EMERGENCY UNIT ASSESSMENT TOOL: *FULL*

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Introduction

Emergency care is a critical component of universal health care and, especially in areas where barriers to access exist, serves as an important point of contact with the healthcare system. Evidence has shown that with sound planning and organization, emergency care has the potential to impact conditions causing over half of deaths and a third of disability incurred annually in low-and middle-income countries. Efforts to improve emergency care have gained increasing attention following the passage of the World Health Assembly Resolution 72.16 which encourages all member states to "...strengthen the provision of emergency care as part of universal health coverage so as to ensure the timely and effective delivery of life-saving health care services to those in need…"

Implementing meaningful and sustainable improvements to an emergency care system begins with a strategic assessment of all aspects of the system to identify current gaps and areas for improvement. The WHO has designed several tools to assist with this process. One of these tools is the Hospital Emergency unit Assessment Tool (HEAT), which is designed to assess emergency care capacity at an individual healthcare facility. The HEAT tool was designed based upon a broad review of other relevant tools including the WHO *Emergency Care System Framework*, the WHO *Guidelines for Essential Trauma Care*, the WHO *Tool for Situational Analysis to Assess Emergency and Essential Surgical Care* and the African Federation for Emergency Medicine *Emergency Care Assessment Tool*.

The goal of the HEAT assessment is to establish current emergency care provision within the facility, identify key gaps and areas for improvement, and create an individualized improvement plan. The results of this assessment can be used by hospital administrators and health system planners to develop targeted interventions at individual facilities and, if multiple facilities are sampled, can also identify gaps across the healthcare system more broadly.

Emergency Unit Assessment

1. Facility Characteristics

1.1 Identifying Information

1.1.1	**Date**	
1.1.2	**Country**	
1.1.3	**Name of facility**	
1.1.4	**Address of facility** (include city, state or province)	
1.1.5	**GPS Reading** (if available)	Degrees Minutes Seconds Latitude: Longitude:
1.1.6	**Name** person filing out form	
1.1.7	**Facility Contact(s)**	**1. Name:** **Phone:** **Email:** **2. Name:** **Phone:** **Email:**
1.1.8	**Level of facility***	□ Health centre or clinic(1) □ 1st level hospital(2) □ 2nd level hospital(3) □ Tertiary hospital(4)
1.1.9	**Type of facility**	□ Private hospital(1) □ NGO hospital(2) □ Government hospital(3)
1.1.10	Distance (in km) to nearest higher level facility (if current facility is the highest level facility available, enter 0):	
1.1.11	Is there an area (room, unit, department) specifically designated for emergency care? **Yes(1)** **No (2)**	
1.1.12	Population served by facility (e.g., 123,000):	

1.2 Facility Metrics

Descriptor		Number
1.2.1	Emergency unit visits per year – total *Do NOT include patients who were sent to other areas of the hospital (such as the OPD) for evaluation and management*	
1.2.2	Emergency unit visits per year – children aged ≤ 5 years *Do NOT include patients who were sent to other areas of the hospital (such as the OPD) for evaluation and management*	
1.2.3	Outpatient visits per year *Do NOT include patients who were seen and evaluated in the EU.*	
1.2.4	Inpatient admissions per year	
1.2.5	Beds/gurneys dedicated for general emergency care (not including inpatient beds)	
1.2.6	Beds/gurneys dedicated to resuscitation of the sickest patients *Only include beds that area available in the EU, can include Resuscitation area / room / unit*	
1.2.7	Inpatient hospital beds	
1.2.8	Functioning operating theatres (24/7)	
1.2.9	Functioning high acuity unit (e.g. ICU) beds with capacity for continuous monitoring and mechanical ventilation	
1.2.10	Emergency operations per year	

Available hours		
1.2.11	During which hours is the emergency unit covered by providers who are physically present in the unit?	
1.2.12	During which hours is the emergency unit covered by providers who are on call, inside the facility?	
1.2.13	During which hours is the emergency unit covered by providers who are on call outside the facility?	
	Opening hours of:	
1.2.14	Emergency Unit	
1.2.15	Laboratory	
1.2.16	Pharmacy	
1.2.17	Radiology	
1.2.18	Operating Theatre	
1.2.19	**Comments:**	

1.3 Infrastructure and essential equipment

Rating: 0 – Never available; 1 - Generally unavailable; 2 - Somewhat available (available to **ONLY SOME** of those who need it); 3 - Adequate (**PRESENT and AVAILABLE** to almost everyone in need and used when needed).

Infrastructure Element		**Rating** (0-3)	**Comments** (if rating <3)
1.3.1	Clean, running water (water at tap/faucet points in the EU that is safe to use for hand washing)		
1.3.2	Electricity source (e.g., wired, generator)		
1.3.3	Designated telephone or radio for communicating with other facilities and/or prehospital providers		
1.3.4	Paper-based emergency unit chart		
1.3.5	Electronic emergency unit chart		
1.3.6	Isolation room for infectious diseases (e.g., TB, haemorrhagic fever)		
1.3.7	Easy physical access to emergency unit for those requiring a wheelchair or stretcher		
1.3.8	Designated waiting area		
1.3.9	Designated triage area		
1.3.10	Designated resuscitation area		
1.3.11	Personal protective equipment (e.g., hair covers, eye protection, N95 face masks, impermeable gowns, shoe covers, gloves) in a range of sizes		
1.3.12	Electronic cardiac monitoring in emergency unit		
1.3.13	Electrocardiograph available in emergency unit		
1.3.14	Crash trolley or code cart with high-acuity equipment and supplies of various sizes in emergency unit		
1.3.15	Rapid access to a transport ambulance and provider to administer care during transport for patients who need to be transferred to another facility		
1.3.16	Is there access to storage space within (or with immediate proximity to) the emergency unit, including secure storage for controlled substances?		
1.3.17	Access to dedicated staff work area (e.g. for paperwork, consultation calls)		
1.3.18	Access to toilet facilities for patients and staff		
1.3.19	Access to handwashing facilities in each patient care area		
1.3.20	System for stocking, managing, and dispensing medications in emergency unit		
1.3.21	Oxygen in emergency unit		

Which of the following methods supply oxygen in this unit?		Yes	No
1.3.22	Oxygen is supplied through a central piped system		
1.3.23	Oxygen is supplied in tanks that are stored on this unit		
1.3.24	Oxygen is supplied by oxygen concentrator stored on this unit		
1.3.25	Emergency unit calls for tank of oxygen from central location if needed		
1.3.26	Emergency unit calls for oxygen concentrator from central location if needed		
1.3.27	**Comments:**		

1.4 Diagnostic Services

Rating: 0 – Absent, 1 – Available less than half of the time, 2 - Available more than half of the time but not all the time, 3 – Available almost all the time

In order for a diagnostic service to be 'adequate' it must be available at all hours (e.g., including nights and weekends). In addition, the results should be available in a reasonable time frame to still allow for care decisions to be made in the EU. Laboratory or imaging studies whose results will not be available until the next day should not be rated as adequate. [For data entry: code any marked barriers as 1, unmarked barriers as 2]

Descriptor		***Rating (0-3)***	*Infrastructure*	*Absent Equipment*	*Broken Equipment*	*Stock out (Supplies)*	*Training*	*Personnel*	*User fees*	*Opening hours*	*Other (specify in comments)*
Laboratory-based Testing											
1.4.1	Haemoglobin										
1.4.2	Full blood count										
1.4.3	Coagulation profile (PT/PTT)										
1.4.4	Electrolytes										
1.4.5	BUN and creatinine										
1.4.6	Lipase										
1.4.7	Cardiac marker (e.g., troponin)										
1.4.8	Arterial blood gas										
1.4.9	Cross matching for blood and blood products										
1.4.10	Blood cultures										
1.4.11	Capacity to obtain sterile blood samples for lab testing										

1.4.12	System for reporting urgent lab results in a timely fashion (where results are needed quickly in order to help inform rapid decisions on clinical care)										
1.4.13	System for reporting critical lab results in a timely fashion (where results exceed certain predefined values and pose a significant risk to the patient)										
Point of Care Testing – available in the emergency unit											
1.4.14	Urine dipstick										
1.4.15	Urine pregnancy										
1.4.16	Glucose										
1.4.17	Malaria Rapid Diagnostic Test (RDT)										
1.4.18	Rapid HIV testing										
Diagnostic imaging											
1.4.19	Stationary X-ray										
1.4.20	Portable X-ray for use in emergency unit										
1.4.21	Ultrasound in the hospital										
1.4.22	Ultrasound for use in emergency unit										
1.4.23	CT scan										
1.4.24	System for reporting radiology results in a timely fashion										
1.4.25	**Comments:**										

2. Human Resources

2.1 Emergency Care Clinical Providers

2.1.1	Do you have a core of fixed (non-rotating) providers permanently assigned to the emergency unit?	Yes (1)	No (2)

Descriptor		**Total Number**	**Number of licensed or certified**
Number of <u>non-rotating</u> providers assigned to emergency unit. Non-Rotating refers to a group of clinical providers (e.g. doctors or nurses) who only work in the EU. These providers are never reassigned to work on the wards or other areas of the hospital			
2.1.2	Nurses/nurse midwives		
2.1.3	Mid-level provider or advance practice nurses (e.g., clinical officers or nurse practitioners)		
2.1.4	Medical officers (doctors without specialist training)		

2.1.5	Emergency medicine specialists		
2.1.6	Other specialist doctor		
Number of <u>rotating</u> providers assigned to emergency unit. Refers to a group of providers that may work in multiple areas of the hospital.			
2.1.7	Nurses/nurse midwives		
2.1.8	Mid-level provider or advance practice nurses (e.g., clinical officers or nurse practitioners)		
2.1.9	Medical officers (e.g., doctors without specialist training)		
2.1.10	Emergency medicine specialists		
2.1.11	Other specialist doctor		
2.1.12	**Comments:**		

2.2 Consulting Services Available to the Emergency Unit

To be considered adequately available, a service must be available in a timely manner to evaluate and treat a patient with an emergency or critical illness relevant to that speciality, regardless of time of day or day of week.
Rating: 0 – Absent, 1 – Available less than half of the time, 2 - Available more than half of the time but not all the time, 3 – Available almost all the time. Comment if < 3.

Consulting Service		**Rating (0-3)**	**Comments**
2.2.1	General Surgery		
2.2.2	OB/GYN		
2.2.3	Orthopaedics		
2.2.4	Anaesthesia		
2.2.5	Paediatrics		
2.2.6	Psychiatry		
2.2.7	Other (Please list):		

2.3 Ancillary Services available to the emergency unit

To be considered adequately available, a service must be available in a timely manner to evaluate and treat a patient with an emergency or critical illness relevant to that speciality, regardless of time of day or day of week.
Rating: 0 – Absent, 1 – Available less than half of the time, 2 - Available more than half of the time but not all the time, 3 – Available almost all the time. Comment if < 3.

Ancillary Service		**Rating (0-3)**	**Comments**
2.3.1	Social work services		

2.3.2	Patient transport services (personnel with wheelchairs and/or gurneys)		
2.3.3	Security personnel assigned to emergency service area		

3. Clinical Services

3.1 Access

3.1.1	What proportion of patients with emergency conditions are brought to the facility by ambulance with formally trained prehospital care providers?	_____ %	Don't know
3.1.2	Are there regulations and/or protocols mandating that acutely ill or injured patients are clinically triaged prior to being required to register?	Yes(1)	No(2)
3.1.3	Does the facility require payment prior to provision of initial emergency care?	Yes(1)	No(2)
3.1.4	Is there an electronic system for registration?	Yes(1)	No(2)
3.1.5	**Comments:**		

3.2 Triage

		Yes	No
3.2.1	Are vital signs measured in triage area?	1	2
3.2.2	Does this facility use a formal triage system (includes a validated, acuity-based triage tool, such as the Interagency Integrated Triage Tool, used by trained personnel)? If no triage protocols, tick no and skip to 3.3	1	2
3.2.3	Are there time targets for each triage category (e.g., YELLOW – seen by provider within 2 hours)?	1	2
3.2.4	If there are time targets, is compliance tracked regularly?	1	2
3.2.5	Are there specific triage protocols for children <5 years of age?	1	2
3.2.6	Are there specific triage protocols for pregnant women?	1	2
3.2.7	**Comments:**		

3.3 Guidelines, protocols and checklists

Are the following written protocols available at this facility? [] No written protocols (if no written protocols in the unit, tick box above and go directly to section 3.4)		Yes	No
3.3.1	Protocol for systematic triage that ensures patients are seen in order of acuity	1	2
3.3.2	Syndromic surveillance guidelines with links to public health officials for case definition and reporting	1	2
3.3.3	Clear protocol for communication with hospital administration during times of overcrowding	1	2
3.3.4	Emergency unit specific emergency response protocol, including protocol for mass casualty incidents	1	2

Are the following clinical management protocols available at this facility?			
3.3.5	Protocol for initial approach to ABCDs (airway, breathing, circulation, basic neurologic function)	1	2
3.3.6	Trauma care checklist	1	2
3.3.7	Medical resuscitation checklist	1	2
3.3.8	Protocol for neonatal resuscitation	1	2
3.3.9	Protocol for volume resuscitation of children and adults	1	2
3.3.10	Protocol for adjusting interventions for malnourished patients	1	2
3.3.11	Protocol for post-exposure prevention of STI/HIV, emergency contraception, counselling	1	2
3.3.12	Protocol for management of labour and delivery in low risk women	1	2
Condition-specific management protocols for:			
3.3.13	Asthma exacerbation	1	2
3.3.14	Pneumonia	1	2
3.3.15	Maternal haemorrhage	1	2
3.3.16	Sepsis	1	2
3.3.17	Diabetic ketoacidosis	1	2
3.3.18	Other: _____	1	2
Are the following admission or discharge protocols available at this facility?			
3.3.19	Acuity-based internal transfer protocols to OT or ICU	1	2
3.3.20	Protocol for timely disposition from the emergency unit	1	2
3.3.21	Protocol for conveying information about discharge or disposition to the patient	1	2
3.3.22	Hand-over protocols when transferring patients from one care provider to another	1	2
Are the following outside transfer protocols available at this facility?			
3.3.23	Condition-specific transfer or referral protocols (e.g., criteria for transfer of burn patient to burn centre)	1	2
3.3.24	Communication with receiving facility prior to transfer of patients with emergency conditions	1	2

Are the following safety protocols available and utilized at this facility?		Yes	No
3.3.25	Infection prevention and control protocols	1	2
3.3.26	Protocol for post exposure prophylaxis for health care workers	1	2
3.3.27	Security protocols to protect staff, patients, and infrastructure from violence.	1	2
3.3.28	Protocol for managing hazardous exposures (including designated decontamination area)	1	2
3.3.29	Containment and disposal of sharps and biomedical waste	1	2

3.3.30	Plan to ensure emergency unit staff and patient safety if an incident occurs *within* the emergency unit (including space, transport, communications)	1	2
3.3.31	**Comments: If protocols are used please explain if they were internally developed or national or international guidelines. How were protocols vetted to be used in the EU.**		

3.4 Quality improvement in the emergency unit

Are the following conducted in the emergency unit?		Yes	No
3.4.1	Systematic process for collecting patient data that links condition, management and outcomes (e.g., trauma registry or can the EU determine how many of their asthma patients with an initial O2 saturation less than 92% were placed on supplemental oxygen?	1	2
3.4.2	Regular meetings convened to use clinical data for quality improvement (e.g., morbidity and mortality conferences, preventable death panels)	1	2
3.4.3	Tracking (e.g., clinical audit) to ensure that quality improvement actions (e.g., corrective action) are implemented after review meetings	1	2
3.4.4	Clinical document template (e.g., standardized clinical chart)	1	2
3.4.5	Has there been a visit to this emergency facility by a supervisor from outside the facility within the last 6 months?	1	2
3.4.6	Is there any documentation from the most recent external supervisory visit?	1	2
3.4.7	Does the document provide any feedback or comments on some aspect of emergency services?	1	2
3.4.8	**Comments:**		

4. Signal Function Performance

The key informants for this section should be personnel with direct involvement in clinical care delivery. In order for performance of a signal function to be rated as 'almost always' it must be able to be performed at all times, including nights and weekends. This includes not only necessary equipment and supplies, but also a provider in the EU trained in how to perform the intervention. Indicate the ability to perform each signal function on a scale of 0 to 3, defined as:

Rating: 0 – Absent, 1 – Available less than half of the time, 2 - Available more than half of the time but not all the time, 3 – Available almost all the time. (For rating <3, mark **all** relevant barriers) [For data entry: code any marked barriers as 1, unmarked barriers as 2]

	VITAL SIGNS, AIRWAY & BREATHING INTERVENTIONS	***Rating*** (0-3)	*Infrastructure*	*Absent Equipment*	*Broken Equipment*	*Stock out (Supplies)*	*Training*	*Personnel*	*User fees*	*Opening hours*	*Other (specify in comments)*
Vital Signs											
4.1.1	Are vital signs measured in the triage area?										
4.1.2	Are vital signs measured in the Emergency Unit?										
Airway Interventions											
4.2.1	Use of manual manoeuvres (e.g., jaw thrust, chin lift)										
4.2.2	Use of suction										
4.2.3	Placement of oro- or naso-pharyngeal airway device										
4.2.4	Placement of supraglottic device (e.g., LMA)										
4.2.5	Endotracheal intubation										
4.2.6	Creation of surgical airway										
Breathing Interventions											
4.3.1	Measurement of oxygen saturation at triage										
4.3.2	Measurement of oxygen saturation in emergency unit treatment area										
4.3.3	Administration of bronchodilator for reactive airway disease										
4.3.4	Administration of oxygen										
4.3.5	Bag-valve-mask ventilation										
4.3.6	Non-invasive positive pressure ventilation (BiPAP, CPAP)										
4.3.7	Invasive mechanical ventilation										
4.3.8	Needle decompression of tension pneumothorax										
4.3.9	Placement of chest tube										
4.3.10	**Comments:**										

CIRCULATION INTERVENTIONS		***Rating*** (0-3)	*Infrastructure*	*Absent Equipment*	*Broken Equipment*	*Stock out (Supplies)*	*Training*	*Personnel*	*User fees*	*Opening hours*	*Other (specify in comments)*
Volume Resuscitation											
4.4.1	Administration of oral rehydration										
4.4.2	Peripheral IV placement										
4.4.3	Intraosseous access										
4.4.4	Venous cutdown										
4.4.5	Central venous line placement										
4.4.6	IV fluid administration										
4.4.7	Adjustment of fluid resuscitation for malnutrition or severe anaemia										
4.4.8	Urinary catheter placement										
Control of Bleeding											
4.5.1	External control of haemorrhage										
4.5.2	Wound packing and/or suture placement to control bleeding										
4.5.3	Tourniquet placement										
4.5.4	Pelvic binding placement										
4.5.5	Safe transfusion (e.g., including screened blood, maintenance of sterility, monitoring)										
4.5.6	Point of care ultrasound (performance and interpretation)										
Cardiac Interventions											
4.6.1	Pericardiocentesis										
4.6.2	External defibrillation and/or cardioversion										
4.6.3	External cardiac pacing										
4.6.4	Adrenaline administration										
4.6.5	ECG with interpretation										
4.6.6	Aspirin administration for ischemia										
4.6.7	Thrombolytic administration for MI										
4.6.8	**Comments:**										

NEUROLOGIC INTERVENTIONS		***Rating*** (0-3)	*Infrastructure*	*Absent Equipment*	*Broken Equipment*	*Stock out (Supplies)*	*Training*	*Personnel*	*User fees*	*Opening hours*	*Other (specify in comments)*
Unconscious patient											
4.7.1	Point of care glucose testing										
4.7.2	Glucose administration for hypoglycaemia										
4.7.3	Lumbar puncture										
Seizure											
4.7.5	Protection from secondary injury										
4.7.6	Benzodiazepine administration										
4.7.7	IV magnesium administration (for eclampsia)										
Other											
4.7.8	Mental status examination										
4.7.9	Extreme temperature management (hyper- or hypothermia)										
4.7.10	Safe physical restraint										
4.7.11	Medication administration for agitation										
4.7.12	Procedural sedation										
4.7.13	Relevant antidote administration for toxic exposure (e.g., atropine, naloxone, anti-venin).										
	Comments:										

SEPSIS INTERVENTIONS		***Rating*** (0-3)	*Infrastructure*	*Absent Equipment*	*Broken Equipment*	*Stock out (Supplies)*	*Training*	*Personnel*	*User fees*	*Opening hours*	*Other (specify in comments)*
4.8.1	IV antibiotic administration										
4.8.2	IV vasopressor administration										
4.8.3	Diagnostic paracentesis										
4.8.4	Bedside minor surgical techniques for infectious source control (e.g., abscess drainage)										
	Comments:										

TRAUMA INTERVENTIONS		Rating (0-3)	Infrastructure	Absent Equipment	Broken Equipment	Stock out (Supplies)	Training	Personnel	User fees	Opening hours	Other (specify in comments)
4.9.1	Cervical spine immobilization										
4.9.2	Three-way dressing for sucking chest wound										
4.9.3	Fasciotomy or escharotomy for compartment syndrome										
4.9.4	Opiate analgesia administration										
4.9.5	Fracture immobilization										
4.9.6	Closed reduction of fracture or dislocation										
4.9.7	Antibiotic administration for open fracture										
4.9.8	Initial wound care										
4.9.9	Tetanus vaccination or IVIg as appropriate										
4.9.10	Rabies vaccination or IVIg as appropriate										
	Comments:										

OBSTETRIC INTERVENTIONS		Rating (0-3)	Infrastructure	Absent Equipment	Broken Equipment	Stockout (supplies)	Training	Personnel	User fees	Opening hours	Other (specify in comments)
4.10.1	Emergency vaginal delivery										
4.10.2	Uterotonic drug (e.g., oxytocin) administration										
4.10.3	Neonatal resuscitation										
	Comments:										

See also: WHO Essential Resources for Emergency Care: Equipment and Medications