general, the health services (ambulance and hospital) have little or no equipment or training to deal with such casualties. If a Tokyo type incident occurred in the United Kingdom with a more efficient dispersal of sarin, the potential for morbidity and mortality among health care providers at all levels would be considerable.

The Defence NBC Centre and the Wiltshire hazardous material working group have, after discussion and field trials, developed a simple, comprehensive, and cost-effective co-ordinated response to the management of chemical casualties.⁸ The management concept is an aggressive response at the incident site(s), with a multidisciplinary approach resulting in decontamination and resuscitation on site; a backup decontamination facility is placed outside each A&E department, with the equipment and procedures being identical to those used at the site. The levels of protection stipulated for the site are chemical suits, butyl rubber gloves, and breathing apparatus for any medical staff within the inner cordon; at the hospital, A&E staff dealing with contaminated casualties require the same level of protection. If no direct contact will occur with contaminated clothing a double pair of surgical gloves may be used to undertake procedures, instead of the heavier butyl rubber gloves. It is recognised that national recommendations are being developed by the Ambulance Service Association chemical incident procedures subgroup.

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- 1 Volans AP. Sarin: guidelines on the management of victims of a nerve gas attack. *J Accid Emerg Med* 1996;13:202-6.
- 2 Clark KP, ed. *Chemical and biological handbook*. Royal Military College of Science, 1995.
- 3 Helm UK. *Triage of chemical casualties*. Bonn, 1991 (internal publication).
- 4 Cooper GJ, Ryan JM, Galbraith KA. The surgical management in war of penetrating wounds contaminated with chemical warfare agents. *J R Army Med Corps* 1994;140:113-8.
- 5 Robertson AG, Morgan-Jones DJ. First line nuclear, biological and chemical medical defence training: the way ahead. *J R Naval Med Service* 1994;80:90-4.
- 6 Baxter PJ. Major chemical disasters: Britain's health services are poorly prepared. *BMJ* 1991;302:61-2.
- 7 Thanabalasingham T, Beckett MW, Murray V. Report of a chemical incident from ethyldichlorosilane. *BMJ* 1991;302:101-2.
- 8 DNBCC and the Wiltshire Hazardous Material Working Group, 1995. Hazardous materials incidents: a guide to a co-ordinated response.

The author replies:

I am grateful that my article has been of interest to the experts in the military and beg forgiveness if the guidelines suggested are simplistic when compared with the highly trained response available within the Army.

It is not entirely clear that the factual inaccuracies mentioned do affect the likely response of the front line civilian services who would be called upon to respond in the event of a civilian attack.

I concentrated on sarin because (1) it is relatively easy to produce with school level chemistry and (2) it has been used by terrorists and there is therefore a precedent. I hope the recipe for VX is not available on the Internet!

Sarin is volatile and consequently, as seen in Japan, most victims suffered vapour exposure with primarily ocular symptoms.

It would appear that the contents of the "Combopen" and the indications for the use of Fuller's earth have been altered since the publication of my source literature.

I was not advocating the enclosure of contaminated victims within casualty pouches, merely suggesting that this is a possible response from the fire and rescue service, presented with contaminated victims of an undiagnosed type in a stressful situation. It would be understandable for them to pass the problem up the line to the receiving hospital.

I agree that the response of civilian services to any major chemical contamination incident is likely to be haphazard in the extreme. These are rare events in the United Kingdom and an individual region may have never tested their plans.

That the Army has recently developed a chemical warfare ALS suggests that their responses to the chaos of such an event were deemed less than perfect.

I look forward with interest to the dissemination of the coordinated response advised by the Defence NCB Centre but wonder if in the reality of an attack on the underground or one of the many enclosed shopping complexes in the UK, this response will occur before contaminated victims arrive in an unprepared A&E department on a Friday afternoon during rush hour.

The common perception of nerve gas injury involves a great amount of fear, with visions of NCB clad warriors dealing with lethally contaminated victims. My aim in writing the article was to show that the treatment of such victims is logical and beneficial and well within the abilities of any qualified doctor. I also wished to point out some of the practical difficulties and offer some suggestions as to their management and I am grateful to Major Morgan-Jones and Major Hodgetts for the additional information which has not so far not been generally available to the civilian practitioner.

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Deliberate self harm

EDITOR,—Ryan *et al*¹ present a valid case for the use of overnight observation wards in the management of deliberate self harm (DSH). From the data presented, the use of such wards reduces the need for psychiatric assessment of these patients.

My own experience of providing a DSH service which offers assessment to all patients who harm themselves would indicate that the provision of an observation ward improves the quality of psychiatric assessment and intervention. The contrast between working in casualty departments which do and do not admit DSH patients to an observation ward is often striking. Emergency assessments of DSH patients who are not deemed to warrant admission to a medical bed are frequently requested. In the absence of overnight observation beds, this often means attempting to address complex "multiple psychiatric and social problems" during the small hours of the morning, while the patient is still in crisis.

When DSH patients are admitted overnight, then a more meaningful assessment can be made the next morning, with full access to social and psychiatric support services. Patients will have had time to reflect upon recent events once they pass through a period of crisis. It is then possible to target appropriate interventions at those who will benefit most

and patients can leave hospital with the appropriate follow up arrangements already in place.

There are in excess of 100 000 annual DSH admissions in the United Kingdom, and some 15-20% of these patients will be readmitted within the following year.² The provision of appropriate psychosocial intervention has the potential to both reduce the demands put upon A&E departments through readmission and to improve the quality of patient care offered. I believe that observation wards facilitate this process and would urge A&E departments to consider their use in cases of DSH.

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- 1 Ryan J, Clemmett S, Perez-Avila C. Managing patients with deliberate self harm admitted to an accident and emergency observation ward. *J Accid Emerg Med* 1996;13:31-3.
- 2 House A, Owens D, Storer D. Psychosocial intervention after attempted suicide: is there a case for better services? *Int Rev Psychiatry* 1992;4:15-22.

The authors reply:

Thank you for offering us the opportunity to reply to Dr Gilbody's comments on our paper. We are encouraged that an academic unit of psychiatry supports the use of an A&E observation ward in the management of deliberate self harm patients. Continued research in this area is important and we now keep a database of all patients who attend following an episode of DSH and are managed by the multidisciplinary team. Analysing these data base has stimulated us to look at other areas such as out patient detoxification, the association of DSH with drug dependency, and the management of frequent offenders, all of which can be appropriately managed by an experienced multidisciplinary team based in an A&E department.

We concur with Dr Gilbody's statement that an observation ward can improve the quality of patient care; however, further research is required in this area to assess the long term impact of such a practice. Those of us working in A&E medicine are in a unique position to be able to study this further and should not neglect our academic responsibilities.

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Dogs, epilepsy and airways. The dog always wins!

EDITOR,—Injuries caused by dog bites are common and as many as 3 per 1000 population may attend accident and emergency (A&E) departments in any one year.¹ Epilepsy is also a common cause of attendance, with a prevalence in the population of 3%. However, it is rare that both problems will occur in the same patient at the same time.

Patient 1 was a 20 year old male with unstable epilepsy who had owned a large, but friendly, German Shepherd for a number of years. Unfortunately on the first occasion that the dog witnessed his master having a seizure it became frightened and attacked the man's throat, causing a fracture of the thyroid and cricoid cartilages and puncturing the trachea. He presented to accident and emergency as a postictal airway obstruction requiring an emergency tracheostomy.

Patient 2 was an 80 year old male who had previously been fit and well. He had owned a terrier for a number of years. With this case, however, it was the human who became frightened when he witnessed the dog having a seizure for the first time. Having learned some first aid, the man immediately tried to prize open the dog's mouth as some sort of attempt to take care of the airway. The dog, however, firmly closed its mouth over the man's forearm and he required surgery for the skin loss and exploration of radial nerve and flexor tendons.

Dogs and epilepsy don't mix.

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- 1 A survey of dog bites in Salisbury. *J R Soc Health* 1991;111:224-5.

Adrenaline, cardiac arrest and evidence based medicine

EDITOR,—Rainer and Robertson must be congratulated on their useful review regarding the use of adrenaline in cardiac arrest.¹ A further piece of evidence is the effect of large doses of adrenaline in the postarrest cerebral reperfusion phase. Adrenaline has been shown to adversely affect the ability of the neurone to resist and repair damage during reperfusion.² The biochemical events responsible for this effect are:

- Acceleration of lipid peroxidation
- Depression of insulin secretion
- Downregulation of the insulin receptor tyrosine kinase.^{2,3}

At the present time the clinical implications of these biochemical events are difficult to quantify. The development of cerebral resuscitation techniques alongside cardiac resuscitation may further challenge the present use of adrenaline as a first line drug in advanced life support resuscitation.

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- 1 Rainer T, Robertson C. Adrenaline, cardiac arrest, and evidence medicine. *J Accid Emerg Med* 1996;13:234-7.
- 2 White BC, Grossman LI, O'Neil B, et al. Global brain ischaemia and reperfusion. *Ann Emerg Med* 1996;27:588-94.
- 3 White BC, Grossman LI, Krause GS. Membrane damage and repair in brain injury by ischaemia and reperfusion. *Neurology* 1993;43:1656-65 (review article: 159 references).

Spinal boards

EDITOR,—The article by Main and Lovell¹ highlights the major problem of the spinal board, namely the high interface pressures that can result in more rapid development of pressure sores. The spinal board has suffered because it is no longer only being used for its intended purpose. The spinal board is an excellent extrication device. A patient can be

very rapidly extricated from a vehicle by sliding them along a spinal board. They are then secured onto the spinal board to transfer them to the ambulance. The spinal board is considered the gold standard for spinal immobilisation in the field by the pre-hospital trauma life support (PHTLS) course² but this course also accepts that "too much focus often is placed on the particular devices without an understanding of the principles of immobilisation".

Unfortunately the problem then develops as to when to remove the patient from the board. Every transfer is a high risk procedure for the spinally injured. The risk is less when several trained people are available, therefore it may be best to delay transfer from the board until arrival at the A&E department when more skilled help is available. However, this means a longer period on the board and lack of support of the lumbar lordosis during transport.

Use of a spinal board as an extrication tool speeds up extrication dramatically and therefore decreases time to arrival in hospital. Its use for this purpose should therefore be encouraged. As with any piece of equipment, proper training is vital. What should be discouraged is long journeys on a spinal board or putting patients on spinal boards in the A&E department. In these cases use of a vacuum mattress is better. The ATLS course has been blamed for the excessive use of the spinal board; however, the course manual clearly states that the backboard is for use "before and during transfer", not for use within the hospital.³ The spinal board is for pre-hospital care not for care within the hospital, when better support can be given to the spine without causing excessive pressure over prominences. It must however be remembered that the torso needs immobilisation as well as the head and neck in order to achieve full spinal immobilisation.

The new product that Main and Lovell describe, combining spinal board and vacuum mattress, is in my opinion not logical. The high friction surface prevents its use as an extrication tool and therefore the board is simply being used to give added strength to the mattress, that is, the main advantage of the board is lost.

If used properly the spinal board can improve trauma care. If abused it will produce pressure sores. On arrival in hospital the patient should be removed from the board at the earliest convenient time providing immobilisation of the spine is maintained.

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- 1 Main PW, Lovell ME. A review of seven support surfaces with emphasis on their protection of the spinally injured. *J Accid Emerg Med* 1996;13:34-7.

- 2 National Association of Emergency Medical Technicians. *Pre-hospital trauma life support*. St Louis: C V Mosby, 1994.
- 3 American College of Surgeons. *Advanced trauma life support*. Chicago: ACS, 1993.

BOOK REVIEW

Accident and Emergency: Diagnosis and Management (3rd ed). ATF Brown. (Pp 410; £16.99.) Oxford: Butterworth Heinemann, 1995. ISBN 0 7506 2233 4.

In recommending a book to SHOs about to start work in an accident and emergency department, I would look for a text which offered practical, up to date, clear and uncontroversial advice in an accessible format. Although there are other books aimed at this corner of the market, *Accident and emergency, diagnosis and management* probably comes closer to achieving these objectives than its competitors. It is a "no frills" book designed to be used on the shop floor rather than as a text to be read cover to cover, and as such will provide some comfort to stressed junior doctors in their first weeks in accident and emergency.

Although the author works in Australia, much of the content is specific to British departments with British telephone contacts, drug names and dosage regimes (though no mention of the vagaries of legal procedures north of the border to appease Scottish opinion). The fact that this text has reached its third edition within 10 years of publication speaks well of the author and publishers' commitment to keeping abreast of new developments in the field of A&E medicine. It is also an index of its success and popularity.

The approach is symptom based to allow consideration of differential diagnosis before management. The book is accurately indexed and cross referenced and also contains suggestions for further reading which will be useful to the better motivated. The content is, however, predominantly text, with only 13 figures consisting of line drawings and 13 tables. This gives a book of over 400 pages a rather monotonous feel at times, though the text is broken up by subheadings and numbered lists.

Although for new SHOs there is no substitute for an experienced colleague looking over your shoulder, a reliable small text such as this can provide reassurance in moments of uncertainty. In summary this book can be recommended to junior doctors as a concise and practical guide to the work of an A&E department.

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