

Emergency Department - What is it?

An emergency department is a dedicated area in a hospital that is organised and administered to provide a high standard of emergency care to people in the community who perceive the need for, or are in need of, acute or urgent care including hospital admission. - (Australasian College for Emergency Medicine 2004)

Accident and Emergency (A & E) Department

- The A & E department is the “shop window” of acute hospitals.
- It is the part of the hospital most closely in contact with the public
 - because it offers the most informal access
- It plays the most important part in caring for the acutely ill and injured patients
- Also it is surrounded by so much drama, tragedy, and media interest

The Evolution

- Not long ago the A & E department was not what we know it today
- Earlier it used to be known as “casualty”
 - The word “casualty” meant a seriously injured patient
- It was predominantly a military word
 - It was a general term for accidents of services: After a battle the dead, the wounded and the sick lumped together as casualties
- The casualty ward also occurred in Shakespeare, and Dickens writing in 1837
 - It described the hospital ward in which accidents are treated
- The early casualty department were to treat casual attendees as well as real casualties
- The care of injured, especially those injured in battle has been one of the important stimuli to improve trauma care
- Napoleon’s chief surgeon, Baron Dominique Jean Larrey (1766-1842) is credited with the concept of:
 - Collecting and treating all the injured in an area close to the front line
 - They were evacuated by fast light horse drawn vehicles. These were known as “Ambulances volantes”
- Examples of early specialization in this field:
 - Establishment of separate fracture clinics in Manchester by Harry Platt in 1913-14
 - American College of Surgeons also first considered trauma care in 1922
- The birth of A & E was prompted by the famous report under the chairmanship of Sir Harry Platt (1962)
- It was realised that running an A&E department required different skills from orthopaedic surgery
 - This led to the formation of Casualty Surgeons Association in 1967
- There was severe problem in staffing the A &E
- A review committee chaired by Sir H Osmond Clark (1970) was formed to overcome the problem
 - Recommended training of interns and surgical residents
- Emergency medicine was recognized as a specialty

- Two prominent models of A & E evolved
 - **The Anglo-American Model:** This is practiced in UK, USA, Ireland, Australia, New Zealand, Canada, Japan, Taiwan, South Korea, and Israel (Emergency medicine in these countries is a separate specialty)
 - **The Franco-German Model:** This is practiced mainly in Germany, France and other European countries including Russia (This is not recognized as a specialty)
- Emergency Medicine in the developing Country
 - Many countries have realized the need for emergency medicine (many others have different priorities)
 - In India, Thailand, South Africa, Namibia, Madagascar, Lebanon and Jordan the situation is different
 - Only very recently MCI has recognized emergency medicine as a specialty (MD in Emergency Medicine and MS Traumatology and Surgery degrees are now available)

Level of Emergency Department

The framework used to determine the level of an Emergency Department is based on:

- Design
- Service description
- Service requirements
- Workforce
- Support services.

The Joint Commission (USA) on Accreditation of Healthcare Organisations has established 4 levels of emergency service. Levels (1 to 4) are in decreasing capacity and capability

Classification of Emergency Service

Level I

- 24 hours service a day
- At least one physician experienced in emergency care on duty in the ED
- In-house physician cover by residents at the senior level or higher for medical, surgical, orthopaedic, obstetric-gynaecologic, paediatric and anaesthesiologic services.

Level II

- Emergency care 24 hours a day
- At least one physician experienced in emergency care on duty in the ED
- Specialty consultation should be available within 30 minutes

Level III

- Emergency care 24 hours a day
- At least one physician on duty in the emergency care area within 30 minutes

Level IV

- Capable of performing triage function
- Can administer lifesaving first aid until transportation to the nearest appropriate facility

Categorization of Trauma Centre's

Level I

- 24 hours availability of:
 - One or more Emergency physicians
 - A general surgeon
 - Anaesthesiology services
 - Blood bank
 - Laboratory
 - Operating theatre team
- Other specialty services on call
- A commitment to education and research in trauma must be demonstrated

Level II

- Similar to Level I
- Does not include commitment to education or research

Level III

- Does not have resources available at Level 1 or 2
- Initial stabilization and lifesaving procedures are performed - Patients are then transferred to a **higher centre**.

Site of the Emergency Department

ED needs to be placed in an area of the hospital that is:

- Easily accessible to Emergency vehicles entering the site
- The situation must allow ease of access and egress from the department
- ED clinical areas should be on the ground floor

Signage

- Hospital having an Emergency Department should be well-signposted
 - This should be from major roads entering the locality

- At all entrances to the hospital campus there needs to be clear signposting of the route to the ED (*The route displayed should clearly indicate both the ambulance / vehicular access and pedestrian access*)
- The convention of “EMERGENCY DEPARTMENT” or “EMERGENCY” in white lettering on red background should be followed for all on-campus signage (*The term „Casualty“, „Accident“, „Accident and Emergency“, are confusing and should not be used*)
- Hospitals without an ED should have signage clearly indicating this.
 - The signage should include details of the nearest available public and private ED.

Major Space Determinants for Planning

Functional Areas:

- Ambulance and ambulatory entrance
- Reception/Triage/waiting areas
- Administrative area
- Resuscitation area
- Acute treatment area (of non-ambulant patients)
- Consultation area/fast track area (for ambulant patients)
- Staff work stations

Specialty Areas:

- | | |
|---------------------------------------|---|
| ➤ Paediatric areas | ➤ Shower/bathroom/toilet |
| ➤ Distressed relatives/interview room | ➤ Staff rooms |
| ➤ Procedure room | ➤ Linen Trolley bay |
| ➤ Plaster room | ➤ Mobile equipment bay |
| ➤ Pharmacy/Drug preparation | ➤ Mobile X-ray equipment bay |
| ➤ Ophthalmology/ENT | ➤ Cleaner's room |
| ➤ Mental Health Assessment | ➤ Lounge/beverage preparation area |
| ➤ Isolation room(s) | ➤ Emergency services officer/lounge |
| ➤ Decontamination areas | ➤ Offices and administration |
| ➤ Teaching areas | ➤ Diagnostic areas e.g. Medical imaging unit/laboratory area (optional) |
| ➤ Tutorial room | ➤ Emergency department short stay/observation area (optional) |
| ➤ Support services | ➤ Circulation space |
| ➤ Storage | |
| ➤ Clean and dirty utility | |

Diagnostic Imaging

- There may be a dedicated imaging facility at the emergency department when the workload is high
 - Else it should be available adjacent to the ED
- Immediate access to CT scanning, Magnetic Resonance Imaging, Ultrasound and Nuclear Medicine Modalities will enhance the effectiveness
- One general radiology room is required for every 20-35 thousand patients per annum
 - These should be available 24X7
- Availability of Picture Archiving and Communication System (PACS) is highly desirable

Pathology

As a minimum, point-of-care testing in the ED should be available to provide results for:

- Arterial blood gas
- Haemoglobin
- Electrolytes
- Urinalysis and pregnancy testing
- Glucose
- Lactate

Other Technical Supports

- Medical records
 - Previous medical history should be available without delay
 - 24 hours availability should be ensured
 - EMR when available will be of great help
- ICU and ICCU
 - Rapid access is highly desirable to reduce transfer time of critically ill patients
- Operating Room
 - Rapid access is highly desirable in certain surgical emergencies e.g. in Ruptured aortic aneurism, Ectopic pregnancy & Major trauma.
- Pathology
 - Turnaround time should be minimal
 - Pneumatic tube and electronic reporting is desirable
- Pharmacy
 - Proximity is desirable for patients with limited mobility

Patient Flow

- Triage
 - All patients should be triaged through a single point
 - Aim of triage is to “sort” patients for providing optimum care consistent with their medical need and ensuring efficient utilization of available resources
 - All patients are allocated to a triage category
- Reception
 - Close operational relationship exists with triage
 - After triage, patients details are recorded by the clerical staff
 - A new medical record is either raised or the old one retrieved
- Treatment
 - Patients may be directed to: Resuscitation area, Acute Treatment Area, Consultation/fast track Area, Medical Imaging or Waiting Area.

- In the treatment area consultation / examination / investigation / treatment are performed either in sequence or concurrently depending on the severity of condition
- Support services, and in some cases, specialized areas e.g. plaster room, may be utilized
- After assessment patients are either admitted, transferred or discharged

Core Facilities

Every ED should have:

- Resuscitation area
- Trolley area (s)
- Ambulatory care area
- Reception and waiting area
- Detailed children's facility - If the ED sees more than 16000 children per year
- Rapid assessment and treatment area
- ED CDU/observation ward
- Education space
- Offices and secretarial space

Ambulance Entrance

- Should have appropriate access for vehicles
- Appropriately signposted
- Weather protection
- May act as reception and treatment area in case of:
 - Disaster
 - Chemical/biological/radiation incidents
- PA system should include this area
- Decontamination facility and modesty screening facility should be available
- External service panel should be available
- Direct access to internal decontamination room should be available
- Short stay Unit (Observation unit)
 - This is within the ED and managed by them
 - Prime orientation of this department is to manage acute problems for patients with expected length of stay is less than 24 hours
 - It should be like a hospital ward with all facilities
 - 8 beds is considered to be the minimum size
 - Requirement is 1 bed per 4000 attendances/year
 - Should be organized like a ward

Reception / Triage Area

- The department should be accessed by two separate entrances
 - For Ambulance patient
 - For Ambulant patients
- Each entrance area contains a separate sealable foyer
- The ambulance entry should be screened as much as possible

Waiting Room

- For waiting patient as well as relatives/escorts
- An open space easily observable from Triage and reception Areas
- Seating should be comfortable
- Adequate space to be provided for wheelchairs, prams, walking aids and patient being assisted
- Zoning may be considered
 - Quiet areas, television lounge and family and small group area
- Area 5 m²/1000 yearly attendances.
 - The area includes seating, telephones, vending machine, display for literature, public toilets and circulation space

Isolation Rooms

- For potentially infectious patients.
- To be located near triage for immediate isolation
- Should have:
 - Negative ventilation
 - Ante room with scrub-up facilities
 - Self-contained with en-suite facilities
- Isolation room may be used for:
 - Patient requiring separation from others
 - Needing privacy for clinical conditions
 - For patients who are source of visual and auditory distress to others
 - Diseased patients with grieving relatives

Decontamination Room

- For patients contaminated with toxic substances
- Requirements include that of isolation room and additionally:
 - Directly accessible from ambulance bay without entering any other part of the ED
 - Have flexible water hose
 - Floor drain
 - Contaminated water trap
 - Storage space for PPE and decontamination equipment

Staff Station

- The Staff station in Acute treatment Area is the major staff area within the department
- Should provide uninterrupted view of patients
 - For this, floor may be raised
- Should be centrally located and designed to maintain privacy
- Enclosed area preferable for security of staff, information and privacy
- Ergonomic design is essential
- It is equipped with all essential items for its function

Clinical Support areas

- Clean utility
- Dirty utility/Disposal room
- Equipment store room
 - For storage of equipment (e.g. IV pole)
 - Disposable medical supplies for the department
 - Sufficient space for GPOs to store and charge battery powered equipment e.g. infusion pumps
 - Area –2.2m²/1000 yearly attendances
- Pharmacy/Medication room
- Linen Trolley Bay
- Mobile Radiology Bay
 - Used to house and charge mobile x-ray equipment
- Trolley/Wheelchair/Hoist Bays
- Beverage bay
- Disposal room
- Disaster equipment store –located near ambulance entrance
- Cleaners room
- Patient bathroom

Other Areas

- Staff facilities
 - Where staff can de-stress
 - To be located away from patient care area
 - Access to natural lighting
 - Staff Change/Lockers/Toilets/Shower Facility (Separate for male & female with restricted access & security)
- Distressed relatives Room
 - Acoustically insulated
 - Access to beverage
 - Toilet and telephone facility

- Laboratory
 - For on-site testing

Administration

- The ED must be organized and administered to meet the health care needs of its population
- Operation of ED must be guided by written policies and procedures
- Medical and the Nursing Director of ED along with appropriate integration of ancillary services must ensure Quality and safety in ED
- Appropriateness of emergency care are continually monitored and evaluated
- The Medical Director of ED should have oversight over all aspects of the practice of emergency medicine in ED
- All new staff members should receive a formal orientation program that addresses:
 - The mission of the institution
 - Standard operating procedures of the ED
 - Responsibilities of each member of the ED staff
- Staff must enhance their professional knowledge and skill
- Triage and screening of each patient must be performed by a physician or trained RN
- Immediate evaluation and stabilization to the degree reasonably possible must be available for each patient with emergency medical condition
- A legible and appropriate medical record must be established for each individual
- The minimum set of SOPs should be available for:
 - Receiving of the patient
 - Registration of the patient
 - Triage of the patient
 - Shifting/Transfer within hospital
 - Referral of the patient
 - Discharge of the patient
 - Brought in dead cases
 - Code Blue
 - Medico-legal cases
 - Clinical protocols

Equipment

A variety of equipment is required which includes

- Resuscitation equipment
- Monitoring equipment
- Diagnostic equipment
- Transportation equipment
- Supportive equipment

ED Workforce

- ED needs a multidisciplinary team effort to provide care to the patients
- ED needs strong medical and nursing leadership
- The care of sick patients and dealing with difficult diagnostic problems are not roles for the unsupervised junior trainee doctor
- Medical staff with adequate seniority, training and experience should be available
- The number of staff should provide 24X7 cover
- The aim is to have immediate attendance to patients on arrival

Quality Indicators

- Unplanned re-attendance rate
- Total time spent in emergency department
- Left without being seen
- Time to initial assessment
- Time to treatment
- Service Experience

Conclusion

- An Emergency department of a hospital can save many patients from death and suffering.
- It needs adequate infrastructure.
- Senior level staffing is most important for a complex environment like the emergency department.
- It is an evolving area of healthcare and needs continual evaluation and research.