

Chest pain observation units

EDITOR.—Goodacre concluded in the January 2000 issue of the journal “there is no strong evidence that chest pain observation units (CPOU) will improve outcomes” and further evidence is necessary to determine whether this approach can be applied in the United Kingdom.¹ He did not reach this conclusion from the cost studies that he listed in table 2. These savings were present in all nine studies reviewed and ranged from \$1873 per patient to \$567 per patient. He reached this conclusion from examination of mortality and missed pathology that he summarised in table 1. The five reviewed studies included three randomised clinical trials.

The flaws in Goodacre’s analysis lies in his failure to examine physician emergency department disposition patterns and his failure to perform power calculations. The missed myocardial infarction (MI) diagnosis rate ranges from 2.8% to 13% in large clinical trials without CPOUs.^{2,5} There is a 11% to 25% death rate for those whose diagnosis is missed and the patient released home from the emergency department with false reassurances.^{2,3} This is the leading cause of adverse outcomes and malpractice suits in emergency medicine in the United States.⁶ The rate of missed diagnosis has been shown to be inversely related to the percentage of emergency department patients receiving a “rule out MI evaluation” (performed during hospital admission before the development of CPOUs).⁵

What sample size is needed to demonstrate a 25% reduction in the missed MI rate? The average miss rate in emergency departments in the United States is 4% with a 60% “rule out MI evaluation” rate.⁵ At this emergency department disposition rate, over 50% of admitted patients are found after full evaluation to have no serious disease as the cause of their symptoms.⁷ The study sample size required to demonstrate a reduction in the average missed MI rate from 4% to 3% is 6262 patients per study arm (85% power). The size of the three randomised clinical trials reviewed by Goodacre were much smaller than this requirement with the largest trial having only 212 patients in each study arm.

I agree with the author’s suggestion to not be complacent with the present traditional emergency department approach to chest pain evaluation. Examination of present United Kingdom utilisation practices (% emergency department patients admitted, % admitted with serious disease) and quantifying the quality of patient care (rigorous follow up to identify the per cent of released emergency department patients with missed disease) might lead the author to reconsideration the value of implementing CPOUs.

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- 1 Goodacre SW. Should we establish chest pain observation units in the UK? A systematic review and critical appraisal of the literature. *J Accid Emerg Med* 2000;17:1–6.
- 2 Goldman L, Cook EF, Brand DA, et al. A computer derived protocol to predict myocardial infarction in emergency department patients with acute chest pain. *N Engl J Med* 1988; 318:797–803.
- 3 Tierney WM, Fitzgerald J, Mchenry R, et al. Physicians’ estimates of the probability of myocardial infarction in emergency room patients with chest pain. *Med Decis Mak* 1986;6: 12–17.

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- 5 Graff LG, Dallara J, Ross MA, et al. Impact on the care of the emergency department chest pain patient from the Chest Pain Evaluation Registry (CHEPER) study. *Am J Cardiol* 1997;80:563–8.
- 6 Karcz A, Holbrook J, Burke MC, et al. Massachusetts emergency medicine closed malpractice claims:1988–1990. *Ann Emerg Med* 1993; 22:553–9.
- 7 Weingarten SR, Riedinger MS, Conner L, et al. Practice guidelines and reminders to reduce duration of hospital stay for patients with chest pain. *Ann Intern Med* 1994;120:257–63.

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EDITOR.—I read with interest Goodacre’s review of chest pain observation unit (CPOU) experience in the United States.¹ While the title raises a critical question “Should we establish chest pain observation units in the UK?” the subsequent review is unable to help us answer this question. This is because the alternatives to CPOU are likely to vary greatly in the two countries. In the United Kingdom many patients judged to be at low risk will be discharged from the accident and emergency department compared with the more common “routine” inpatient observation in the United States. Indeed in the three randomised studies identified, CPOU was compared in Farkouh’s study with monitored cardiology beds and in the studies of Roberts and of Gomez with inpatient telemetry monitoring and hospital admission respectively. This strategy was despite the fact that in the latter two cases the subjects were at “low risk of myocardial infarction”. This definition refers to a less than 7% risk using the computer protocol of Goldman et al.² The conclusion drawn in the abstract is that “there is no strong evidence that a CPOU will improve outcome if routine practice is good” but it would be my contention that it is far from likely that current practice in the UK has been shown so to be.

Unfortunately the title and abstract are what grab the eye and indeed Minerva announces in an ensuing edition of the *British Medical Journal* that “Dedicated units sound like a good idea but there’s little evidence that they save lives or prevent inappropriate discharge.”³

I whole heartedly agree with Goodacre that further studies should be done to determine if CPOU units should be used in the UK.

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- 1 Goodacre SW. Should we establish chest pain observation units in the UK? A systematic review and critical appraisal of the literature. *J Accid Emerg Med* 2000;17:1–6.
- 2 Goldman L, Weinberg M, Weisberg M, et al. A computer-derived protocol to aid in the diagnosis of emergency room patients with acute chest pain. *N Engl J Med* 1982;307:588–96.
- 3 Minerva. *BMJ* 2000;320:524.

The author’s reply

It is true that my conclusion regarding outcomes was not based upon the cost studies listed in table 2. From these studies I concluded that the chest pain observation unit (CPOU) is cost saving in the United States but this may not necessarily be reproduced in the United Kingdom. If the introduction of a CPOU leads to increased rates of referral to coronary care or for angiography, or to CPOU assessment of patients who would otherwise be directly discharged, it is possible that costs

may be increased. Therefore we must either demonstrate that cost savings are reproduced in the UK or demonstrate that a CPOU will improve outcomes.

Examination of emergency department disposition patterns provides a theoretical mechanism by which the CPOU may improve outcomes but does not in itself constitute strong evidence. Historical evidence of missed myocardial infarction can be compared with modern practice in US CPOUs to conclude that they improve such outcomes (reference 5 above) but the limitations of this analysis are discussed in my review.

Had I concluded that “there is strong evidence that the CPOU will not improve outcomes” I would indeed have required a power calculation to assess the possibility of a (false negative) type 2 error. I did not. The distinction is important; lack of evidence of benefit should not be confused with evidence of lack of benefit. It is indeed possible that the CPOU will improve outcomes in the UK but evidence is required.

I share the concerns of both correspondents regarding the quality of acute chest pain assessment in the UK. The conclusions of my review should not be taken as supporting present practice in any way. Indeed, as I stated, descriptive studies show that CPOUs are a safe and practical means of assessing patients with chest pain. No such evidence exists to support our present approach.

Evaluation of the role of the CPOU in the UK will be challenging but offers an excellent opportunity to develop a cost effective, evidence-based service for our patients.

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Three generations of recurrent dislocated shoulders

EDITOR.—A 57 year old man presented with a spontaneous posterior dislocation of his right shoulder. It had happened as he reached up to open an overhead cupboard door. He had first dislocated it eight weeks before, while an inpatient receiving chemotherapy for a brain tumour.

He was accompanied by his daughter. When asked she admitted having dislocated both her shoulders in the past. From the history these seemed to be spontaneous dislocations. As there appeared to be a familial tendency she was asked about other members of the family. One of her three sisters and a niece had also suffered spontaneous dislocated shoulders. She then admitted that the patient was not her biological father: only her stepfather, but that her biological father (deceased) had a history of spontaneous shoulder dislocation. The result of this inquiry was a family tree in which three generations had suffered from spontaneous dislocations of the shoulder. There was no family history of any other joint dislocations, nor was there any history of noticeable joint laxity, or “double jointedness”. None of the family had had any surgery to prevent further recurrences.

Atraumatic dislocations of the shoulder are relatively uncommon. Rowe, in 1956, noted that atraumatic shoulder dislocations only accounted for 4% of a series of 500 dislocations.¹ However, atraumatic instability of the shoulder is a well recognised phenomenon, which may be multidirectional and bilateral. Recurrent instability often results from minor

trauma, such as lifting an arm, or reaching up, as described by the index case in this report.

Regarding the familial tendency seen in this case Hovelius noted that 17% of young adults (aged 23–29 years) with shoulder instability had the problem in both shoulders, and that the incidence of dislocation in other family members was 5%, compared with only 1.7% for the general population.² Therefore, the incidence for three generations in a family with dislocating shoulders will be 0.00425% (1.7% × 5% × 5%).

Joint laxity has been suggested as a cause of familial recurrent dislocation of the shoulder.³ It is a feature of several dominantly inherited conditions, such as Ehler's-Danlos and Marfan's syndromes, and osteogenesis imperfecta. Congenital dislocations, especially of the elbow, are also a feature of Larsen's syndrome (pentasomy X). Carter and Sweetnam, who investigated the role of joint laxity in recurrent dislocations of the patella and of the shoulder, found only two families in which two family members had suffered recurrent dislocated shoulders, from their series of 40 patients with recurrent shoulder dislocations.³ In neither case did the condition extend over three generations. A three generation history of recurrent shoulder dislocation would seem to be a very rare event.

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- 1 Rowe C. Prognosis of dislocation of the shoulder. *J Bone Joint Surg* 1956;**38A**:957–77.
- 2 Hovelius L. Anterior dislocation of the shoulder in teen-agers and young adults: Five-year prognosis. *J Bone Joint Surg* 1987;**69A**:393–9.
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BOOK REVIEWS

Too much to read and not enough time: a suggested reading list for accident and emergency specialist registrars

As the specialty of accident and emergency (A&E) develops the knowledge base from which we learn expands. The diversity of the area means it is difficult to provide comprehensive, useful textbooks for the specialty and despite the emergence of a number of handbooks aimed at the senior house officer (SHO) it remains difficult for the specialist registrar to find texts pitched at an appropriate level. The introduction of the FFAEM exam has provided an added impetus for trainees to expand their academic knowledge.

In view of these issues we as a group of A&E trainees in the Yorkshire Deanery have produced a book list that could be used as the basis for specialist registrar reading. We have attempted to cover all areas of A&E practice and, if identified in our search process, include more than one book per subject bearing in mind that doctors from different back-

Reviewers were asked to;
aim for 75–100 words
consider the following:
the relevance of the book to the A&E specialist registrar
its value for money
the books readability and layout
the books scope and quality, rather than just its good and bad points
Are there significant omissions?
Is there discussion of controversial issues?
Are all major points covered?
Is it well referenced?
Is it well illustrated?
Comment on the index/list of contents

Figure 1 Guidelines used as basis of review.

grounds will approach a subject from a different knowledge base. However, some specialties (for example surgery, psychiatry, obstetrics and gynaecology) appear from the search to be poorly catered for in terms of relevance to A&E practice. It may be that individual chapters in the larger A&E texts could be used to fill these apparent gaps in the literature.

We acknowledge the subjectivity of this list and content of each review. We also acknowledge that because of the inevitable delay between compiling and producing these reviews and the time to publication some of the editions included may not be the most current. Where newer editions are known to exist but time did not allow re-appraisal this is documented under the relevant title.

Methods

Over a 10 month period, 25 A&E specialist registrars from the Yorkshire Deanery read and reviewed 72 books. The books were chosen by a number of methods and included those known to the main two authors from their own reading, books available in the three hospital libraries in Leeds in the A&E section and books identified as potentially useful from the local medical bookshop. All A&E trainees and five A&E consultants were also asked to alert us to titles they had found helpful.

The books were reviewed alongside a list of guidelines to try and achieve a degree of objectivity (fig 1). The reviewers were asked to rate the book according to a starring system (fig 2) and those with the highest number of stars included in the list. For completeness we have mentioned those books that were reviewed but did not have the highest number of stars allocated to them.

- **** pivotal/indispensable — worth ownership
- *** excellent — consider ownership
- ** useful for occasional reference — eg, from library or colleagues
- * not particularly relevant to the A&E specialist registrar

Figure 2 Starring system to allow comparative rating.

ACCIDENT AND EMERGENCY MEDICINE:
MAJOR TEXTS

Emergency Medicine—Concepts and Clinical Practice. 4th ed. Edited by Peter Rosen, Roger Barkin, Daniel F Danzl, *et al.* (Pp 2930; £182.00.) St Louis: Mosby, 1997. ISBN 0-815-13774-5.

Now in its 4th edition this book continues to lead the field in emergency medicine textbooks. It does not deal with practical procedures but instead serves as an academic reference work covering just about every topic imaginable relevant to current A&E practice. Despite having many authors, the chapters are generally well written and include in depth discussion of controversial aspects where appropriate. The sections on resuscitation, trauma, cardiac emergencies and toxicology are particularly outstanding, whereas the paediatric section is not comprehensive enough. Despite this it is a superb book.

Rating ****

Emergency Medicine: A Comprehensive Study Guide. 4th ed. By Judith E Tintinalli, Ernest Ruiz, Ronald L Krome. (Pp 1472; £110.00) New York: McGraw-Hill, 1997. ISBN 0-070-64879-4.

This is a comprehensive book written predominantly by physicians in emergency medicine. Its relevance to the A&E registrar is not in doubt. The introduction looks at prehospital care and preventative emergency medicine. The layout makes reading easy covering day to day cases and cases of special interest. Regrettably there are no chapter plans, which I feel would have made it easier to read. It covers most emergency topics with no significant omissions. A plus is the chapter on dental problems and the discussion of nerve blocks relevant to the emergency physician. Like most textbooks it fails to reference "statements of fact". It is written for American emergency physicians and as with most American texts there is emphasis on guidelines/protocols and investigations with little credence give to clinical acumen.

Rating ***

(5th edition now available: 1999: ISBN 0-070-65351-8).

Cambridge Textbook of Accident and Emergency Medicine. Edited by David Skinner, Andrew Swain, Rodney Peyton, *et al.* (Pp 1285; £150.75) Cambridge: Cambridge University Press, 1997. ISBN 0-521-43379-7.

This text attempts to introduce A&E medicine as a distinct specialty. The book is divided into three parts. Each chapter has a plan making the book easy to read. Part 2 deals well with "bread and butter" issues found in every A&E department in the UK. There are, unfortunately, some glaring deficiencies such as the omission of subarachnoid haemorrhage. Referencing is rather limited and there are no illustrations in the dermatology section. Compared with the other established emergency medicine textbooks such as Rosen and Barker this book is rather limited. However, it remains the best one written specifically for the UK.

Rating **/***