Reference


Steering wheel spin

Nigam and Cutter totally fail to present evidence to justify the claim that “Welsh emergency vehicles examined exhibited an unacceptable level of bacterial contamination.” What is more, a press release from the editorial team to local newspapers led Madeline Brindley of the Western Mail to write, “Dirty ambulances infested with huge amounts of harmful bacteria are carrying seriously ill patients to hospital in Wales, according to a report published today. The new research discovered that even after they have been cleaned, ambulances are still home to "unacceptable" levels of bacteria.”

The authors make no attempt to quantify levels of bacteria for any given measured area. However, our work was simply described as a preliminary investigation and this pilot study did identify shortfalls in cleaning practices in use at the time of the study. These included a lack of designated cleaning equipment for ambulances, insufficient time for thorough cleaning, and lack of suitable decontamination processes for medical equipment.

Most organisms identified in the study were unlikely to pose any threat of infection to patients or ambulance personnel. This was clearly stated in our article, but sadly was often ignored in the subsequent press reports, resulting in public concern.

Having identified that there were shortfalls in cleaning practices, action was required. The Welsh Ambulance Trust responded immediately to the results of the study and, supported by one of the authors (JC), took action to improve standards of cleanliness. This included the following:

- The Infection Control Committee and Regional Infection Control Teams continue to monitor cleanliness through regular environmental audits; Colour coded cleaning equipment has been introduced to prevent cross contamination during cleaning and standardisation of detergents and disinfectants has been completed; All vehicles have now been provided with “spillage kits” to absorb fluid spills; A chlorine releasing disinfectant is provided for each vehicle for prompt decontamination of blood and body fluids;
Significant investment has been made to replace re-usable medical equipment, for example, Entonox masks and suction canisters with disposable alternatives. Disposable covers are provided for laryngoscope blades and single use bougies for intubation have been supplied;

Infection control training is provided during all patient transport services and emergency technician training courses in which the importance of cleaning is included.

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Children and mini-magnets: comments and suggestions
I read with interest “Children and mini-magnets” for I had previously listed similar events. The authors illustrate the difficulty of separating attracted magnets when avoiding further trauma to the entrapped tissue, as the usual methods—of sliding the magnets apart, or using standard instruments—cannot be used. It is possible to “short out” the effective strength of a magnet (in the same way that the soft iron keeper of a horseshoe magnet greatly diminishes its external attraction) by putting a high permeability material between the poles. One such material is “Permalloy”, and pieces and sheet can be formed around a magnet. (McCormick *et al* do not seem to list the magnetisation directions in the shape they encountered, so one cannot make any more specific suggestions.) Permalloy might be available in your friendly neighbourhood physics department. Another technique is to put a third similar magnet against one of the two problem ones.

Here in the USA, powerful magnets are used to hold ear “rings” or ear studs in place. A friend, who has given magnetic jewelled studs as science encouragement to pre-teen girls, has received thanks from their mothers: the mothers emphatically prefer the magnets to the pierced ears. I am curious about the origin of the Sheffield magnets: extremely powerful ones are found in discarded computer hard drives, but they have irregular shapes.

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Radiology in paediatric cervical spine injury
I read with interest the letter by Smart *et al* regarding the assessment of paediatric cervical spine injuries. It would certainly appear that many children in their cohort were radiographed unnecessarily according to current guidelines. However, I would hope that the practice in their institution has changed dramatically in the six years since the group attended.

Current guidelines on selection of patients for imaging are based primarily on adults. In the NEXUS group, only 30 children had a cervical spine injury, and in the Canadian c-spine group, there were no children at all. Extrapolating results to children who may be distressed or uncooperative should be performed with caution.

The low prevalence of cervical spine injuries in children makes guidelines difficult to create. In an 11 year analysis of the Trauma Audit Network Database, only 239 children (of 19 538 with major trauma) were identified as having a cervical spine fracture and 21 with spinal cord injury without radiological abnormality (unpublished data).

I am concerned that the authors feel that a single lateral projection should be adequate. The evidence for omitting the PEG view is based on small case series or questionnaires, and certainly the odontoid synchondrosis should be ossified by the age of 7.

Imaging of the paediatric cervical spine remains a difficult problem. As the authors confirm, there is no substitute for adequate clinical assessment, but where this is not possible, every effort should be made to rule out a potentially devastating injury.

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References

Emergency department investigation of deep vein thrombosis
Kilroy *et al* should be commended for highlighting the difficulty of point of care (“near patient”) testing in general, and in emergency medicine in particular. They, however, failed to highlight some important points that may have been significant confounding variables in this study. Firstly, the authors quite rightly pointed out the qualitative nature of the SimpliRED-D dimer (DD) assay as the gold standard and the inherent possibility for interobserver variation. Although this is a “simple” assay and comparatively accurate in experienced hands, there is a learning curve in performing and interpreting the results that the authors failed to emphasise. How steep or otherwise was the learning curve of the doctors assessing the SimpliRED test? The robustness of the data may be improved if interobserver reliability was measured, for example by κ and weighted κ statistics. Secondly, cut off points are critical in diagnostic testing because they determine the assay sensitivity and specificity. For example, if the DD cut off is set too low, then the test is too sensitive and not specific, so almost everyone ends up being positive and the test loses meaning. What was the cut off value for DVT diagnosis in this study? Was it based on receiver operator characteristic (ROC) curves (a scientifically valid method of determining diagnostic cut off values)? Differences in cut off values may explain the differences observed in the diagnostic performance of the assay in this study (Kilroy *et al* and Wells’ original data). Finally, to ensure good applicability, when choosing a cut off point to diagnose DVT thrombosis from the manufacturer of the assay? If so, was their study population similar to that of the manufacturer’s?

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References

Fractured clavicle and vascular complications
A 55 year old right handed man presented with a three month history of left arm pain and precordial chest discomfort. His symptoms had started three months previously after a heavy game of squash. Three years before the acute episode, he was involved in a motorcycle accident and had sustained a left mid-clavicular fracture.

On clinical examination he was in sinus rhythm and the supine blood pressure was 146/94 mm Hg in the right arm. He had a cold left arm with no recordable blood pressure. The left axillary, brachial, and radial pulses were absent. A bruist was audible over the left subclavian artery. The fasting total cholesterol was 4.4 mmol/1.

The chest radiograph showed non-union and displacement of the fragments of the left clavicle. Three dimensional contrast enhanced magnetic resonance angiography (CE-MRA) showed a small false aneurysm (diameter 1.5 cm) in the mid-portio of the left subclavian artery (see fig 1). In addition there was a stenosis of the left subclavian artery adjacent to the aneurysm with an intraluminal thrombus, immediately distal to the point of stenosis. The aneurysm probably resulted from insult to the subclavian artery by the clavicular fracture and aggravated by squash playing.

Percutaneous balloon angioplasty with stent deployment to the left subclavian artery was attempted. The procedure was complicated by acute thrombosis requiring intra-arterial thrombolysis with streptokinese. Restoration of blood flow was achieved by a reverse vein graft bypass between thoraco-acromial and brachial arteries.

Injury to the subclavian artery should be considered in all patients who complain of ischaemic symptoms in the arm after clavicular fracture. Furthermore, this case...
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References


Nothing ever changes...

Readers may be interested in the following articles:

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2 Lancet 1869;ii:577.
3 Lancet 1869;ii:677.

Acknowledgements

I am grateful to Dr Sue Barnes for drawing these articles to my attention.

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The 5 minute toxicology consult for PDA


Why am I writing a review of an e-book?

PDAs are small but immensely capable mobile computers with greater processing power than the desktop machines of five years ago. These handheld computers have matured from simple address books to devices that can word process, email, run presentations, manage databases, and (this is the best bit) switch on every television in my house.

Their basic memory varies from 8–64 megabytes but this may be expanded into the gigabyte range. This immense memory together with the ultra portability of the PDAs means that they can always be in your pocket offering near infinite text storage. A PDA may be the perfect way to carry your textbooks with you.

This toxicology program is supplied on a CD ROM together with nine other programs all from Lippincott Williams and Wilkins. The CD is compatible with Windows CE/PocketPC and PalmOS operating systems; this review used a Compaq iPAQ running PocketPC. The purchased program is the only one with unlimited access but all the others may be used up to 15 times on a trial basis. As the program is supplied on a CD it must be
downloaded via the computer used to synchronise with the PDA rather than directly to the device. Once the CD is inserted however the installation is straightforward. The entire program is then transferred onto the PDA when it is next connected.

The program must be activated for it to permit unlimited use. This process requires both internet access and some intuition. The 15 item alphanumeric code supplied with the disc must be entered into the Lippincott Williams and Wilkins’ web site together with the unique code of the PDA. This generates another code on the web site that then may be used to unlock the program.

Once up and running, its appearance is straightforward. Two narrow icon bars, one at the top of the page and another down the side, leave plenty of space for the text. The text size is alterable from “quite hard to read” to “enormous” and may be made to fit the screen. Using the basic functions fortunately did not require access to the scanty “help files”. Access to the files is either via the main index (including the ICD-9-CM index) or the table of contents (TOC). Using the TOC option is simpler although this has no search option. Topics are divided into “General Approach”, “Patient presentations with toxicological causes”, “Antidotes”, and “Chemical and Biological agents”.

This is a 4 megabyte text only program. There are lots of entries. Each entry has a similar format, being divided up into “Smart tabs” of Basics, Diagnosis, Treatment, Follow up Indications, Contraindication and Adverse Effects, Dosage and Method of Administration, Pitfalls, and Miscellaneous. Sensibly not all “Smart tabs” are available for each entry. Some differences are seen between this North American e-book and UK practice. These include the recommendation for induced emesis for decontamination or the use of oral N-acetylcysteine in paracetamol poisoning. The vast majority of the text, however, reflects transatlantic agreement.

A facility for written and even spoken notes exists and the entries are cross indexed. If any other LWW programs are on the PDA, their choice of disasters to illustrate their chapters. This makes for challenging reading.

Confusingly, the text alternates between the language used is an odd mixture of patronising simplicity (“Lidocaine is used to lessen the pain of an irritable, hurting heart”) and potentially impenetrable medical jargon (the terms “half-life” and “fibrillation threshold” are mentioned but not explained).

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The language used is an odd mixture of patronising simplicity (“Lidocaine is used to lessen the pain of an irritable, hurting heart”) and potentially impenetrable medical jargon (the terms “half-life” and “fibrillation threshold” are mentioned but not explained). Confusingly, the text alternates between the perspective of an EMT observing a paramedic and that of a paramedic undertaking a procedure. This risks leaving readers with the inappropriate impression that, for example, an EMT’s responsibility to correct intubation of the oesophagus.

The book contains important errors. It implies that the carboles are level with the angle of the jaw, that the tracheas remain within the vascular compartment; that selection of the correct diameter of nasopharyngeal airway should be based on the patient’s sex; and that “unrecognised oesophageal intubation” are mentioned, but not explained.)

Sentence construction often renders the text difficult to read and introduces the potential for some entertaining misunderstandings. For example, “Automated implantable cardiac defibrillators usually are placed to improve the quality of life” (unrelated to the lungs). An ECG purporting to show a prolonged p-r interval is printed in reverse, rendering it useless.

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