



# Accidents and Emergencies

A practical handbook for  
personal use

THIRD EDITION

R.H. Hardy



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A PRACTICAL HANDBOOK  
FOR PERSONAL USE

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R. H. HARDY

*Consultant in Accident and Emergency Medicine  
Hereford General Hospital*

THIRD EDITION

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## Preface to the third edition

As time goes on ideas change and an author's practice and understanding alter — for the better he hopes.

This edition is meant to be updated and expanded. I hope the text will be clearer and more definite, conflicting views (which are legion) presented more fairly, and the index made more helpful. Some gaps have been filled and bits added to make it more complete. Some of the new entries have been kept very brief, especially in the obscure parts of the medical field, so as not to overload. An effort has been made to meet the needs of countries of the 'Third World'.

I have to remind myself continually of the casualty officer's basic diagnostic tenet, that 'uncommon manifestations of common diseases are commoner than common manifestations of uncommon diseases', and so have tried to emphasize the common but mention the uncommon.

My indebtedness to other casualty officers, friends, enemies, junior staff, fellow members of the Casualty Surgeons' Association, nurses, anaesthetists, ambulance crews and officers, hospital colleagues, patients, and many more beside, shows an exponential time/gratitude curve. I owe almost everything that has improved my book to them. I hope that they may all reap the benefits of their generosity.

I should like to apologize for some of the etymological bastards I employ — e.g. 'hypovolaemic' (I use 'shock' only to mean surgical or hypovolaemic shock, i.e. collapse due to diminution of the circulating blood-volume, from whatever cause) — but usage makes them inescapable.

May I end with one exhortation? Any patient received into an accident and emergency unit is solely and wholly the casualty surgeon's responsibility. His understanding of the patient, his handling, and his decisions are every bit as important and unique as those of the most highly specialized and sophisticated physician, surgeon, accoucheur, GP, or whatnot, who may treat that patient before or after, and his professional relationship with that patient

## vi Preface to the third edition

is as absolute in its demands, until disposal of the casualty is completed.

*January 1981*

RHH

## Preface to the second edition

It is a great pleasure to launch a second edition under the imprint of the Oxford University Press. I hope it has been improved by the alterations and additions that have been made. Many kind suggestions and criticisms have been received and I am very grateful for all of them, especially those of Mr William Rutherford, OBE, FRCS and Roger Snook, MD.

It is difficult to strike a balance between brevity and completeness; between cheapness and improved presentation. If this edition comes any nearer the ideal it is due to the generous help of its critics.

*May 1977*

RHH

## Preface to the first edition

I have found a continual need of a handbook to give to medical and nursing staff coming to accident and emergency work for the first time, and I know that many others in my place have found the same.

This one is based on the handbook which grew up in Hereford, but it has been largely rewritten after the critical scrutiny of many friends and colleagues, in particular Mr James Scott, FRCS, who has gone through the text with a thoroughness that I cannot thank him enough for, and Miss Sheila Christian, FRCS, who has made many useful suggestions and criticisms.

Any textbook of accidents and emergencies will have limitations because of the lack of any generally accepted practice in the field, the absence of any received dogma, and the fact that all medical and surgical practice is in a state of flux. Besides which, the variations between different parts of the country and different

The opinions and guidance offered are often heterodox and sometimes frankly contentious in the hope that they may stimulate radical rethinking of current practice and a revaluation of every user's concepts in the light of his own experience as well as ours. The text on the left-hand page is only a framework upon which the reader can build. What will be really valuable is what is written on the right.

Accident and emergency work is emerging as a career which attracts more medical talent each year because of the increasing realization of its capacity for growth and improvement in giving help to the injured and acutely ill, and the endless opportunity and interest it offers to its practitioners as its scope and skill develops. This very tentative compilation is made in the hope that beginners of all sorts may find it a useful basis for building up their own expertise.

A casualty officer in the medical organism has been compared to the hand in the individual's constitution — both are the most highly unspecialized organs in the body. So the keynote of a book designed to help the first to be fully effective has to be adaptable versatility.

My thanks to my publisher, Robert Dugdale, are limitless for his faith in my undertaking and for the endless pains he has taken in trying to make a silk purse out of a sow's ear. I have been continually helped and encouraged by his critical enthusiasm and hope that he will have no occasion to regret his daring.

Needless to say the responsibility for everything written here is my own, but it would unquestionably have been far worse without the help of all the many people who have been so generous with their aid.

RHH

## Acknowledgements

Author and publisher would like to thank the following for permission to use material reproduced in this book: Smith and Nephew Pharmaceuticals Ltd for Figs 4 and 5; B. H. Bass MD, FRCP, of the Good Hope Hospital, Sutton Coldfield, for the circular on gas gangrene; Brian Thomas, FRCS, for permission to illustrate his superb radial palsy splint.

The author's thanks in particular go to Dr J. O. P. Edgcumbe for insisting on the article on **Haematological emergencies** and to Dr Jeff Kramer for his help in preparing it; to Dr I. R. Ferguson for checking the bacteriology of the PUO table; above all to Mrs Brenda Prosser for turning illegible manuscript into rational type.

## Note on right-hand pages

Recent contributions to the art and science of A & E care have been added on the facing pages, together with references where it would be advisable to refer to the original text. It is the author's earnest wish that users of this handbook will prove their appreciation of it by adding their own comments, corrections, and improvements in the same way.

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## **1 Abdominal injuries**

### **ABDOMINAL INJURIES**

Common in RTA, horse-riding accidents, gun-shot wounds, stabbings, agricultural accidents, and even sometimes in domestic accidents.

#### **Blunt abdominal trauma**

A solitary injury due to (e.g.) steering wheel or lap-strap compression is easy to spot: tenderness, guarding and rigidity are diagnostic. Bruising of the soft abdominal wall or fabric imprints on to the skin over soft parts are serious signposts. Associated low rib-fractures alert the examiner to the possibility of splenic or hepatic injury.

If an abdominal injury is one of many, especially if consciousness is lost, it is very easy to miss it.

In all cases of multiple injuries where there is any risk of abdominal injury as well, girth measurements should be made at a marked level every ten minutes and recorded. Increasing girth is a warning of bleeding or ileus.

Ruptured spleens may bleed slowly; they may also develop a subcapsular haematoma which can rupture in 7–15 days.

Ruptured liver is a common event in blunt abdominal trauma and is often only clearly identified at laparotomy, which has been decided on in response to a patient's failure to stabilize his pulse and blood pressure after injury.

Traumatic perforation of the bowel usually occurs at a site where external compression meets internal resistance – e.g. where the duodeno-jejunal junction rests on the 3rd lumbar vertebra. Tears of the meso-colon and other mesenteries in the midline can also occur.

Renal damage may arise from direct violence to the loin; pelvic viscera can be involved in injuries to the bony pelvis, notably the bladder and the female urethra. The male urethra is injured less frequently and the ureter very rarely (perhaps only in cases of fracture-dislocation of the sacro-iliac joint).

#### **Sharp abdominal trauma (cf. Stab wounds)**

In general, early operation is not all that important in stab wounds, but awareness of the possibility of multiple perforations and the

## **2 Abdominal injuries**

likelihood of bowel trauma in the absence of a clear wound-track through the abdominal parietes will make the observer alert to changes in the patient's physical signs. He must share this awareness with nursing staff responsible for trolley-side observations.

Aortic or common iliac lacerations due to blunt or sharp trauma rarely cross the therapeutic threshold.

In identifying visceral bleeding 4-quadrant peritoneal taps, peritoneal lavage, or needle endoscopy may have their uses in surgical hands or in properly organized Trauma Units, but are not applicable in the ordinary A & E set-up.

A high index of suspicion in casualty officers is of far more value than special investigations if abdominal injuries are not to be missed.

### **ABORTIONS (cf. Obstetric emergencies)**

Threatened, inevitable, incomplete, or complete, abortions are unpredictable and often combined with anxiety and fear. They are best dealt with in a specialist unit, and should be given the briefest of examinations in the ambulance or car and transmitted as soon as possible to their proper destination, unless urgent resuscitation is required on arrival.

### **ABSCESSSES (cf. Hand infections)**

Small ones can often be incised under intradermal local anaesthetic, but it is difficult to ensure full breakdown of loculi and proper clearance in big ones. Infected sebaceous cysts respond well. Some authorities dislike local infiltration of abnormal skin but no ill effects have been observed in practice. General anaesthetic is preferred if available.

Other abscesses are best opened under general anaesthetic or IV narcanalgesia with doxapram safeguard (q.v.). If of any size they are traditionally fully explored by the gloved finger and rubber/plastic drain, or antiseptic tulle gras or ribbon-gauze inserted to ensure proper drainage. Drainage is prevented by tight packing.

Combined drainage and systemic antibiotics give quicker healing than either separately, and should always be used together.

### 3 Abscesses

If you don't like the look of it refer it to a senior member of the staff.

Subcuticular abscesses should be *completely* unroofed.

Test the urine of *every* case for sugar.

Without doubt the recent development of Ellis's method of treatment of major abscesses supersedes all the traditional ones (*The casualty officer's handbook*, 4th edn: see **Bibliography**, p. 168).

There are 8 steps:

- 1 Injection of the right antibiotic(s)  $\frac{1}{2}$ –1 hour pre-operatively
- 2 Anaesthesia
- 3 Incision of sufficient size to admit one exploring index finger
- 4 Digital exploration and evacuation of pus
- 5 Curettage of the entire pyogenic membrane and dry gauze toilet of the cavity
- 6 Irrigation, without raising the pressure inside the cavity, using hydrogen peroxide solution (20 ml syringe and filling 'quill')
- 7 Sutures so placed as to occlude the cavity
- 8 Antibiotic continued orally. After the first 24 hours twice daily hot baths are comforting and helpful.

The choice of antibiotic is important: all abscesses below the waist merit treatment with clindamycin, as infections are usually mixed and include anaerobes (300 mg by IM injection pre-operatively – 150 mg orally, 6-hourly, for 5 days). An increasing number of other abscesses contain anaerobes as well and the characteristic stink of the pus generally gives them away. If the infection is clearly staphylococcal, cloxacillin is given by injection and flucloxacillin by mouth. If there is a possibility of a mixed infection penicillin-G 1 mega + cloxacillin 500 mg for pre-op. injection and Magnapen orally to follow.

Many path. labs provide a *GLC profile* which provides evidence of anaerobic infection within the hour.

The benefit to patients of this out-patient treatment of major abscesses is incalculable: 2 visits (for operation and removal of sutures) instead of dozens; minimal pain and inconvenience, brief recovery period, diminished recurrence. It does a great deal, too, to relieve the pressure of repeated attendances at A & E departments. Traditionalists sometimes cavil, but only those who haven't tried it.

Don't forget: it depends for its success on thorough and

#### 4 Abscesses

complete surgery and the appropriate use of antibiotics; it is *not* suitable for hand infections; it is suitable for *all* other major abscesses.

##### **Pilonidal abscess**

The important feature of this mid-line sacro-coccygeal abscess is its central sinus extending upwards for varying distances (up to 65 mm; 3½ in) from its orifice. The sinus is epithelialized and may contain hairs. It should be opened on to a probe inserted to the full extent of the sinus and treated by the clindamycin method described, after energetic curettage of the epithelial tract and all its ramifications.

#### **ACCIDENTS, MAJOR**

With head, or multiple and head, injuries the routine treatment is simple and must always be followed in this order:

- 1 Ensure **airway**, with cuffed tube if necessary, and ventilation — get an anaesthetist fast if in difficulty or doubt.
- 2 Stop major external **bleeding**, usually by local pressure.
- 3 Strip and **examine**.
- 4 Step up **IV fluids** if necessary — 4 may need to precede 3 — bilaterally if required and always in the arms if possible, having first taken blood specimens for cross matching and any relevant baseline estimations.
- 5 Investigate **injuries**, and record their nature and significance.
- 6 **Treat** if required.
- 7 The importance of getting as clear a **history** as possible must not be forgotten, but the circumstances may prevent it.

Where accident and intensive care units are closely associated, a CVP catheter may be inserted early, but for the majority of accident units it is inappropriate. Where this is to be done the safest and best method, and often the quickest, is by dissection of the subclavian vein at its junction with the axillary vein — i.e. where the clavicle crosses the first rib. The CVP catheter is inserted after digital occlusion of the subclavian vein and the venous incision is carefully closed by superficial interrupted 4/0 Dexon stitches. The skin is similarly closed and carefully dressed. The

## 5 Accidents, major

skin wound is sealed with povidone-iodine ointment (Betadine). Full surgical aseptic precautions are observed throughout.

Any major accident demands a combined operation and the more relevant help you get in, after the first assessment of the situation, the better for everyone – especially the patient. Evidence from witnesses and ambulance personnel can be of vital importance in the first assessment.

With practice you should be able to make a reliable assessment of the number and severity of injuries in a 5-minute examination. Your findings should be briefly, clearly, and definitely recorded, starting at the top, like this:

<i>Part of the body</i>	<i>Injuries</i>
Head and oropharynx	.....
CNS	.....
Chest	.....
Abdomen	.....
Pelvis	.....
Upper limbs	.....
Lower limbs	.....
Skin	.....
Other	.....

Keep this list of injuries separate from observations of the patient's condition, especially surgical shock and circulatory failure.

## ACCIDENTS, ROAD TRAFFIC

Injuries are often multiple. It is easy to overlook an associated injury by concentrating on the primary one, e.g.:

- 1 In cases of dashboard injury to the knee it is important to X-ray the ipsilateral hip to exclude fracture/dislocation.
- 2 In cases of head injury with loss of consciousness it is easy to miss an associated fracture/dislocation of the cervical spine.
- 3 Severely injured people are often also drunk (and vice versa) – ask for an urgent blood-alcohol (if available) to help clarify the severity of their head injuries.

You will quickly adopt your own or your department's techniques for the reception and treatment of such patients. It will not be

## **6 Accidents, road traffic**

helpful to write out a scheme here. Make your own, and make it infallible, and record it on the opposite page.

### **ACTINOMYCOSIS**

A rare cause of subacute submandibular abscess, likely to be secondary to periodontal infection. Advanced actinomycosis is unheard of today in medically sophisticated countries. Treatment is by surgical drainage and IM penicillin.

### **ADHESIVES**

Cyano-acrylate adhesives have introduced a new dimension into emergency production. Their adhesion is instant. A child can stick fingers indissolubly together, gum up his eyes, nose, and mouth with a single smearing gesture and die of suffocation. The manufacturers comfortingly advise peeling apart adherent skin surfaces after applying warm soap and water. Emergency laryngostomy may however be required.

Every accident department should obtain the manufacturers' well-prepared advice-sheet, available on application to Loctite (UK) Ltd, Welwyn Garden City, Herts, AL7 1JB.

### **ANAESTHESIA, LOCAL AND REGIONAL**

#### **Digital nerve block for fingers and toes**

If this is done well, it works with 100 per cent success. If it is done badly it is ghastly and saps the patient's confidence like nothing else.

Where appropriate, the injection should be given into the interdigital web — lignocaine 1% 3–5 ml each side in adults. The needle should point towards the digital nerve (see Fig. 1). If there is no web, local anaesthetic should be injected from the dorsum of the finger until the bulge is palpated in the volar aspect (about 2.5 ml in children, 3–5 ml in adults). You *must* wait at least 5 minutes. Then, if all is not well, repeat the dose. A tourniquet can be applied after injection if prolonged operation is anticipated. Otherwise it is superfluous and may be painful. The injection



## 7 Anaesthesia, local and regional

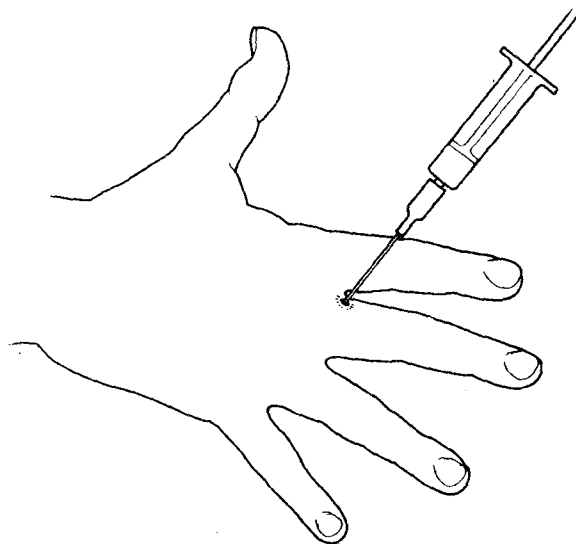


Fig. 1.

must be given into healthy tissue. In the presence of infection (e.g. a large paronychia) larger quantities are generally required. Thus it is wise to give more to the nerve on the affected side of the digit.

### **Intermetacarpal block**

should always be given from the dorsum of the hand and it is wise to give 8–10 ml of lignocaine 1% either side of the relevant metacarpal. A tourniquet to the forearm (sphygmomanometer cuff is safest) will increase its efficacy.

### **Median and ulnar nerve blocks (see Fig. 2)**

Palpate the pisiform and hamate bones on the volar surface of the wrist medially, and the tubercle of the scaphoid laterally. Anaesthetize the skin. Inject lignocaine 1% 5 ml immediately lateral to the pisiform and superficial to the flexor retinaculum at the level of the proximal skin-crease. Then inject lignocaine 1% 2 ml subcutaneously immediately medial to the tubercle of the