Analysis of intensive care populations to select possible candidates for high dependency care

J V Pappachan, B W Millar, D J Barrett, G B Smith

Abstract

Objectives—To identify the proportion, and range across intensive care units, of intensive care patients who might potentially be managed on a high dependency unit (HDU) using three different classification systems.

Methods—8095 adult patients admitted to 15 intensive care units in the south of England between 1 April 1993 and 31 December 1994 were studied. Patients were identified as potential HDU admissions if their APACHE III derived risk of hospital mortality was ≤10%, if they were categorised as a low risk monitor (LRM) patient using the Wagner risk stratification method, or if they did not require advanced respiratory support (ARS).

Results—4146 patients (51.2%) had an APACHE III derived risk of hospital death of ≤10%, 1687 (20.8%) were classified as LRM, and 3860 (47.7%) did not receive ARS. The values for each intensive care unit ranged from 32.8–63.3% (APACHE III group), 7.2–29.9% (LRM group), and 14.4–68.2% (ARS group). No matter which of the three methods was used, there were significant differences between the 15 units (p<0.0001) with regard to the number of potential HDU patients identified within the scored population.

Conclusions—The percentage of intensive care patients who might be more appropriately managed in a HDU varies considerably between hospitals, and depends upon both local circumstances and the method used to define a high dependency patient. However, whichever method is used, it appears that significant numbers of patients of low dependency status currently fill intensive care beds in the units studied. If these analyses are correct, the perceived national shortage in intensive care beds might be improved by the development of HDUs.

In the USA and the UK critically ill patients appear to have a better outcome if admitted to intensive care units directly from the accident and emergency (A&E) department,2 in comparison with those from general wards. In the UK in particular, some critically ill patients will be admitted to general wards from the A&E department because of the lack of high dependency or intensive care beds.

Opinions vary concerning the use and provision of high dependency or intensive care beds.3–12 At present only approximately 15% of UK hospitals possess a high dependency unit (HDU),13 14 yet studies from individual hospitals have suggested that up to 40% of patients currently admitted to an intensive care unit might be more appropriately managed in a HDU if one was available.5 10 12 15 Although these estimates generally rely upon subjective assessments of the need for HDU care, several objective methods have been described.3 11 16 17 Kilpatrick et al have suggested that patients may be safely nursed on a HDU if their predicted hospital mortality, derived using the acute physiology and chronic health evaluation II (APACHE II) scoring system,16 is ≤10%.1

This mortality prediction assumes that the patient is managed on an intensive care unit and may not be valid if the patient is nursed on a HDU instead.19

Wagner et al have described an alternative method which uses a risk stratification system.16 Intensive care unit admissions are categorised into active treatment, high risk monitor (HRM), and low risk monitor (LRM) groups; the distinction between HRM and LRM is made using the predicted risk of receiving active intensive care unit type treatment (>10% for the HRM group and <10% for the LRM group). Wagner et al suggest that LRM patients, who by definition have low intervention and low mortality rates, could be appropriately placed in a HDU. Some of the active treatment modalities, identified as requiring intensive care unit admission in the USA, can, in our opinion, be managed in a less dependent area in the UK and, therefore, Wagner's technique may not be transferable. In the UK, patients who do not require advanced respiratory support (ARS)—for example nasotracheal or oro-tracheal intubation, mechanical ventilatory support (excluding mask continuous positive airways pressure (CPAP) and
Table 1  The list of 31 unique intensive care type interventions referred to by Wagner. Numbers 1 to 4 represent ARS as defined by the authors

<table>
<thead>
<tr>
<th>No.</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Controlled ventilation with intermittent or continuous muscle relaxants</td>
</tr>
<tr>
<td>2.</td>
<td>Controlled ventilation with or without PEEP</td>
</tr>
<tr>
<td>3.</td>
<td>Assisted respirations or intermittent mandatory ventilation</td>
</tr>
<tr>
<td>4.</td>
<td>Nasotracheal or orotracheal intubation</td>
</tr>
<tr>
<td>5.</td>
<td>Induced hypothermia</td>
</tr>
<tr>
<td>6.</td>
<td>Barbiturate anaesthesia</td>
</tr>
<tr>
<td>7.</td>
<td>Continuous arterial drug infusion</td>
</tr>
<tr>
<td>8.</td>
<td>Ventriculostomy</td>
</tr>
<tr>
<td>9.</td>
<td>Mannitol infusion</td>
</tr>
<tr>
<td>10.</td>
<td>Treatment of seizures</td>
</tr>
<tr>
<td>11.</td>
<td>Treatment of metabolic encephalopathy</td>
</tr>
<tr>
<td>12.</td>
<td>Spontaneous PEEP or CPAP</td>
</tr>
<tr>
<td>13.</td>
<td>Active treatment of metabolic balance</td>
</tr>
<tr>
<td>14.</td>
<td>Fresh tracheostomy (within 48 hours)</td>
</tr>
<tr>
<td>15.</td>
<td>Emergency bronchoscopy</td>
</tr>
<tr>
<td>16.</td>
<td>Emergency operative procedure</td>
</tr>
<tr>
<td>17.</td>
<td>Pressurised blood transfusion</td>
</tr>
<tr>
<td>18.</td>
<td>Haemodialysis, stable patient</td>
</tr>
<tr>
<td>19.</td>
<td>Haemodialysis, unstable patient</td>
</tr>
<tr>
<td>20.</td>
<td>Atrial or ventricular pacing</td>
</tr>
<tr>
<td>21.</td>
<td>Intra-aortic balloon assist</td>
</tr>
<tr>
<td>22.</td>
<td>Vasoactive drug infusion</td>
</tr>
<tr>
<td>23.</td>
<td>Continuous antiarrhythmic infusion</td>
</tr>
<tr>
<td>24.</td>
<td>After cardiac arrest (48 hours)</td>
</tr>
<tr>
<td>25.</td>
<td>Cardiopulmonary resuscitation</td>
</tr>
<tr>
<td>26.</td>
<td>Emergency cardioversion</td>
</tr>
<tr>
<td>27.</td>
<td>Complex metabolic balance</td>
</tr>
<tr>
<td>28.</td>
<td>Balloon tamponade of varices</td>
</tr>
<tr>
<td>29.</td>
<td>Nasogastric lavage</td>
</tr>
<tr>
<td>30.</td>
<td>Emergency endoscopy</td>
</tr>
<tr>
<td>31.</td>
<td>IV replacement of excess fluid loss (&gt;6 l/day)</td>
</tr>
</tbody>
</table>

non-invasive, for example mask, ventilation)—are often nursed on HDUs.

We postulated that the number of intensive care unit patients who might be classified as potential HDU admissions would vary between units and might depend upon the classification method employed. The aim of this retrospective observational study was to estimate the proportion of intensive care patients from 15 units that might have been cared for on a HDU by using the three methods outlined above.

Methods

All admissions to 15 intensive care units (labelled A to O) in the Western Division of the South Thames Regional Health Authority and the Portsmouth Health District were studied between 1 April 1993 and 31 December 1994. Four of these units (J, K, N, and O) were pure general intensive care units while the remaining 11 served as mixed intensive and coronary care units with patients from both categories being nursed in the same floor area. In 10 of these, coronary care patients were managed by general physicians, whereas in the remaining unit (I) the intensive care unit consultants took responsibility for the management of all patients on the unit. The coronary care unit patients admitted to unit I were included in the APACHE III analysis.

An identical system of data collection (Ward Watcher software) and central analysis (Critical Audit Ltd) was used in all intensive care units. An assessment of risk of hospital death was made for each patient using the APACHE III scoring system unless they (a) were aged under 16 years; (b) had a diagnosis of primary burns injury; (c) died within four hours of intensive care unit admission; or (d) had been admitted to intensive care units A–H and J–O because either a separate coronary care or theatre recovery unit did not exist or was not available in the hospital concerned.

For each patient scored using the APACHE III system, demographic data including age, gender, diagnosis, reason for admission (that is, medical, elective surgical, or emergency surgical), pre-existing co-morbidity, intensive care unit length of stay, hospital length of stay, and actual hospital outcome were recorded. Data were further analysed by Critical Audit Ltd, using algorithms supplied by Apache Medical Systems Inc, to subdivide admissions into active treatment, HRM, and LRM groups. Table 1 lists active treatment tasks as defined by Wagner et al.16

Figure 1  Percentage of scored patients with a <10% risk of hospital mortality as assessed by the APACHE III predictive algorithm.
we then identified those scored patients who required ARS. This was defined as the need for mechanical ventilatory support (excluding mask CPAP and non-invasive, for example mask, ventilation), nasotracheal or orotracheal intubation.

The number of intensive care units admissions in each centre which might have been scored for in an HDU environment were then quantified using three different criteria: (a) those with a \(<\)10% risk of mortality using the APACHE III system (Apache III group); (b) those with a \(<\)10% risk of requiring intensive care unit type interventions as described by Wagner et al\(^6\) (LRM group); and (c) those not receiving ARS.

Results

A total of 15 717 patients were admitted to the 15 intensive care units studied. Altogether 7622 patients were excluded from APACHE III analysis; of these 89.7% (6837) had been admitted to the unit because either a separate coronary care or theatre recovery unit did not exist or was not available in the hospital concerned. The percentage of patients excluded varied between 10.3% (unit K) and 83.6% (unit A).

Eight thousand and ninety five patients (51.5%) had a prediction of hospital mortality derived using the APACHE III system and this group can be regarded as representing the "true" intensive care population. The means of the raw and derived data from the group are shown in table 2.

Overall, the percentage of the 8095 scored intensive care unit patients who might have been suitable for HDU care was 51.2% (APACHE III group), 20.8% (LRM group), and 50.0% (ARS group). The values for each intensive care unit are shown in figs 1–3 and ranged from 32.8–63.3% (APACHE III group), 7.2–29.9% (LRM group), and 14.4–68.2% (ARS group). The rank order of units varied depending upon the method used to identify potential HDU patients. Unit J admitted the lowest number of potential HDU patients when admissions were ranked on the basis of APACHE III risk of mortality and LRM. In contrast, unit I admitted the highest number of potential HDU patients when admissions were ranked using any of the three methods.

Individual data from each of the 15 intensive care units are shown in table 3.

There were statistically significant differences between the 15 intensive care units with respect to the percentage of scored patients admitted for medical reasons (mean 55.3%, range 37.5–78.7%; p<0.0001) and after elective (mean 27%, range 11.3–40.6%; p<0.0001) and emergency operations (mean 17.7%, range 10–34.4%; p<0.0001). For the purpose of this analysis we used the definitions of medical and surgical admissions in the APACHE III scoring system.\(^6\) We also showed

Table 3 Details of admissions to the 15 intensive care units studied describing the numbers admitted and scored, the number with a hospital mortality as predicted by APACHE III of \(<\)10%, those in the LRM group, and those not receiving ARS

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
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<tr>
<td>Admissions</td>
<td>1217</td>
<td>658</td>
<td>667</td>
<td>1454</td>
<td>572</td>
<td>1628</td>
<td>234</td>
<td>884</td>
<td>1488</td>
<td>445</td>
<td>435</td>
<td>1399</td>
<td>1981</td>
<td>1461</td>
<td>1194</td>
</tr>
<tr>
<td>Excluded</td>
<td>1018</td>
<td>242</td>
<td>188</td>
<td>957</td>
<td>253</td>
<td>1033</td>
<td>106</td>
<td>683</td>
<td>223</td>
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<td>45</td>
<td>890</td>
<td>1565</td>
<td>174</td>
<td>187</td>
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<tr>
<td>Scored</td>
<td>199</td>
<td>416</td>
<td>479</td>
<td>497</td>
<td>319</td>
<td>595</td>
<td>128</td>
<td>201</td>
<td>1265</td>
<td>387</td>
<td>390</td>
<td>509</td>
<td>416</td>
<td>1287</td>
<td>1007</td>
</tr>
<tr>
<td>No in LRM group</td>
<td>43</td>
<td>71</td>
<td>112</td>
<td>126</td>
<td>53</td>
<td>94</td>
<td>32</td>
<td>38</td>
<td>378</td>
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<td>77</td>
<td>58</td>
<td>96</td>
<td>371</td>
<td>100</td>
</tr>
<tr>
<td>%</td>
<td>21.5</td>
<td>17.0</td>
<td>23.4</td>
<td>25.3</td>
<td>16.6</td>
<td>15.8</td>
<td>25.0</td>
<td>18.9</td>
<td>29.9</td>
<td>7.2</td>
<td>19.7</td>
<td>11.4</td>
<td>23.0</td>
<td>28.8</td>
<td>9.9</td>
</tr>
<tr>
<td>No with (&lt;)10% risk of hospital mortality</td>
<td>90</td>
<td>201</td>
<td>244</td>
<td>259</td>
<td>149</td>
<td>229</td>
<td>55</td>
<td>84</td>
<td>801</td>
<td>127</td>
<td>202</td>
<td>264</td>
<td>222</td>
<td>651</td>
<td>547</td>
</tr>
<tr>
<td>%</td>
<td>45.2</td>
<td>48.3</td>
<td>50.9</td>
<td>52.1</td>
<td>46.7</td>
<td>38.5</td>
<td>43.0</td>
<td>42.0</td>
<td>63.3</td>
<td>32.8</td>
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<td>51.9</td>
<td>53.4</td>
<td>50.6</td>
<td>54.3</td>
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<tr>
<td>No not receiving ARS</td>
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<td>273</td>
<td>229</td>
<td>277</td>
<td>106</td>
<td>279</td>
<td>72</td>
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<td>863</td>
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<td>153</td>
<td>219</td>
<td>200</td>
<td>761</td>
<td>145</td>
</tr>
<tr>
<td>%</td>
<td>50.3</td>
<td>65.6</td>
<td>47.8</td>
<td>55.7</td>
<td>33.2</td>
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<td>43</td>
<td>48.1</td>
<td>59.1</td>
<td>14.4</td>
</tr>
</tbody>
</table>
a significant difference between the numbers of patients excluded from APACHE III analysis in each unit (p<0.0001). In addition, no matter which of the three methods was used, there were significant differences between the 15 units (p<0.0001) with regard to the number of potential HDU patients identified within the scored population.

Discussion

The inappropriate placement of high dependency patients in intensive care beds may lead to an increase in costs, greater numbers of patient transfers between intensive care units, delays in transferring critically ill patients from A&E units, and the cancellation of major routine surgery. However, most methods of identifying HDU patients from within the intensive care unit population are subjective which may make categorisation invalid. A small number of publications suggest specific objective criteria, but these may also produce differing estimates.

Henning et al used an acute physiology score ≤10, but this technique fails to recognise the important contribution of diagnosis to the risk of mortality. Furthermore it lacks discrimination because there is considerable overlap in the degree of physiological derangement between ward and intensive care patients. Kilpatrick et al used an APACHE II derived mortality prediction of ≤10% as the arbiter for selection of HDU patients. This technique may overestimate the true number of patients who could safely be transferred from an intensive care unit, because the APACHE II predictive equation assumes that subsequent care will be in an intensive care unit and not an HDU. Wagner et al described a risk stratification method which, if employed in the UK, might underestimate the number of HDU patients within an intensive care unit, because some of the interventions considered to require intensive care unit admission in the USA could be managed safely in a less dependent area. Moreover, some are esoteric and are infrequent treatment modalities on a general adult intensive care unit in the UK.

Other publications have used the number and chronicity of failing organs, or the requirement for organ support, as indicators of the need for HDU or intensive care unit admission. Common to all is the view that patients requiring ARS (mechanical ventilation with or without intubation) should be admitted to an intensive care unit. For this reason, we proposed that patients who do not require ARS might be suitable for high dependency, rather than intensive, care. Nevertheless, we recognise fully that a small number of patients, requiring only basic respiratory support, might need intensive care unit admission for other reasons.

All three methods tested in our study are flawed as arbiters of the requirement for intensive care over time. The APACHE III method and the LRM technique of Wagner et al estimate the need for intensive care based on the severity of illness within the first 24 hours of intensive care unit admission. The third method used in our study stratified patients according to their need for ARS at any point during intensive care unit admission and may therefore have overestimated the true requirement for intensive care facilities. These flaws may be corrected when augmented care period data become available. This method, recently devised by the NHS Executive, is likely to provide information regarding the number of intensive care unit bed days occupied by high dependency patients.

We have shown that the percentage of intensive care unit patients who might be better managed in a HDU varies considerably between hospitals and with local circumstances. However, this figure also depends heavily upon the method used to define a high dependency patient. Overall, 4146 (51.2%) intensive care admissions had a risk of hospital mortality of ≤10%, 1687 (20.8%) fell into the LRM category, and 3860 (47.7%) did not require ARS. Using these figures, the number of scored intensive care unit patients who would be classed as high dependency patients ranges from 1687 to 4146. Alarming this, would classify between 59% and 75% of our original population of 15717 patients (7622 of which were not scored) as potential HDU admissions. Equally concerning is the discovery that six of the 15 intensive care units studied (that is units A, B, E, G, H, and M) appear to admit fewer than 200 "true" intensive care patients per annum and are clearly already working predominantly as HDUs, if one adopts the classification proposed by the Intensive Care Society. At the other end of the spectrum, unit O scored 1007 of 1194 patients (84.3%) admitted during the study period, and, of these, 862 (85.6%) required ARS.

It is estimated that, in the UK, approximately 10 000 transfers of critically ill patients occur annually, many simply because of a lack of intensive care facilities in the base hospital. In addition, many patients requiring postoperative intensive care have surgery postponed because intensive care beds are unavailable. Possibly more worryingly, the proportion of intensive care patients who are admitted directly from A&E is significantly smaller than in the USA (23.5% vs 35.8%) and this may be a contributing factor to the apparent excess hospital mortality observed when intensive care practice in southern England is compared with that in the USA. This admission of ill patients from an A&E department to a general ward may be the understandable result of an absence or relative deficiency of high dependency or intensive care beds in a hospital, but it is recognised that such patients may receive substandard care which may contribute to increased morbidity and mortality.

The finding that approximately 50% of scored patients in 15 intensive care units in the south of England might require only high dependency care could suggest that the UK possesses adequate numbers of intensive care beds, but that their correct use is often hampered by a lack of high dependency facilities. The solution almost certainly involves a combination of actions. Intensive care beds,
which are used predominantly for high dependency care, should be reclassified and restaffed as high dependency beds. In addition, intensive care beds should be redistributed to those hospitals that already cancel a significant number of major acute surgical procedures and/or undertake many interhospital transfers because of a lack of local intensive care resources, after ensuring that these are not the same hospitals that fill intensive care beds with HDU patients. There may also need to be an expansion of HDUs to cater for the significant number of patients on the general wards who might also benefit from this level of care and who have not been considered by our study.

We would like to thank the Directors and staff of the intensive care units of the South West Thames Intensive Care audit group for their permission to use data from their units.

1 Escarce JJ, Kelley MA. Admission source to the medical intensive care unit predicts hospital death independent of APACHE II score. JAMA 1990;264:2389-94.
6 Ryan DW. High dependency units may be the answer. BMJ 1995;310:1010-1.
Analysis of intensive care populations to select possible candidates for high dependency care.
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doi: 10.1136/emj.16.1.13

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### Table 1 Details of coins

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<th>Coin</th>
<th>Diameter (cm)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twenty pence</td>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Ten pence</td>
<td>2.3</td>
<td>6.5</td>
</tr>
<tr>
<td>Fifty pence (new)</td>
<td>2.6</td>
<td>8.0</td>
</tr>
<tr>
<td>World Cup</td>
<td>2.6</td>
<td>8.1</td>
</tr>
</tbody>
</table>

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BOOK REVIEWS


Since moving from the UK to work in the southern hemisphere in March 1997, life has taken on a new meaning. Not only do I get non-stop criticism about the state of northern hemisphere rugby (in particular, England), but I also find myself regaining control of the airway. Airway management is much more part of the emergency physician’s work than in the UK and there is no formal “ownership” of it by anaesthetists. I therefore reviewed the second edition of this paperback with great interest.

The first thing I noticed is that it is lighter and thinner than the first edition by approximately 60 pages. Chapters on pre-hospital care and management of patients with multiple injuries have both gone and there has been some subtle fine tuning in the editing process. Otherwise the book is very similar to the first edition and has the standard format of other books in this series. Personally, I find them easy to read and restful on the retina.

This book makes an excellent introduction to the subject and I enjoyed reading it. It is not, however, a standard reference source or a pocket “bible”. For example there is only a superficial mention of topics such as fibrotic intubation, transtracheal jet insufflation, and no mention of the Combitube or retrograde intubation. Although assessment of potentially difficult airways using the Mallampati criteria is clearly mentioned, as is measurement of the distance between the hyoid bone and the chin, their importance would be emphasised if they were in the same section, rather than approximately 80 pages apart. The above topics clearly all relate to management of the difficult airway and it would be useful to have an example of difficult airway algorithm, even if it is actually outside the scope of the book.

There are some minor niggles. The current buzz words “conscious sedation” are not referred to, although sedation is discussed well. My experience in Australasia is that midazolam is often used as an induction agent and I could find no reference to this role. In recent years topical adenocorticane and cocaine paste has become popular in the UK for topical anaesthesia (and has been written in this journal), but I could find no reference to it in the section on topical anaesthesia.

One recommendation slightly surprises me. The authors recommend that a straight bladed laryngoscope can be used up to the age of about 6 months, whereas the Advanced Paediatric Life Support course recommends a straight bladed laryngoscope for at least the first 12 months of life and possibly for the first five years. This reminds me of the old adage that if you were to ask three orthopaods how to manage a specific fracture, you’ll get five opinions.

Overall, I think this book is an excellent introduction to the subject. Medical students, junior doctors and nurses, as part of their training, and nursing staff will all find it extremely useful. The experienced anaesthetist or Australasian nurtured emergency physician will find it an interesting read, but it will not answer all their queries.

GEOFF HUGHES
Wellington, New Zealand


Climbing big mountains is a dangerous business. Time was when chain smoking, tweed jackets, and a diet of quail’s eggs was regarded as the best prophylaxis for mountain sickness. How medicine has changed.

The second edition of this book is a credit to its authors. They have achieved something that I have often regarded as impossible—writing a text that is as suited to the medical profession as it is to the general public. I have come across their first edition in many strange parts of the world as a lightweight addition to the rucksacks of travellers of all age groups. It is a thoroughly comprehensive review of high altitude medicine, without surplus fact, focusing the reader down to the essentials he or she requires. The book would also be a good companion for those who are travelling to lower levels and to under-developed parts of the world, though I imagine that was not the authors’ intention.

How I wish this book had been available when I accompanied an expedition to Everest. I remember frantically searching for a suitable list of items to take. Such lists were few and far between. Yet here, in The High Altitude Medicine Handbook, an example of an expedition medical kit is to be found. I would suggest all those providing medical cover for expeditions to remote places seek out this list first before developing their own ideas. Much of the work has already been done for you.

I sense the hand of Pollard—he is a respected paediatrician—in the chapter covering the effects of altitude on children. Thought by some to be an irresponsible act, children nevertheless have increasingly appeared at high altitude in recent years. The real problem is not that a child is more susceptible to high altitude but that he or she may not be able to express what they are feeling. Death can be very rapid if early symptoms are ignored. In short, this is an excellent text. Even if the thought of a mountain terrifies you I would read the book nevertheless. The text is ideally sized to fit on a bookshelf, in a briefcase, or even a rucksack pocket. It is just what high altitude needs.

RICHARD N VILLAR
Consultant Orthopaedic Surgeon, Cambridge

Books received


NOTICES

2nd Trauma Care Conference: Improving Trauma Care
7–9 June 1999, Bournemouth International Centre
Further details: Trauma Care Conference Secretariat, c/o Index Communications Meeting Services, Crown House, 28 Winchester Road, Romsey, Hampshire SO51 8AA (tel: +44 (0) 1794 511351/2, fax: +44 (0) 1794 511455, e-mail: icms@dial.pipex.com).

Car Crashes and Occupant Injuries: A Team Approach to Accident Investigation
11–12 June 1999, University of Birmingham
Further details: Jane Loney, Motor Accident Solicitors Society, Bridge House, 48–52 Baldwin Street, Bristol BS1 1QD (tel: +44 (0) 117 929 2560, fax: +44 (0) 117 904 6006).

Correction

We regret that an error occurred in the paper by Pappachan et al, Analysis of intensive care populations to select possible candidates for high dependency care (J Accid Emerg Med 1999;16:13–17). The legends for figures 1 and 2 were transposed: figure 1 should read “Percentage of scored patients in the LRM group” and figure 2 “Percentage of scored patients with a ≤10% risk of hospital mortality as assessed by the APACHE III predictive algorithm”.

Letters, Book reviews, Books received, Notices, Correction