

# The Organisation of an Accident Service

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## SUMMARY

With the tremendous advances in assessment and treatment of trauma there is a concomitant necessity for an improvement in the organisation of accident services in hospitals. The organisation of such a separate Accident Unit is discussed and its many advantages over the present Casualty System for the reception of injured patients is described.

*S. Afr. Med. J.*, 48, 1954 (1974).

In general, the Casualty Department is still the accepted centre of reception of the traumatised patient. Here he is first seen, usually by a fairly junior medical officer, who examines and assesses the patient and possibly puts up a drip and then sends the patient either for radiographs or to the ward. This casualty system<sup>1</sup> is the organisation which was set up before World War I and it has remained completely unchanged since then. In view, however, of the tremendous advances which have been made, both in the assessment and resuscitation of injured patients and in the surgical management of trauma, it is essential that we improve our organisation and management so that our patients can receive the benefit of this know-how.

I was, until recently, involved with the planning, equipment and organisation of the New Accident Unit established at Groote Schuur Hospital in Cape Town, and I wish to present a description of the organisation of the unit and of some of the experience gained there, and of the benefits and improvements which resulted.

## PRINCIPLES OF ORGANISATION

There are three possible ways of organising the accident services of a hospital. Firstly, the general principle of a casualty department can be maintained, but the efficiency of the department can be improved. This means placing experienced senior surgeons in the casualty department and placing the casualty department under the direct control of either the General Surgical or Orthopaedic Department of the hospital. Although this improves the service tremendously as far as assessment and resuscitation are concerned, it does not overcome the problem of liaison with other departments when it is necessary for two or three disciplines to co-operate in consultation, or in the operating theatre, or during aftercare. There is also often the problem of who is to be in charge of the patient and to which ward he is to be admitted. In the theatres one

also usually finds that where two disciplines wish to operate together, instruments have to be brought from separate areas of the hospital, and theatre sisters of one discipline are frequently not able to manage the techniques of the other disciplines involved.

Another disadvantage of the casualty system is that patients have to be wheeled to other departments, such as X-ray, Orthopaedic and Eye Departments to receive specialised treatment, and since the casualty officers cannot be spread over the hospital, the patient is nearly always accompanied at this time by only a porter and possibly a nurse.

The second possible principle for the organisation of an accident service is the institution of a specialised accident hospital as in Birmingham,<sup>2</sup> where special accident surgeons who are not orthopaedic surgeons, general surgeons, or neurosurgeons, do the work. These accident surgeons are trained purely to treat trauma. This is, in my opinion, not as satisfactory as having surgeons who are experienced in the total management of their field dealing with trauma. In any case, the institution of accident hospitals in the Republic of South Africa is not practicable, since we do not have trained accident surgeons.

The third possible principle for the organisation of trauma services is to separate the treatment of trauma patients from those who attend the hospital for other emergencies or are referred there because it is after hours. This entails the organisation of an Accident Unit,<sup>3</sup> completely separate from the Casualty Department. Injured patients are brought to the Accident Unit where the initial emergency is dealt with and the patient is assessed and resuscitated, if necessary.

Any specialist treatment necessary is carried out by general surgeons, orthopaedic surgeons, etc., who are on roster. The Accident Unit has its own X-ray department, resuscitation and intensive care units, its own theatres equipped with instruments of all the disciplines and with theatre sisters trained in those surgical disciplines.

## THE ACCIDENT UNIT IN CAPE TOWN

It was soon apparent that the Accident Unit did not necessarily require the services of very senior or experienced surgeons, but that a registrar in training interested in learning the principles of surgery and willing to be trained in the vigorous routine of the management of a traumatised patient, could be trained very quickly to perform the task reliably. This, however, requires careful teaching, training and apprenticeship during the initial weeks. If anything, the patients received overtreatment, so that occasionally central venous pressure recordings or electrocardiographic tracings would be done when a more experienced surgeon would have avoided these

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manoeuvres. However, this never really presented any serious problem and the tendency disappeared as further experience was gained.

The ideal organisation is to have one doctor in charge as the director. His function should be to assess and direct every patient into one of two separate streams. The first stream consists of those patients, the majority, who do not have serious injuries and do not require expert care—these can be referred to a fairly junior doctor. The second stream consists of patients with multiple injuries, potential shock or those who require more skilled attention. They are taken to the combined resuscitation and intensive care area, where they are, if necessary, kept for 24 hours or longer.

An important principle of an accident unit is, therefore, that the patient is seen by a doctor experienced in the assessment and resuscitation of trauma patients and who directs their treatment, but does not himself become involved in it. He directs resuscitation and sees to it that various experts in their fields are called. The services are brought to the patient rather than having the patient wheeled round the hospital to the services. In the Accident Unit there should be full radiological services and full resuscitation equipment and facilities, so that central venous pressure readings, electrocardiograms and arterial blood gas measurements can be done.

### Equipment

The Accident Unit in Cape Town is fitted with screen intensifiers for fracture diagnosis and to exclude ruptures of the diaphragm with herniation of the abdominal contents into the chest. Major and minor operating theatres are available so that patients can be operated upon, when necessary, by teams of doctors from the various disciplines. Instruments for all disciplines are kept in the unit so that instruments never have to be sent for, and the theatre sisters are trained in the various disciplines. After surgery, the patient is, if necessary, again kept in the combined resuscitation and intensive care room or in the wards of the Accident Unit, which are part of the Unit. When assessment and resuscitation are no longer necessary the patient is moved to the general surgical, orthopaedic or neurosurgical wards of the hospital. By keeping the patient in the Accident Unit for the initial 24 or 48 hours the dangerous practice of having to wheel patients to other departments is avoided—and this is the time when there is danger of the patient not being under constant supervision. A further advantage of having centralised resuscitation care is that there is no demand on the general staff, and, since patients are constantly in one resuscitation room, it is easy for one doctor or one team of doctors to look after a fairly large group of patients.

### THE BASIC ESSENTIALS

Although the building, equipment and staffing of a large sophisticated Accident Unit is of necessity expensive, the principle can be introduced into any hospital in a lesser, but still very successful, form. The basic essential principle

is that all non-trauma patients must be separated from traumatised patients arriving at the hospital, so that the Accident Unit receives and treats traumatised patients only, while a second medical emergency Casualty Department is available for the 24-hour treatment of casual patients requiring out-of-hours or emergency treatment.

Secondly, the Accident Unit must be staffed by medical and nursing staff trained and equipped to assess trauma and, when necessary, to institute modern resuscitative treatment.

Thirdly, rosters must be arranged of staff of all disciplines who are on call and available to give treatment to patients in the Accident Unit.

It is important to emphasise that the institution of an intensive care unit is in no way a substitute for an Accident Unit, since the initial selection of patients who have to go to the intensive care unit requires the decision of a doctor experienced in trauma, otherwise the danger remains that patients with apparently minor, but actually major, injuries will be missed. The only safe way to treat these patients is for every traumatised patient to undergo the same strict routine of management, examination and assessment, whether it is for an apparently minor or an obviously severe injury.

### SECONDARY BENEFITS

The establishment of an Accident Unit allows very careful and accurate record-keeping to be instituted, so that scientific assessment of procedures and results in the resuscitation and treatment of trauma becomes possible. (A computer form for this purpose is in use at the Accident Unit in Cape Town.) The simple form of recording includes the anatomical site of the injury, the pathology involved and the treatment which is carried out. Each form allows for the diagnosis and recording of eight separate traumatic events for each patient on one individual card.

The associated ambulance services in the area can be much improved since the Head of the Accident Unit can liaise with the ambulance staff, and this results in a greater understanding on their part of the management of trauma.

The ambulance service should preferably be organised into two separate entities. One section of the ambulance service should be a well-equipped, well-staffed flying squad service for the treatment of severely traumatised patients (which can also be used for coronary care patients). The other section of the ambulance service can be a much less well-equipped and less well-staffed fleet of vehicles which acts more as a transport system. In the flying squad ambulance section the ambulance drivers should have a higher level of education than is generally required from an ambulance driver, and they should be motivated and educated in the treatment and management of trauma. They should be paid higher salaries than usual and be called 'accident officers' to give them greater status. During those periods when they are not involved in driving to an accident or an emergency call, they should be integrated into the duties of the Accident Unit as technicians, so that they can learn the techniques and principles of plaster applications and the understanding of

the general working of the Accident Unit, as far as handling, management and resuscitation of patients is concerned. In this way they learn by apprenticeship the first-aid and emergency care of a traumatised patient better than by attending a series of first-aid lectures and demonstrations.

The emergency flying squad section of the ambulance should be fully equipped for the care of both traumatised and coronary care patients, since the equipment necessary for both these emergencies is very similar. The equipment of the ambulance should also include a special canvas trolley top, so that once a patient is placed on it, no further transference or moving of the patient is necessary until resuscitation, radiology and surgery are completed and the patient is moved finally into bed. For this reason the equipment of the Accident Unit and the ambulance service should be standardised and exchangeable, so that any equipment used from an ambulance can be replaced.

For the management and organisation of mass emergency or disaster care,<sup>4</sup> at least one highly organised sophisticated Accident Unit of this nature, which should be the centre of disaster care, should be established in each area or province, and the surgeon in charge of the unit should be capable of organising<sup>5</sup> and training medical officers who are able to proceed to the scene of disaster, take control of the area and, if necessary, liaise with the military authorities in the area. The total organisation and training of both civilian and military authorities should be such that they can be integrated in times of emergency.

## CONCLUSION

I believe that an Accident Unit, in principle, should be established in every hospital throughout the country to replace the present antiquated idea of a Casualty Department. A central, more sophisticated Accident Unit should be established in each major area or Province and should act as the central organisation for the entire peripheral Accident Service in the area. In this way, with the system of grading of injuries, the patients with lesser injuries can be treated successfully by less experienced staff in the peripheral network of hospitals while the more seriously injured, requiring more experienced medical staff and more sophisticated equipment and facilities, should be moved to the larger centre. In this way the greatest use can be made of the bed space and the manpower which we have available.

The time has come for us to organise our accident services to meet the problem of trauma and to deal with it as one single entity, which it undoubtedly is.

I wish to pay tribute to Professor J. H. Louw, Head of the Department of Surgery, University of Cape Town, for suggesting and stimulating the formation of the Accident Unit at Groote Schuur Hospital.

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