

Casualty Officer's Handbook

Fourth Edition

**David H. Wilson
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Butterworths

Casualty Officer's Handbook

FOURTH EDITION

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Casualty Officer's
Handbook



Maurice Ellis, F.R.C.S.
1904-1977

Preface to the Fourth Edition

Before his death last year, Maurice Ellis asked us if we would prepare a new edition of his Casualty Officers' Handbook. We consider ourselves privileged to be his successors.

Since the third edition appeared, Accident and Emergency has become an established specialty within the National Health Service in the United Kingdom and a full career structure has been introduced. This development, which owes much to Maurice Ellis's pioneer work, is a reflection of his concern for the specialty and will remain a lasting tribute to his efforts.

In preparing this new edition we have kept to the same format but, because nine years have passed since the third edition was published, we have re-written much of the work and introduced new material in order to reflect the changing pattern of work within the Emergency Services. In keeping with the increasing importance of medical emergency care, we have included chapters on medical emergencies and paediatric problems, and we have extended the chapter on 'The Casualty Officer and the Law'. As in previous editions, we have sought to provide a handbook for junior doctors to help them deal with some of the many problems that they will face when they start to work in the Emergency Services. We hope that medical students and nurses will also find it helpful.

We wish to express our thanks to our secretaries, Miss Christine Whitehead and Mrs Barbara Parker, and to our colleagues who have made many helpful suggestions. We are also indebted to Mr Peter Hargreaves and the staff of the Medical Photographic Department of the General Infirmary at Leeds, and to Mr Peter Kilshaw and the staff of the Medical Illustration Department of Preston Royal Infirmary.

D. H. W. Leeds
M. H. H. Preston

Preface to the First Edition

This book has grown out of the teaching given to many students and junior Casualty Officers over the past ten years. Their questions and difficulties showed me that there seemed to be no book for them to consult for practical help in the management, diagnosis and treatment of the patient in front of them in the Casualty Department. Verbal instruction, therefore, became reinforced by written teaching on the more common injuries and emergencies seen in these patients. I was pleased, therefore, to accept the invitation from Butterworths to expand these written lectures into a practical handbook for Casualty Officers.

This handbook is designed to help the newly appointed Casualty Officer, or the House Surgeon and House Physician who have to do duty irregularly in the Casualty Department. Such recently qualified men and women are often left alone with no experienced senior available for advice on the management of patients in front of them. They need assistance in deciding what urgent help is required in the serious case, on how to manage the border-line case, and they require full details of the treatment of the less serious cases, which comprise the majority of patients treated. This book is not intended to replace standard textbooks on fractures, but does give details of the management of suspected fractures and the treatment required in the Casualty Department before the patient is passed on to the care of the fracture surgeon. Fractures, however, form no more than 15 per cent of the work of the Casualty Department. Some of the remaining patients need urgent life-saving procedures, but most require careful treatment of their wounds, sprains, abscesses and burns in the Casualty Department with equally careful follow-up treatment. This treatment and follow-up are described in detail.

Leeds, 1962

M. Ellis

Contents

<i>Preface to the Fourth Edition</i>	v
<i>Preface to the First Edition</i>	vi
1 Accidents	1
2 The Management of the Severely Injured Patient	5
3 X-Rays in the Emergency Department	17
4 Head Injuries	22
5 Injuries to the Face	35
6 Eye Emergencies	54
7 Injuries to the Chest and Chest Wall	63
8 Abdominal and Pelvic Trauma	81
9 Injuries to the Back and Neck	88
10 Injuries to the Shoulder	96
11 Injuries to the Arm and Elbow	110
12 Injuries to the Forearm and Wrist	119
13 Hand Injuries	130
14 Injuries to the Pelvic Girdle and Hips	142
15 Injuries to the Thigh and Knee	151
16 Injuries to the Leg and Ankle	162
17 Injuries to the Foot	168
18 The Treatment of Wounds	174
19 The Treatment of Burns and Scalds	183
20 The Treatment of the Acute Abscess	194
21 The Acute Abdomen	204
22 Paediatric Emergencies	217
23 Medical Emergencies	243
24 The Accident Officer and the Law	264
<i>Appendix I</i>	277
<i>Appendix II</i>	278
<i>Appendix III</i>	279
<i>Appendix IV</i>	280
<i>Index</i>	283

Accidents

The Accident and Emergency Department exists for the reception and treatment of a wide variety of urgent medical and surgical conditions, and both public and hospital expect equally efficient and prompt treatment in severe and trivial cases alike. A survey of the 70 000 new patients coming each year to an A & E Department in an industrial city is valuable in giving an idea of the burden that has to be carried, the skills required for treatment and the equipment that should be available. The following figures show the age distribution and broad diagnostic categories:

Children	0–14 years	23%
Young people	15–24 years	24%
Adults	25–64 years	43%
Elderly	65+ years	10%
Accidents		71%
Acute medical conditions		15%
Acute surgical conditions		14%

Accident patients constitute by far the largest part of the work load. They can be divided into 4 categories:

1. Those requiring resuscitation – there is a danger to life and they may have multiple injuries probably requiring the services of several surgical specialities.
2. Those requiring in-patient treatment but with no immediate threat to life.
3. Those who can be treated as out-patients – even though their injuries may be moderately severe. For these patients the treatment will be carried out in full by the staff of the A & E Department.
4. Those with minor injuries – for whom efficient treatment is still required to prevent complications or unnecessarily long morbidity.

2 ACCIDENTS

With each of these categories, a different kind of management is required. The type of patient in each category will therefore be described, together with the broad outlines of management. The treatment of burns in the A & E Department is described separately.

CATEGORY 1 – RESUSCITATION PATIENTS

Seriously injured patients with multiple injuries are few in relation to the less serious injuries which come to the A & E Department. The first time Accident Department doctors see such a patient they may find that their previous medical training has not prepared them to deal with this type of patient and they are often at a loss to know where to start in the management. Chapter 2 is therefore devoted to this important problem of the management of the severely injured patient.

CATEGORY 2 – REQUIRING IN-PATIENT TREATMENT

These patients will lie either in the province of the general surgeon or in one of the surgical specialities: orthopaedics, plastics, etc. Management in the A & E Department will consist of relieving pain, applying suitable splinting and temporary dressings, carrying out the necessary X-rays and establishing a provisional diagnosis. Head injury patients requiring admission to hospital, primarily for observation rather than immediate surgery, should be thoroughly examined to provide base-line information as described in Chapter 4; the management of patients in this category should be expeditious, but without the urgency of the first category.

CATEGORY 3 – TO BE TREATED AS OUT-PATIENTS

It is for patients in this category that the Accident Officer has the opportunity and is expected to show personal skill in the treatment of each individual patient. The reduction of dislocations, the manipulation of fractures and the suture of moderately severe wounds are all carried out in the A & E Department. In subsequent chapters, instructions for the treatment of these common injuries are given in detail with indications for the follow-up treatment.

In the management of these patients many pitfalls await the unwary. It would seem that most patients are only capable of complaining of one condition at a time, and they therefore direct the attention of the doctor to the most painful lesion, and often refuse to admit that any other part of the body has been injured. The discovery of one lesion

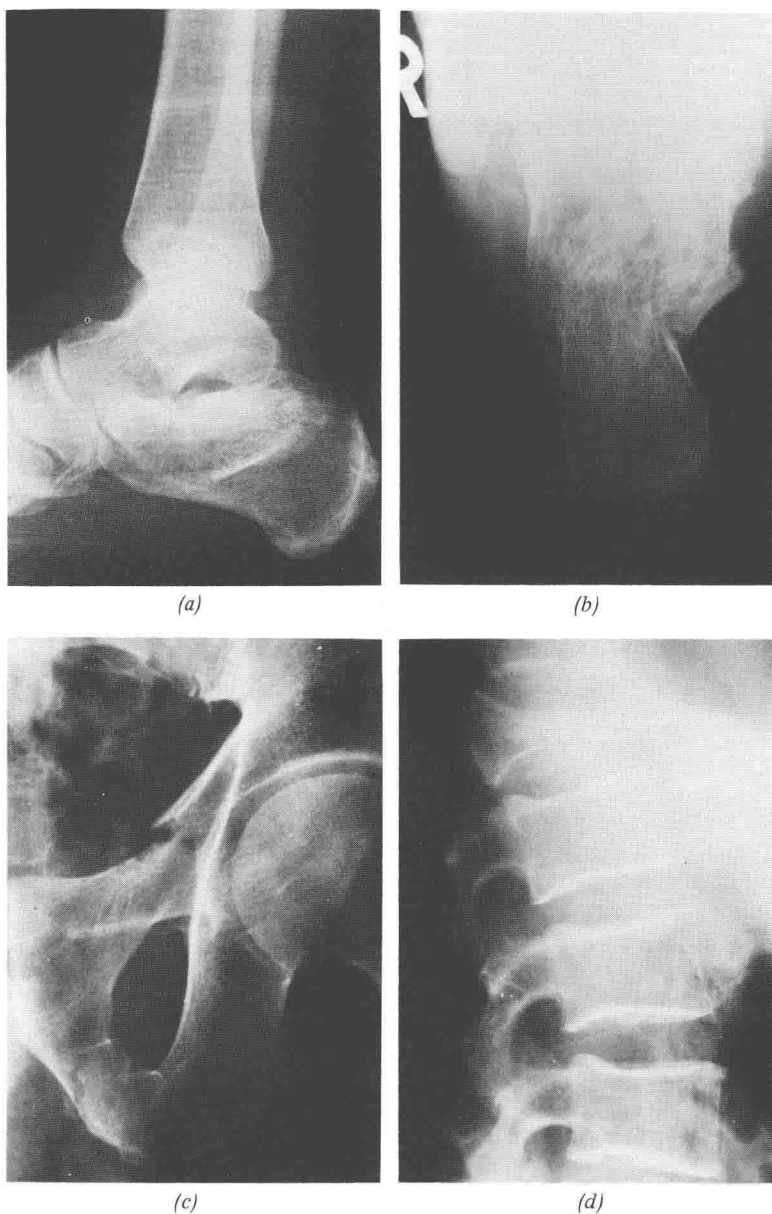


Figure 1.1. X-Rays of a patient who fell 7 metres from a roof and landed on his heels. (a) and (b) Fractures of the os calcis. (c) Fracture of the hip. (d) Fracture of the lumbar spine

should not deter the doctor from excluding other conditions. For instance, a patient who has been knocked down by a motor car may only complain of an injury to the arm, and ignore the fact that the abdomen was hit at the same time causing trauma to the spleen or bowel. A fall from a height may have fractured the os calcis and at the same time have damaged the hip and the spine (*Figure 1.1*); the os calcis fracture is the most painful lesion and the other fractures may be missed. These accidents may not be so immediately dangerous to life as those in category 1 but, unless there is an adequate physical examination, treatment may be arranged on an out-patient basis for the most painful lesion when the other more serious lesions require admission to hospital.

CATEGORY 4 – MINOR INJURIES

The number of patients in category 4 will probably exceed the combined total of all 3 previous categories. The minor nature of the conditions should not be made an excuse for an inadequate examination or treatment. Many of the patients are wage-earners and wish to be away from work for the minimum period. If adequate supervision and skill are not exercised, complications, such as sepsis and the breaking down of wounds, may prolong absence from work by several weeks. If each patient is away from work one week less, the saving to industry and to the economy of the country will be immense. The saving to the hospital by the reduced bill for the dressings will also be considerable. To achieve such a result it is imperative that every patient be seen by a doctor. If the treatment is delegated, the doctor must be satisfied that the person to whom he delegates it is adequately trained and competent to carry out the instructions and has fully understood the doctor's intentions. A treatment routine must be established with the co-operation of the nursing staff, the correct instructions must be available and the entire staff of the department must take a pride in the quality of their work.

IT IS ALSO IMPERATIVE THAT AN ADEQUATE RECORD IS MADE AND KEPT OF EVERY PATIENT, HOWEVER TRIVIAL THEIR COMPLAINT MAY APPEAR TO BE; SUCH NOTES MUST BE CONCISE BUT ACCURATE. THEY WILL NOT ONLY HAVE CLINICAL SIGNIFICANCE BUT THEY MAY ALSO ASSUME MEDICO-LEGAL IMPORTANCE AT A LATER DATE.

The Management of the Severely Injured Patient

AT THE SCENE OF THE ACCIDENT

Ideally, the management of severely injured patients should start at the scene of the accident and ambulance crews are now trained for this task. The most important single item of management is the care of the patient's respiration. In the unconscious patient the airway may be blocked by the tongue falling backwards, or by secretions, blood, vomit, false teeth or other foreign bodies. Having removed all extraneous material from the mouth, the jaw is pulled forwards and held until the patient can be turned into the semi-prone or 'recovery position'.

1. The airway

In the recovery position secretions will drain to the outside and the jaw will fall forward (*Figure 2.1*). Even in the conscious patient the airway may be partially obstructed and the patient unable to clear it by coughing; ambulances now carry suction apparatus and pharyngeal airways to deal with this problem. The value of training ambulance men to pass an endotracheal tube at the scene of the accident is still under discussion.

2. Open wounds

After taking care of the respiration, temporary sterile dressings should be applied to open wounds. The use of a tourniquet to control arterial bleeding is not encouraged: a local pressure pad and bandage is recommended. The pulse should be checked and an estimate made of the volume of blood lost at the scene of the accident. Inflatable splints are not only valuable for supporting fractures in the distal half of the limbs but also because they will stop bleeding; they should be blown up by mouth and released temporarily every hour if the journey is prolonged.



Figure 2.1. The recovery position. The patient must not be left unattended

3. Analgesia and splints

In order to ease the pain when applying splints and moving the patient at the scene of the accident, analgesia can be given by an entonox apparatus which delivers 50 per cent oxygen and 50 per cent nitrous oxide. The apparatus is difficult to use if there are severe facial injuries and should never be used in the presence of fire or sparks from metal cutting equipment because of the risk of an explosion. Fractured upper limbs can be supported by lightly bandaging them to the chest wall. If one leg is fractured the other will serve as a splint, but if both legs are injured external supports must be applied. If the patient is trapped and a spinal injury is suspected, a spinal board should be used to support the back and neck while extricating the patient.

4. Moving the patient

Considerable skill is necessary for handling and moving patients. A stout canvas carrying sheet can be unrolled under the patient's body and poles introduced into the side folds for lifting. These sheets should be interchangeable between hospitals and the ambulance service so that the

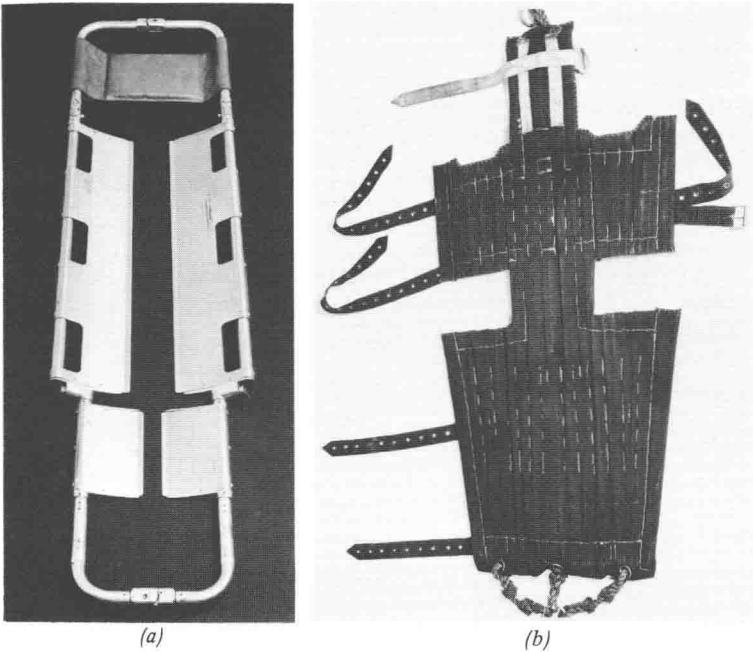


Figure 2.2. (a) Scoop stretcher. (b) Neil Robertson stretcher

patient can remain on the same carrying sheet until he reaches the ward, the ambulance being re-equipped with another carrying sheet from the hospital supply. For patients with displaced fractures, a metal scoop stretcher may be preferable to give support to the injured limbs and occasionally, in difficult circumstances, a Neil Robertson stretcher is indicated (*Figure 2.2*).

5. Transport to hospital

If there are any witnesses to the accident, enquiries should be made before leaving the scene to find out if the patient has been unconscious, and to obtain a brief account of the accident.

After moving the patient into the ambulance, the airway and pulse must be checked again. If the pulse is weak or the patient cyanosed, oxygen should be administered during the journey to hospital. Assuming the ambulance is equipped with a radio-telephone, the receiving hospital

should be warned that the patient (or patients) is on the way, if possible giving an estimated time of arrival. Transport, by road or by air, should be as rapid as possible without causing any further trauma to the patient. Throughout the journey, observations must be made on the respiration, pulse and level of consciousness. If the expertise is available, an intravenous infusion can be started.

RECEPTION OF THE PATIENT AT HOSPITAL

In the reception bay

When the A & E Department of the hospital receives notification of the expected arrival of the injured patient, a reception team should be made available — doctors, nurses and porters. The equipment the team require is as follows:

1. A resuscitation trolley of which the surface can be raised or lowered at either end, is radio-translucent and has a device for holding X-ray cassettes under the surface. The trolley should also have a holder for an oxygen cylinder, a drip attachment and a wire basket for the patient's clothes and property.
2. An oxygen cylinder with mask and flowmeter.
3. A bag containing a suitable selection of airway tubes, a laryngoscope, cuffed endotracheal tubes and other equipment for endotracheal intubation.
4. A portable suction apparatus (*Figure 2.3*).
5. A spare carrying sheet and poles.

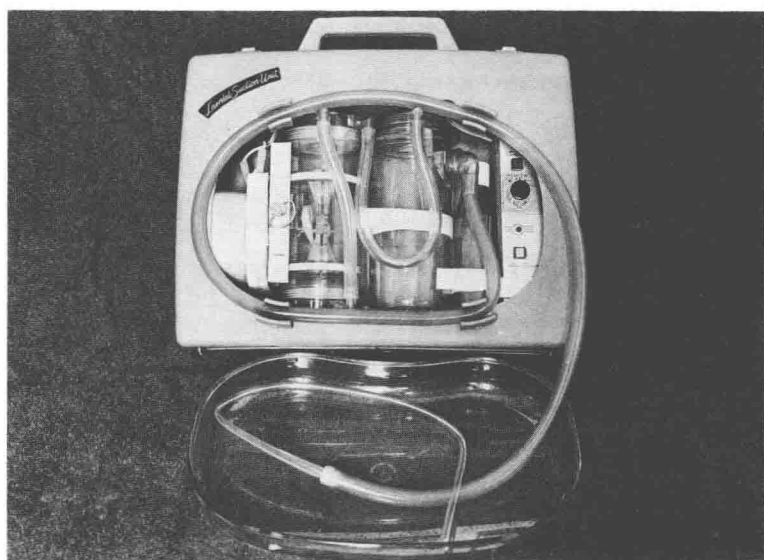
On arrival of the ambulance, the doctor should immediately check the patient's respiration. In the unconscious patient, if the airway is obstructed, endotracheal intubation and tracheal toilet may be performed in the ambulance and positive pressure respiration started if necessary; but there should be no undue delay before the patient is wheeled to the resuscitation room.

IN THE RESUSCITATION ROOM

A modern resuscitation room must be warm, well-lit, private, have adequate floor space, be fully equipped with the necessary apparatus including X-ray, have piped gases and suction, and be in telephone



(a)



(b)

Figure 2.3. (a) Foot-operated suction apparatus. (b) Battery-operated portable suction unit