

Total Score (3-9) ¹	Indicator	Definition	Measure Type ²	Data source	Guidance Notes
8.6	Blood glucose checked in patient with change in mental status	% of patients with documented change in mental status who have blood glucose (BG) checked Numerator: # of patients with documented change in mental status who have BG checked Denominator: # of patients with documented change in mental status	Process	Hospital register/chart	Change in mental status may include altered behaviour, psychotic behaviour, obtundation, unconsciousness
8.3	Antibiotics given for paediatric pneumonia	% of patients < 5 with pneumonia given antibiotics during EU length of stay Numerator: # of patients < 5 with pneumonia given antibiotics during EU length of stay Denominator: # of patients < 5 with pneumonia	Process	Hospital register/chart	Paediatric patients include those under 5 years of age.
8.3	Bronchodilator treatment given for asthma patients	% of patients with documentation of asthma who receive bronchodilator treatment Numerator: # of patients with documentation of asthma who receive bronchodilator treatment Denominator: # of patients with documentation of asthma	Process	Hospital register/chart	
8.3	Recording of initial complete vital signs	% of patient encounters with recording of initial completed vital signs (VS) Numerator: # of patient encounters with recording of initial completed VS Denominator: # of patient encounters	Process	Hospital register/chart	Complete VS include BP, RR, HR, Temp, SaO2 Patient encounters include charts, logbook or electronic entry.
8.3	Documentation of diagnosis	% of patient with documented diagnosis Numerator: # of patients with documented diagnosis Denominator: # of patients seen in EU	Process	Hospital register/chart	
8.2	Antibiotics given for adults with pneumonia	% of adult patients with pneumonia given antibiotics during EU length of stay Numerator: # of adult patients with pneumonia given antibiotics during EU length of stay Denominator: # of adult patients with pneumonia	Process	Hospital register/chart	
8.2	Mortality from trauma	% of patients with trauma-related chief complaint who die within 24 hours of EU presentation Numerator: # of deaths from trauma within 24 hours of EU presentation Denominator: # of patients with trauma-related chief complaints	Outcome	Hospital register/chart	
8.1	Adult patients with shock given	% of adult patients with SBP < 90 given intravenous fluids (IVF)	Process	Hospital register/chart	IVF includes isotonic crystalloid such as Normal Saline or Ringers Lactate

	IV fluids	Numerator: # of adult patients with SBP < 90 mmHg given IVF Denominator: # of adult patients with SBP < 90 mmHg			<i>SBP < 90 mmHg includes anytime during EU stay</i>
8.1	Action taken to control postpartum haemorrhage	% of patients with postpartum haemorrhage who receive medication to control bleeding Numerator: # of patients with postpartum haemorrhage who receive medication to control bleeding Denominator: # of patients with postpartum haemorrhage	Process	Hospital register/chart	<i>Appropriate medications include oxytocin, ertometrine, misoprostol</i>
8	Hypoglycaemic patients given glucose	% of patients with blood glucose < 70 mg/dL given glucose Numerator: # of patients with blood glucose < 70 mg/dL given glucose Denominator: # of patients with blood glucose < 70 mg/dL	Process	Hospital register/chart	<i>Administration of glucose includes oral and IV routes including food or sugary drink</i>
7.9	Recording of demographics and chief complaint	% of charts with recording of chief complaint and demographics Numerator: # of charts with recording of chief complaint and demographics Denominator: # of charts	Process	Hospital register/chart	<i>Demographics include name, age &/or DOB, gender, location of residence</i>
7.9	Pregnancy test checked in women of reproductive age	% of female patients of reproductive age with pregnancy test checked Numerator: # of female patients age 15–49 with pregnancy test checked Denominator: # female patients age 15-49	Process	Hospital register/chart	
7.8	Supplemental oxygen given for hypoxic patients	% of patients with SaO2 < 92% who had supplemental oxygen given Numerator: # of patients with SaO2 < 92% with documentation of supplemental O2 Denominator: # of patients with SaO2 < 92 %	Process	Hospital register/chart	
7.8	Long bone splinting for patients presenting with extremity fracture	% of patients with extremity fracture who are splinted Numerator: # of patients with extremity fracture who are splinted Denominator: # of patients with extremity fracture	Process	Hospital register/chart	
7.8	Parental magnesium given to patients with eclampsia/pre-eclampsia	% of patients with diagnosis of eclampsia or pre-eclampsia receiving magnesium Numerator: # of patients with diagnosis of eclampsia or pre-eclampsia receiving magnesium Denominator: # of patients with diagnosis of eclampsia or pre-eclampsia	Process	Hospital register/chart	
7.6	Action taken to control external haemorrhage	% of patients with active external bleeding who have physical manoeuvres applied to control haemorrhage Numerator: # of patients with active external bleeding who have physical manoeuvres applied to control haemorrhage documented	Process	Hospital register/chart	<i>Physical manoeuvres include direct pressure, pressure dressing, tourniquet placement, Bakri balloon placement, bedside surgical control or OT surgical control</i>

		Denominator: # of patients with active external bleeding			
7.6	Mortality from lower respiratory tract infection (adult)	% of adult patients with diagnosis of lower respiratory tract infection (LRTI) who die within 24 hours of EU presentation Numerator: # of adult patients who die from LRTI within 24 hours of EU presentation Denominator: # of adult patients who have a diagnosis of LRTI	Outcome	Hospital register/chart	<i>LRTI includes documented diagnoses of bacterial pneumonia, TB, viral pneumonia or pulmonary infection</i>
7.6	Mortality from lower respiratory tract infection (child)	% of patients < 5 with diagnosis of LRTI who die within 24 hours of EU presentation Numerator: # of patients <5 who die from LRTI within 24 hours of EU presentation Denominator: # of patients <5 who have a diagnosis of LRTI	Outcome	Hospital register/chart	<i>LRTI includes documented diagnoses of pneumonia, TB, viral pneumonia or infection</i> <i>Paediatric patients include those under 5 years of age.</i>
7.5	Availability of essential medications	% of essential medications available in the EU Numerator: # of essential emergency medication available within the EU at time of assessment Denominator: # essential emergency medications listed	Structure	Hospital survey	<i>Dependent on list of essential medications</i>
7.5	Blood transfusion given to patients meeting transfusion criteria	% of patients meeting local transfusion criteria who receive blood transfusion Numerator: # of patients meeting local transfusion criteria who receive blood transfusion Denominator: # of patients meeting local transfusion criteria	Process	Hospital register/chart	<i>If no local criteria exist, patient meets criteria if:</i> <ul style="list-style-type: none"> • Hgb < 7g/dL • Active bleeding and signs of clinical instability
7.4	Antibiotics given for patients with sepsis	% of patients with diagnosis of sepsis given antibiotics during EU length of stay Numerator: # patient with a diagnosis of sepsis given antibiotics during EU length of stay Denominator: # of patients with sepsis	Process	Hospital register/chart	<i>Inclusion if chart states "sepsis, severe sepsis or septic shock" OR FOR ADULTS if there are clinical indicators of systemic tissue hypo-perfusion as defined by quick Sequential[Sepsis-related] Organ Failure Assessment qSOFA >2³</i> <ul style="list-style-type: none"> • 1 point- altered mental status (GCS<15) • 1 point -RR ≥ 22 breaths/min • 1 point -SBP≤100 mmHg
7.4	Corticosteroid treatment given for asthma patients	% of patients with documentation of asthma who receive corticosteroid treatment Numerator: # of patients with documentation of asthma who receive corticosteroid treatment Denominator: # of patients with documentation of asthma	Process	Hospital register/chart	
7.3	Availability of essential emergency equipment	% of essential emergency equipment available in the EU Numerator: # of essential emergency equipment items available within the EU at time of assessment Denominator: # of essential emergency equipment items listed	Structure	Hospital survey	<i>Dependent on list of essential equipment</i>

7.3	Analgesia given to patients reporting pain	% of patients with documentation of pain who receive pain medications Numerator: # of patients with documentation of pain who receive pain medications Denominator: # of patients with documentation of pain	Process	Hospital register/chart	<i>Pain medications include the following: opiates, NSAIDs, acetaminophen, pethidine</i>
7.3	Documentation of disposition	% of patients with documented disposition Numerator: # of patients with documented disposition Denominator: # of patients	Process	Hospital register/chart	
7.2	Nurses with triage training	% of nursing staff who have received triage training Numerator: # of nursing staff who have received triage training Denominator: # of nursing staff in the EU	Structure	Hospital survey	
7.1	Nurse training in emergency care	% of nurses receiving training in emergency care Numerator: # of nurses receiving training in emergency care Denominator: # of nurses in EU	Structure	Hospital survey	<i>Training in emergency care includes specialty certification or courses > 1 weeks time</i>
7.1	Time to triage	Mean time to triage assessment Numerator: sum of time from EU registration to triage assessment for all patients with registration time and triage assessment time recorded Denominator: # patient with triage assessment time recorded Median time to triage assessment	Process	Hospital register/chart	<i>Triage level varies by system</i>
7	Mortality from asthma	% of patients with diagnosis of asthma who die within 24 hours of EU presentation Numerator: # of patients who die from asthma within 24 hours of EU presentation Denominator: # of patients who have a diagnosis of asthma exacerbation	Outcome	Hospital register/chart	
6.9	Primary survey performed for all trauma patients	% of patients with chief complaint of trauma with documented primary survey Numerator: # of patients with chief complaint of trauma with documented primary survey Denominator: # of patients with chief complaint of trauma	Process	Hospital register/chart	
6.9	Tetanus vaccination updated for susceptible adult patients	% of patients age > 18 with open wound and documentation of tetanus vaccination given (or patient's reported recent vaccination) Numerator: # of patients age > 18 with open wound and documentation of tetanus vaccination given (or patient's reported recent vaccination) Denominator: # of patients age > 18 with open wound	Process	Hospital register/chart	<i>Recent vaccination considered within the last 10 years</i>
6.8	Documentation of reason for transfer	% of patients with documented reason for transfer Numerator: # of patients with documented reason for transfer Denominator: # of patients being transferred	Process	Hospital register/chart	
6.8	Initial	% of patients receiving an initial assessment	Process	Hospital	<i>Patient should receive assessment</i>

	assessment for all patients	Numerator: # of patients receiving an initial assessment Denominator: # of patients arriving at EU		register/chart	<i>regardless of ability to pay.</i> <i>Initial assessment includes triage category and/or documentation of patient status.</i>
6.6	FAST exam performed for blunt abdominal trauma	% of patients with chief complaint of blunt abdominal trauma who have documented results of Focused Assessment with Sonography in Trauma (FAST) exam Numerator: # of patients with chief complaint of blunt abdominal trauma who have documented results of FAST exam Denominator: # of patients with chief complaint of blunt abdominal trauma	Process	Hospital register/chart	
6.6	Time to the operating theatre	Mean time to EU departure for the operating theatre (OT) Numerator: sum of time from EU arrival to EU departure with a documented arrival and departure time with a disposition of OT Denominator: # of patients with EU arrival and departure time recorded and a disposition of "OT" Median time to EU departure for the OT	Process	Hospital register/chart	<i>Include all patients with dispositions of OT, OR, emergent surgery</i>
6.5	Provider training in emergency care	% of providers receiving training in emergency care Numerator: # of providers receiving formal training in emergency care Denominator: # of providers	Structure	Hospital survey	<i>Training in emergency care includes specialty certification or courses > 2 weeks time</i>
6.4	Provider availability	Number provider-hour coverage in EU per 100 EU visits Numerator: sum hours worked by each provider for all providers in an EU over the last 7 days Denominator: # of patients in the last 7 days * 100	Structure	Hospital survey	<i>Separate providers cadres to include: Nurses Clinical Officers Physicians Registrar/resident</i>
6.3	Rate of triage	% of patients arriving to the EU receiving a triage score Numerator: # of patients arriving to the EU receiving a triage score Denominator: # of patients treated in the EU	Process	Hospital register/chart	<i>Triage level varies by system</i>
6.3	Left without being seen	% of patients registered in the EU who left without being seen by a provider Numerator: # of patients registered in the ED who left without being seen by a provider Denominator: # of patients registered in the EU	Outcome	Hospital register/chart	
6.2	Time to the ICU	Mean time to EU departure for the intensive care unit (ICU) Numerator: sum of time from EU arrival to EU departure with a documented arrival and departure time with a disposition of ICU	Process	Hospital register/chart	<i>For those facilities with ICU capacity only</i>

		<p>Denominator: # of patients with EU arrival and departure time recorded and a disposition of ICU</p> <p>Median time to EU departure for the ICU</p>			
5.9	Vital signs recorded every 15 min for highest acuity patients	<p>% of patients with highest triage priority who have VS recorded every 15 min in the first hour of presentation</p> <p>Numerator: # of patients with highest triage priority who have VS recorded every 15 min in the first hour of presentation</p> <p>Denominator: # of patients with highest triage priority</p>	Process	Hospital register/chart	
5.8	Maintenance logs for equipment	<p>% of essential equipment with up to date maintenance logs</p> <p>Numerator: # of essential equipment with up to date maintenance logs</p> <p>Denominator: # of essential equipment in the EU</p>	Structure	Hospital survey	<i>Dependent on list of essential equipment</i>
5.8	Time to consult received	<p>Mean time from consult requested to consult received</p> <p>Numerator: sum of time from consult request to consult received</p> <p>Denominator: # of patients with consult request and consult received time recorded</p> <p>Median time from consult requested to consult received</p>	Process	Hospital register/chart	
5.6	Time to EU departure for transferred patients	<p>Mean time to EU departure for transferred patients</p> <p>Numerator: sum of time from EU arrival to EU departure with a documented arrival and departure time with a disposition of "transfer"</p> <p>Denominator: # of patients with EU arrival and departure time recorded and a disposition of "transfer"</p> <p>Median time to EU departure for transferred patients</p>	Process	Hospital register/chart	
5.4	Staff retention – turnover	<p>% of permanent staff who leave the EU in a given year</p> <p>Numerator: # of permanent staff who leave the EU in a given year</p> <p>Denominator: # of permanent staff in the EU</p>	Structure	Hospital survey	<i>Staff members include NON ROTATING advance practice providers, physician and nurse providers.</i>
5.3	Triage level categorisation	<p>% of patients by triage category</p> <p>Numerator: # of patients with designated triage level</p> <p>Denominator: # of patients seen in EU</p>	Process	Hospital register/chart	<i>Triage level varies by system</i>
4.7	Staff retention - callouts	<p>% of callouts per week</p> <p>Numerator: sum of callouts per week</p> <p>Denominator: # staff members scheduled per week</p>	Structure	Hospital survey	<i>Staff members include NON ROTATING advance practice providers, physician and nurse providers.</i>
4.6	Time to disposition decision	<p>Mean time from arrival to EU disposition decision</p> <p>Numerator: sum of time from EU arrival to disposition decision documented</p> <p>Denominator: # of patients with disposition decision time</p>	Process	Hospital register/chart	

		recorded			
		Median time from arrival to EU disposition decision			
	Syndromic surveillance guidelines for targeted diseases	% of EU with syndromic surveillance guidelines for targeted diseases Numerator: # of EU with syndromic surveillance guidelines for targeted diseases Denominator: # of EUs within the region	Structure	Hospital survey	<i>Emergency Units include any location within a facility which is specifically dedicated to the care of acutely ill individuals.</i>
	Data reported to national Health Management Information System (HMIS)	% of EU reporting to national HMIS system Numerator: # of EUs reporting to national HMIS system Denominator: # of EUs within the region	Structure	Hospital survey	
	EU level disaster planning	% of EUs with plan for Mass Casualty Incidents Numerator: # of EUs with plan for Mass Casualty Incidents Denominator: # of EUs within the region	Structure	Hospital survey	
	Presence of triage protocols involving tiered classification	% of EUs with triage protocols Numerator: # of EUs with triage protocols Denominator: # of EUs within the region	Structure	Hospital survey	
	Dedicated registration in the EU	% of EUs with dedicated registration Numerator: # of EUs with dedicated registration Denominator: # of EUs within the region	Structure	Hospital survey	
	Dedicated triage in the EU	% of EUs with dedicated triage area Numerator: # of EUs with dedicated triage area Denominator: # of EUs within the region	Structure	Hospital survey	
	Adequate security in the EU	% of EUs with adequate security in the EU Numerator: # of EUs with adequate security in the EU Denominator: # of EUs within the region	Structure	Staff survey	
	Right to emergency care for all	Presence of a policy for comprehensive service delivery for all emergent patients regardless of ability to pay Presence of a policy for equitable access for different races/gender, vulnerable populations and minority groups	Structure	Ministry of Health, national law or hospital based policy	
	Dedicated EU leadership personnel	% of EUs with dedicated leadership personnel Numerator: # of EUs with dedicated leadership Denominator: # of EUs within the region	Structure	Hospital survey	<i>Leadership to include: Director of EU Director of nursing Head of quality improvement</i>
	Presence of clinical guidelines for emergency care	% of EUs with clinical guidelines for emergency care Numerator: # of EUs with clinical guidelines for emergency care Denominator: # of EUs within the region	Structure	Hospital survey	

	Presence of trauma protocol	% of EUs with trauma protocol Numerator: # of EUs with trauma protocol Denominator: # of EUs within the region	Structure	Hospital survey	
	Presence of sepsis protocol	% of EUs with sepsis protocol Numerator: # of EUs with sepsis protocol Denominator: # of EU within the region	Structure	Hospital survey	
	Presence of reactive airway disease protocol	% of EUs with reactive airway disease protocol Numerator: # of EUs with reactive airway disease protocol Denominator: # of EUs within the region	Structure	Hospital survey	
	Regular audits of EU diagnostics and/or treatment compliance	% of EUs with regular audits of EU diagnostics and/or treatment compliance as dictated by local priority Numerator: # of EUs with regular audits of EU diagnostics and/or treatment compliance as dictated by local priority Denominator: # of EUs within the region	Structure	Hospital survey	<i>Use of key diagnostics and/ or treatments of high risk/high volume conditions</i>
	Isolation area	% of EUs with isolation area Numerator: # of EUs with isolation area Denominator: # of EUs within the region	Structure	Hospital survey	
	Decontamination area	% of EUs with decontamination area Numerator: # of EUs with decontamination area Denominator: # of EUs within the region	Structure	Hospital survey	
	Areas for paediatric patients	% of EUs with area for paediatric patients Numerator: # of EUs with area for paediatric patients Denominator: # of EUs within the region	Structure	Hospital survey	
	Areas for psychiatric patients	% of EUs with area for psychiatric patients Numerator: # of EUs with area for psychiatric patients Denominator: # of EUs within the region	Structure	Hospital survey	
	Continuing education for emergency providers	% of EUs that offer CPD courses for emergency medicine topics Numerator: # of EU that offer CPD courses for emergency medicine topics Denominator: # of EUs within the region	Structure	Hospital survey	
	Laboratory access	% of EU that have laboratories open 24 hrs/day Numerator: # of EU that have laboratories open 24 hrs/day Denominator: # of EUs within the region	Structure	Hospital survey	<i>Laboratory open and staffed 24hrs/day, 7 days/week</i>
	Prioritisation of lab specimens	% of hospital labs that prioritise EU specimens Numerator: # of hospital labs that prioritise EU specimens Denominator: # hospital labs in hospitals with EUs	Structure	Hospital survey	
	Established transfer criteria	% of EUs with established transfer criteria Numerator: # of EUs with established transfer criteria Denominator: # of EUs within the region	Structure	Hospital survey	<i>Requires written documentation of transfer criteria.</i>
	Established timely disposition	% of EUs with established timely disposition criteria Numerator: # of EUs with established timely disposition criteria Denominator: # of EUs within the region	Structure	Hospital Survey	<i>Requires written documentation of transfer criteria.</i>

	criteria				
	Quality improvement system	% of EUs with quality improvement system in place Numerator: # of EUs with quality improvement system in place Denominator: # of EUs within the region	Structure	Hospital survey	<i>Quality improvement system monitors structure, process and outcome measures</i>
	Staff feedback system	% of EUs with staff feedback system in place Numerator: # of EUs with staff feedback system in place Denominator: # of EUs within the region	Structure	Hospital survey	
	Referral system	% of EUs with established referral networks Numerator: # of EUs with established referral networks Denominator: # of EUs within the region	Structure	Hospital survey	<i>Requires written documentation of referral network or formal referral system in place.</i>
	Patient handover – in hospital	% of EUs with established in-hospital handover protocol Numerator: # of EUs with established in hospital handover protocols Denominator: # of EUs within the region	Structure	Hospital survey	<i>Requires written documentation of in-hospital handover protocol.</i>
	Patient handover – inter-facility	% of EUs with established inter-facility handover protocol Numerator: # of EUs with established in inter-facility handover protocols Denominator: # of EUs within the region	Structure	Hospital survey	<i>Requires written documentation of inter-facility handover protocol.</i>

Shaded areas are deemed quality indicators measured at the facility as present or absent but collectively indicate the quality of the facility based emergency health system.

¹ Expert ranking was in 3 domains from 1-3 with a maximum score of 9. The 3 domains were indicator of the health system function, patient value, and feasibility.

² Donabedian A. Evaluating the quality of medical care. *Milbank Mem Fund Q.* 1996; 44:166-203.

³ SAILORS study group. Sepsis Assessment and Identification in Low Resource Settings: the SAILORS Study. Results to be presented at 2017 American Thoracic Society International Conference. *Personal communication with Dr. Alfred C. Papali.*