CHAPTER 2 THE FUNCTIONAL AREAS OF THE EMERGENCY HOSPITAL

There are eleven functional areas in the Emergency Hospital:

Functional Areas

1. Administration Area
2. Admission and Discharge Area
3. Resuscitation (Pre-op) Area
4. Recovery Area
5. Operating Room Area
6. Central Supply Area
7. Pharmacy Area
8. Wards (General) Area
9. X-ray Area
10. Laboratory Area
11. Service Utilities Area

Leadership and Direction

The Medical Director of the Emergency Hospital is appointed by the Provincial Director of Emergency Health Services. He should be a physician experienced in administration and familiar with the operation of medical facilities. The responsibility for leadership, co-ordination and direction of all areas is primarily that of the Medical Director of the Emergency Hospital. A Senior Surgeon, skilled in diagnosis, should act as his immediate deputy. The Deputy Director who is in overall control of Patient Care Services will have direct charge of the Admission and Discharge Area where his primary responsibility will be that of sorting casualties and secondly, supervising the Operating Room Area (where three surgeons will be working). When the flow and sorting of casualties ceases, he will take over surgical duties in the operating rooms, with the three other surgeons.

The other members of the basic team of leaders, the Director of Nursing Services, the Director of Pharmaceutical Services and the Administrative Officer who is Deputy Director of Supplies Services have particular responsibilities in relation to the nursing, supply and administrative services provided (see figure 1). Area Chiefs may be responsible for one or more functional areas which have related interests. The full peacetime basic team is indicated in Chapter 5 (page 47) and the suggested operational staff is shown in Figure 2.

Administration Area

The Administrative Officer is one of the basic team of leaders. He is appointed by the Provincial Director of Emergency Health Services. He must have extensive hospital administration experience and should have a deputy (Transport Officer).

The Administrative Officer is responsible for the general administration of the Emergency Hospital and for the overall control of communications,

His detailed responsibilities are as follows:

a) Establishment of a control centre for intra- and extra-hospital communications. Liaison with all outside agencies

b) Procurement and assignment of unskilled personnel

c) Maintenance of all hospital and personnel records

d) Provision of feeding, laundry, maintenance and housekeeping services

e) Establishment and control of a morgue

f) Procurement and control of transport.

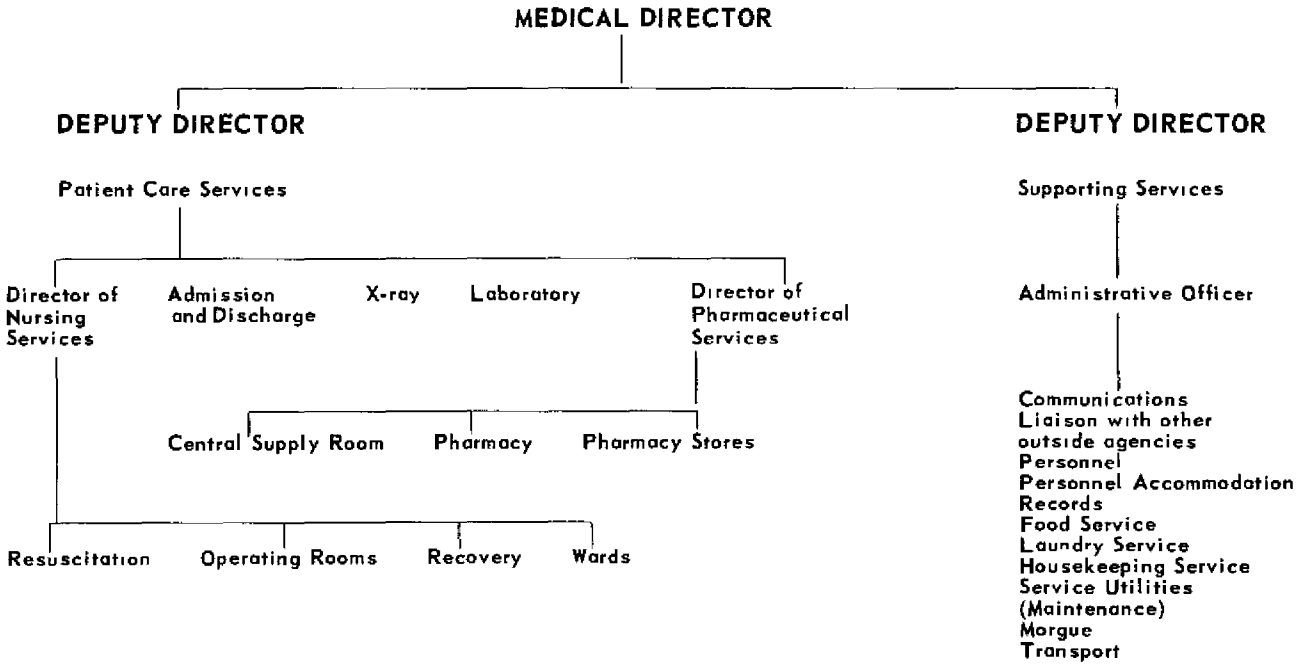
In a school building the administrative area should be sited in the usual administrative offices of the school. Full use should be made of the existing communications system and office furnishings. The administrative area should be reasonably close to the admission and discharge area. A Message-Control Centre should be established in this area.

Chaplain Service

Chaplains working in the Admission and Discharge area should know the location of the

Figure 1

LEADERSHIP RESPONSIBILITIES IN THE EMERGENCY HOSPITAL



Message Control Centre and visit it from time to time to acknowledge messages from the wards, requesting their services.

Communications

The Administration Officer with the Transport Officer as his deputy will assume control of hospital communications.

A Message Control Centre should be established in the Administrative Area even before supplies are unloaded. Any existing and intact internal communications system: telephones, public address system, etc. should be utilised to the full by the Control Centre.

Immediate contact must be made with the local Municipal Emergency Health Services Director at the Municipal Emergency Government Headquarters, by any means available, telephone, radio-communication or messengers.

All out-going communications must pass through the Message Control Centre for approval by the Administrative Officer or his deputy who will refer all messages involving policy decisions on personnel, supplies and equipment etc., to the Medical Director.

Brief Situation Reports should be made by functional area chiefs as often as the Hospital Director requests and a Hospital Situation Report should be channelled to Municipal Emergency Government Headquarters, at frequent intervals as requested by the Headquarters.

Messengers should make routine tours of the hospital to pick up and deliver messages to the Control Centre.

Food Service

Feeding of patients and staff in the Emergency Hospitals is the responsibility of the Emergency Welfare Services.

The basic team of leaders in their initial survey of the building chosen to house the emergency hospital should note what facilities exist in the building for the preparation and serving of food.

Should there be a cafeteria and a Home Economics classroom within a school building these rooms should be reserved for the Emergency Feeding Service. If there are no facilities of this nature, seven hundred square feet of space should be allotted to the Emergency Feeding Service.

There must be adequate liaison at this stage with the Provincial, Zone and the Municipal Emergency Welfare Services organizations. The basic team must have knowledge of the emergency feeding arrangements for the Emergency Hospital in a disaster situation.

For further information reference should be made to the Emergency Welfare Services publication "Emergency Feeding Manual" 1965., Chapter XVII – Hospital Feeding in Emergency.

Housekeeping and Laundry Services

The Administrative Officer is responsible for the overall supervision of the housekeeping and laundry services.

He must ensure that the Housekeeping Service is capable of undertaking the maintenance of a clean environment in all functional areas. Soiled dressings and other refuse from treatment areas must be removed as frequently and expeditiously as possible for incineration. If a temporary incinerator is set up this should be sited at least fifty feet downwind from the building. All cleaning supplies usually held in the building should be assessed and planning arrangements made for obtaining additional supplies to meet anticipated needs in an emergency, from local resources.

The local resources for laundry service must be explored also in the early planning phases. Cleaning and repair of linens and clothing will be centralized in the laundry service. Work should be undertaken in the following priorities:

1. Operating rooms
2. Wards
3. Patient and staff clothing.

Service Utilities

The Administrative Officer will assume responsibility for the overall operation of this particular functional area.

Function

The function of this area is to ensure:

1. Adequate water supply
2. Maintenance of satisfactory working temperatures
3. Repair of mechanical breakdowns
4. Operation of emergency equipment.

Equipment

Emergency hospitals are likely to be sited in locations between 25 and 100 miles from ground zero in a target area. It is probable that the building selected will possess functioning lighting, heating and water supplies. In the event of disruption of such services, however, the following emergency facilities are provided with the hospital supplies:

1. A ten kilowatt generator
2. A 1500 gallon water portable water tank and electrically-operated water pump
3. A three kilowatt generator (see page 31)

1. The ten kilowatt generator is powered by a standard piston engine, which may be easily maintained and replaced if necessary. Electrical accessories, cabling, plugs, spare parts, etc. are supplied.

The generator can deliver sufficient current to power the surgical lamps and electrical suction-machines in the operating rooms, the electrically-driven water pump unit and some general lighting for the hospital.

It must be noted that the two special units (see plate 10), supplied with the portable autoclaves in the Central Supply Room which enable the autoclaves to be heated electrically, must be powered from a main source of supply. The genetor will not supply sufficient current for these in addition to the other units mentioned above.

2. The water storage tank (see plate 19), which must be assembled indoors under winter conditions, is of 1500 gallons capacity. The electrically-driven pump can deliver 825 gallons per hour at a discharge pressure of 20 pounds per square inch. The pump may also be used to

suction water from a source(nearby well or a water truck). A deep well attachment which permits suctioning of water from depths over thirty feet is supplied with the tank. All the accessories, valves, hose, etc. to connect the unit via a three-tap header to three water points for the hospital are provided.

As supplies are not available with the hospital for the chemical treatment of the water, adequate liaison must be made with the local Health Department regarding planning arrangements for the testing and chlorination of water supplies in an emergency.

A number of sets of spare parts for the autoclaves are provided (see page 25) in addition to general purpose tools.

If it is necessary to use natural or mixed gas as a fuel source for the autoclaves, appropriate burner jets are supplied for the local supplies of gas.

The Director of Pharmaceutical Services must obtain fuel for the gasoline-driven ten and three kilowatt generators from a local source. Five safety cans (empty) of 5 U.S. gallon capacity are provided with the hospital. One safety can must be earmarked specifically for the three kilowatt generator, which requires an oil/gasoline mixture for fuel. The correct mixture is ½ pint motor oil (S.A.E. 30) to 1 Imperial gallon of gasoline, ie. one quart of oil to one 5-gallon safety can. Multigrade oil should not be used.

The oxygen cylinders and the propane-gas cylinders will be supplied filled, (see page 29). The Director of Pharmaceutical Services is responsible for making planning arrangements for re-filling of these cylinders.

Morgue

The Administrative Officer is responsible for the supervision of the morgue. Some three hundred square feet of floot space is the minimal requirement for the morgue. It should be located in an inconspicuous area of the building which is unheated, or in a suitable nearby building.

The Administrative Officer should ensure that there is:

1. Complete and proper documentation for the identified dead
2. As complete records as possible kept for all unidentified dead. A hospital number must be assigned to all unidentified dead (see page 14)
3. Proper religious observance, where possible prior to interment, and a record kept of the same
4. Scrupulous recording of body locations in emergency cemeteries
5. Removal, recording and safe storage of personal effects.

Admission and Discharge Area

The most experienced surgeon on the hospital staff should be appointed as Area Chief by the Medical Director of the Emergency Hospital. He will supervise the operation of a number of diagnostic teams. These teams should consist of:

a) A physician or surgeon

b) A nurse or nursing assistant

c) A recording clerk.

An alternate is required for this surgeon to take over from him after a twelve-hour period (see figure 1)

The three surgeons who will be operating in the three hospital operating rooms may be used initially on these teams until such time as the operating rooms are functioning and casualties are ready for surgery.

Functions of the Admission and Discharge Area

This area has administrative and professional functions:

a) To unload casualties from vehicles and deliver them to the admission and discharge area for sorting.

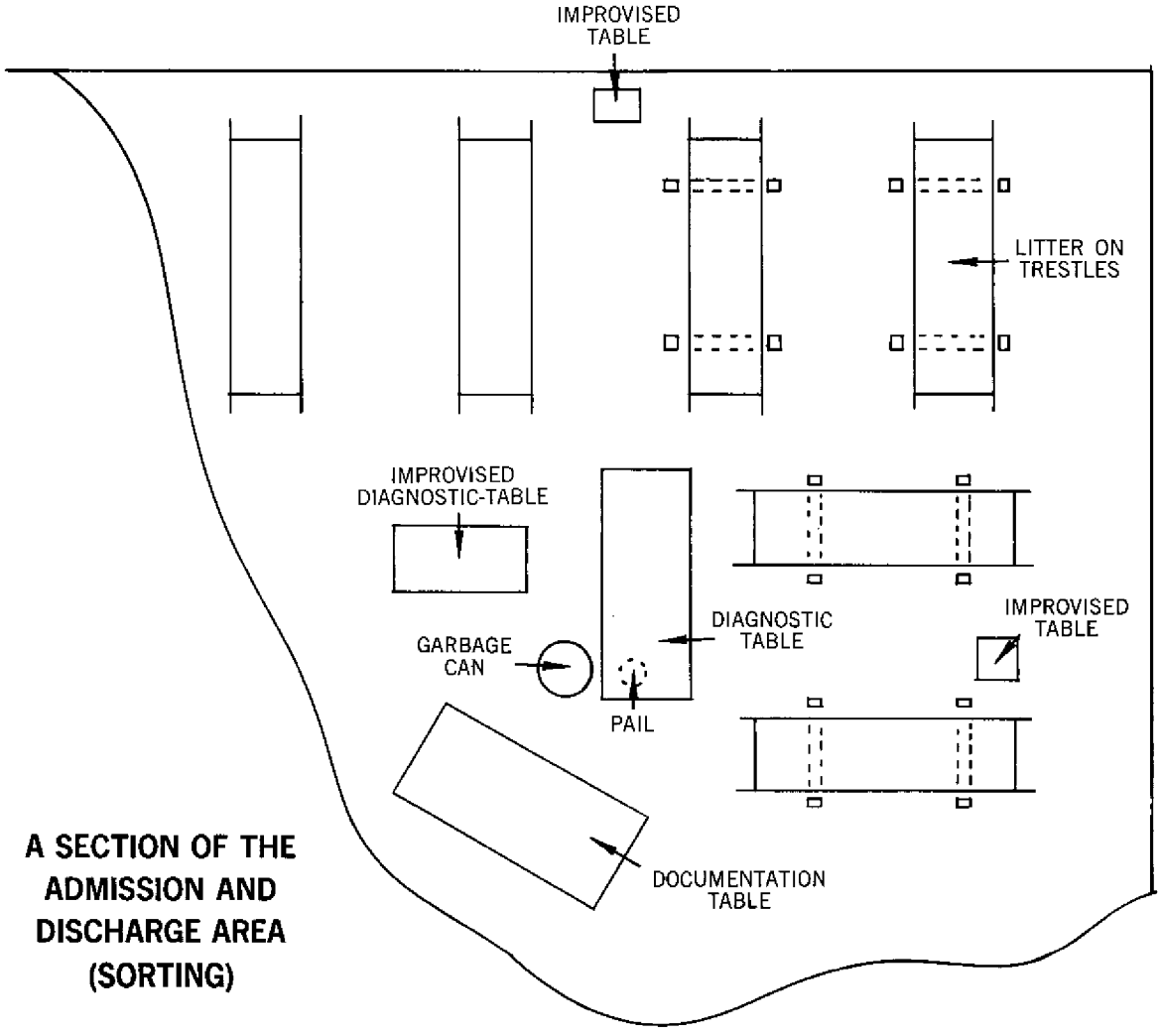
b) In conjunction with the Radiation Defence Officer to provide facilities for fallout contamination control

c) To record personal particulars of casualties

d) To control patient flow to other functional areas of the hospital.

The medical staff have additional responsibilities for:

e) Physical examination of all casualties arriving at the hospital



A SECTION OF THE ADMISSION AND DISCHARGE AREA (SORTING)

f) Sorting of casualties classified as minor and diversion of these to the Emergency Clinic

g) Sorting of casualties into priorities for treatment

h) Periodic examination of casualties in the resuscitation ward or other areas and reassessment of priorities if indicated.

The staffing of the Area is indicated in fig. 2.

Location of the Area

The Admission and Discharge Area should be located close to the main entrance of the building and with easy access to other sections of the building. Some 1500 square feet or more of space will be required for this area.

Equipment

There is sufficient equipment available in this area for three to four diagnostic teams working independently.

A corner of the Admission and Discharge area is shown in plate 2.

Documentation in the Admission Area

An Admission Number should be used for all patients. This is entered by the recording clerk in the Emergency Hospital Medical Record Jacket and Medical Record (see page 90). All Admission and Discharge Books are serially numbered and this combined with page and line numbers provides a useful hospital Admission Number (see page 91). Each page has line numbers one (1) to fifteen (15).
Example: 1457/15/10 would indicate the tenth patient entry on page 15 of Admission and Discharge Book No 1457.

The prefix "U" may be used to indicate unconscious and unidentified patients, eg., U/1457/15/7.

Casualties who have reached an Advanced Treatment Centre without a tag will be given there an Emergency Medical Tag which bears a serial number, (see page 92., Fig. 1). The serially numbered tags are provided in the supplies of the Advanced Treatment Centre. The Emergency Medical Tag serial number is a useful but not a totally reliable cross-reference. It should be entered into the Admission and Discharge Book when the tag bears a serial number.

The Emergency Medical Tags (Field Medical Card) attached to a casualty's arm or leg by First Aid personnel of Casualty Collecting Units bear no serial number. (see page 92., Fig. 2)

Fallout Contamination Control

Detailed and specific information on the subject of fallout contamination control is to be found in other manuals; the main references are given at the end of this section. The following is a brief summary of the cardinal tenets:

The Appointment and Responsibilities of the Radiation Defence Officer

A radiologist or radiation health physicist, when available, should be named Radiation Defence Officer, otherwise any physician may assume the responsibility. In the pre-attack phase this officer will have responsibilities relating to basic planning – the evaluation of the building for protection factors, the acquisition of equipment, the training of his supporting staff and liaison with municipal authorities.

In the post-attack phase, he will have specific duties in relation to decontamination, monitoring of radiation, movement of patients and staff to fallout shelter areas and finally maintenance of records.

When persons or supplies from fallout areas enter the interior of the Emergency Hospital, it may be subject to contamination by radioactive fallout material. The amount of this material is likely to be insufficient to constitute an appreciable addition to the external (gamma) hazard to persons. X-ray film is liable to fogging at low levels of exposure to radiations. Patients and supplies from fallout areas should be identified and cleansed to reduce any hazards extant.

Patients

Contamination may be deduced from:

1. The patient's history
2. Clinical evidence of radiation exposure (acute radiation syndrome)
3. Information on the casualty card
4. Visible dust on body or clothing.

Cleansing is effected by:

1. Removal of clothing
2. Gentle washing of exposed body surface
3. Re-dressing with clean clothing or blankets.

Radioactive contamination which remains on the persons of patients after admission to ward areas will be reduced further by bathing and natural exfoliation of the skin. For the first twenty-four hours after admission, a contaminated patient's hands should be washed carefully before meals to reduce secondary contamination of food and drink.

Location of Area

The Radiation Defence Officer will designate the area where decontamination is to be conducted and this should be close to the admitting area and service entrances; walls and floors should be smooth to permit ready washing down; water supply should be adequate, drainage should be efficient. When the installation becomes operational the Radiation Defence Officer will issue to the area sets of decontamination equipment and protective clothing and direct the disposal of dry and liquid wastes.

Supplies

Supplies known or suspected of contamination will be held in a designated location in the supply area until decontaminated.

Cleansing is effected by vacuum cleaning or washing of surfaces, removal of outer wrappings (avoiding secondary contamination of contents), or in the case of textiles by laundering.

Protection of X-ray Film Fallout Radiation

The polaroid film for the X-ray unit of the Emergency Hospital is subject to fogging by exposure to ionizing radiations. The Radiation Defence Officer will be responsible for:

1) The protection of polaroid film in storage at the Emergency Hospital
2) Protection of the developing fluids when used (i.e. in normal radiography)
3) Control of patients (from fallout areas) admitted to the X-ray room
4) The protection of the film in transit from storage. The mechanics of protection of X-ray film can be found in ref. 2., below.

Further information on fallout contamination control is available in the following publications:

1) Casualties from Nuclear Weapons (1964) Appendices X, XI, XII
2) Radiation Protection in Emergency Health Services Units (1964), Sections V and VIII.

Resuscitation Pre-operative Area

The physician in charge of anaesthesia should be the Area Chief of both the Resuscitation Area and Post-operative Recovery Area. His primary duties will be to supervise the medical or para-medical personnel giving the anaesthetics in liaison with the area chief of Admission and Discharge and the physician actively engaged in resuscitation to regulate the flow of casualties to surgery. These three persons must operate as a team.

Alternates are required for this anaesthetist, and the physician engaged in the resuscitation area after a 12 hour period (see fig. 2).

Location of Resuscitation Area

This area must be contiguous with the three operating rooms. It may consist of one large area, 1100 sq. feet or more, with space for twenty litters on trestles, or be in two adjoining rooms of 700 sq. feet with ten litters on trestles in each.

Lay-out of Resuscitation Area

A suggested lay-out of this area for ten litters is shown on (page 16 and plate 3). The patients heads are placed to the centre of the room to ensure easier observation by the staff. Four feet spacing between the trestles is suggested to provide ample working space.

Equipment

A five-outlet oxygen apparatus (double cylinders) and a manually-operated Wangensteen apparatus will provide oxygen and suction for a number of patients. Intravenous stands are clamped to the litters. Ambu resuscitators are also available and these may be connected to the oxygen supply if desired. Casualties whose vital