MOH STANDARDS FOR EMERGENCY AMBULANCE SERVICE (2017) [Updated 20 Jan 2021]

These Standards are for the reference of providers operating or intending to operate an Emergency Ambulance Service.

These Standards spell out the minimum requirements which a provider must comply with when operating an Emergency Ambulance Service.

These Standards and the *'MOH Standards for Medical Transport Service (2017)'* will supersede the *'Guidelines for Private Ambulance Service'* issued by the Ministry of Health (MOH) on 23 April 1998.

Contents:

EMERGENCY AMBULANCE STANDARDS

1. Definitions

1.1 "Emergency Ambulance" means a ground conveyance that is used or intended to be used for transport, by land, of any Emergency patient.

1.2 "Emergency Ambulance Service" or "EAS" means a service to transport, by land and using Emergency Ambulances, any individual suffering, or believed to be suffering, from an injury or condition of acute or sudden onset and of an emergency nature.

1.3 "Emergency Ambulance Service Provider" or "Emergency Ambulance-SP" means any entity that is approved by MOH to provide an Emergency Ambulance Service.

1.4 "Emergency patient" means an individual suffering, or believed to be suffering, from a medical emergency as defined in Appendix 1. Such patients include, but are not limited to, those being conveyed to emergency departments of hospitals, or facilities with appropriate medical, nursing and resuscitation support, for immediate attention of critically ill patients.

1.5 All references to "Ambulance Services" in legislation will refer to "Emergency Ambulance Services" in these Standards.

1.6 "Emergency Ambulance Service Crew" refers to persons meeting the requirements set out in paragraph 4.1 below.

1.7 "Clinical Director" means a medical practitioner holding the qualifications and performing the roles and responsibilities as set out in Appendix 2 of these Standards.

1.8 "Emergency Ambulance Driver" means a person meeting the requirements set out in paragraph 4.2 below.

1.9 "Emergency Medical Technician (EMT)" means a person meeting the requirements set out in paragraphs 4.3 to 4.5 below.

1.10 "Paramedic" means a person meeting the requirements set out in paragraphs 4.6 to 4.8 below.

1.11 "Ambulance Nurse" means a person meeting the requirements set out in paragraphs 4.9 to 4.11 below.

1.12 "Ambulance Doctor" means a person meeting the requirements set out in paragraphs 4.12 to 4.13 below.

2. Emergency Ambulance Service Provider (Emergency Ambulance-SP)

2.1 All entities that provide or intend to provide Emergency Ambulance Service must be approved as an Emergency Ambulance-SP by MOH.

2.2 The Emergency Ambulance-SP shall comply with the following:

Personnel

a. engage a qualified Clinical Director with roles and responsibilities as stipulated in Appendix 2, to supervise and advise on the patient care provided;

b. ensure the required training, competency and certification of all Emergency Ambulance Service Crew as stated in these Standards, including registration of personnel on professional nominal rolls as required by the Ministry of Health;

c. develop written ambulance care protocols for patients transported and a training programme to ensure the proficiency of all staff in carrying out these protocols, in accordance with such regulatory standards and guidelines as issued by the Ministry of Health;

Communications

d. set up a system compatible for communication with the Singapore Civil Defence Force (SCDF) or other designated medical dispatch system for ambulances;

Documentation

e. maintain a medical record system and an ambulance log system for purposes of quality assurance and audits;

Equipment and Medication

f. ensure that the Emergency Ambulance is duly equipped and carry the required supplies as detailed in paragraph 5 below;

Quality Assurance

g. develop a system for performance monitoring, reporting and evaluation of the Emergency Ambulance Service provided;

h. develop a framework to record, review and improve on all adverse events, such as events relating but not restricted to lapses in patient care and safety, or the safety and health of crew;

i. develop road and vehicular safety standards to ensure that

patients and the Emergency Ambulance Service Crew are protected from unnecessary risks as provided under any written law or as directed by the Land Transport Authority (LTA).

Infection Control

j. ensure that there are measures and protocols in place to ensure adequate infection control, including:

- handling patients with infectious diseases, including instructions on appropriate action to take in the event of an exposure to blood or body fluids/substances including needle-stick injuries and other incidents;

- training and use of Personal Protective Equipment (PPE) such as N95 mask, gloves, gown/apron, face shield/ goggles, disinfectants;

- decontamination of Emergency Ambulances after transport of patients with infectious diseases, or in event of contamination by body fluids, and protocols for storage, transportation and disposal of waste in accordance with any written law or such standards/ guidelines issued by the Director of Medical Services (DMS) from time to time; and

- immunisations for Emergency Ambulance Service Crew in accordance to requirements for healthcare workers under the Workplace Health and Safety Act and its regulations.

2.4 The Emergency Ambulance-SP shall be subject to a system of oversight as determined by MOH. This could include, but not limited to inspections or audits of the Emergency Ambulance-SP by MOH and/or its appointed agents for compliance with these Standards.

2.5 An Emergency Ambulance can ferry an Emergency patient only if all Standards prescribed herein are complied with.

2.6 All Emergency Ambulances may attend to and ferry non-emergency patients. The Emergency Ambulances shall not use the sirens and beacon lights during the ferrying of non-emergency patients.

3. Emergency Ambulance

3.1 Each Emergency Ambulance shall meet such vehicle specifications as may be prescribed by LTA, including any requirements for inspection and maintenance to ensure that the

Emergency Ambulance is fit for its purpose. All Emergency Ambulance-SPs shall also obtain and maintain all licences, permits, certifications and regulatory authorisations pertaining to the Emergency Ambulance without any restriction or qualification whatsoever so as to enable them to fulfil these Standards.

3.2 The minimum equipment in each Emergency Ambulance shall be maintained as listed in paragraph 5. All equipment shall be functional and effective at all times when the Emergency Ambulance is in operation.

3.3 Each Emergency Ambulance shall bear the letterings **"EMERGENCY AMBULANCE"** on the front, both sides and rear of the Emergency Ambulance.

3.4 The Emergency Ambulance may use the siren and beacon lights **only when transporting an Emergency patient.**

4. Emergency Ambulance Service Crew

4.1 Each Emergency Ambulance shall be staffed by **minimally** a 2-man (3-man crew recommended), in accordance with the following requirements:

A 2-man crew should comprise:

a. a crew leader who is qualified to perform the tasks stipulated in paragraph 4.8. This person must be either a Paramedic, Ambulance Nurse who fulfils the requirements stipulated in paragraph 4.10, or Ambulance Doctor; and

b. a crew member who shall drive the Emergency Ambulance, and be minimally qualified as an Emergency Ambulance Driver.

A 3-man crew should comprise:

a. a crew leader who is qualified to perform the tasks stipulated in paragraph 4.8. This person must be either a Paramedic, Ambulance Nurse who fulfils the requirements stipulated in paragraph 4.10, or Ambulance Doctor;

b. a crew member who shall drive the Emergency Ambulance, and be minimally qualified as an Emergency Ambulance Driver; and

c. another crew member who is minimally qualified to perform the tasks stipulated in paragraph 4.5. This person must be either an Emergency Medical Techincian, Paramedic, Ambulance Nurse who fulfils the requirements stipulated in paragraph 4.11 or Ambulance Doctor.

Emergency Ambulance Driver

4.2 The Emergency Ambulance Driver shall have the minimum qualifications and experience as follows:

a. possess a valid licence to drive the Emergency Ambulance;

b. possess a valid certificate issued by the Bukit Batok Driving Centre, Singapore Safety Driving Centre (SSDC), ComfortDelGro Driving Centre or Civil Defence Academy to prove that the driver has completed a course in defensive driving at one of these centres, and be familiar with the use of sirens and beacon lights during conveyance of patients;

c. possess valid certification for Cardio-Pulmonary Resuscitation (CPR) and Automated External Defibrillation (AED) usage issued by a centre accredited by the Singapore Resuscitation and First Aid Council (SRFAC), the National Resuscitation Council Singapore (NRC) or the National First Aid Council (NFAC) for the purpose; and

d. understand the usage of stretchers and be able to assist in the care of and evacuation of a patient or casualty.

Emergency Medical Technician (EMT)

4.3 The EMT shall have the minimum qualifications and experience as follows:

a. be certified through an EMT course, as approved by MOH (see Appendix 3).

b. hold valid certification in Basic Cardiac Life Support (BCLS) issued by a centre accredited by SRFAC, NRC or NFAC for the purpose; and

c. be certified in AED usage and first aid by a centre accredited by SRFAC or NFAC for the purpose.

4.4 The EMT shall undergo recertification of the above at least once every two years.

4.5 The EMT shall be able to perform the tasks as stipulated below:

a. be familiar with and be able to properly handle and operate all equipment on board the Emergency Ambulance and be familiar with the Emergency Ambulance-SP's medical protocols;

b. use various types of stretchers and body immobilisation devices;

c. perform basic life support on infants, children and adults and be proficient in the use of bag valve mask;

d. independently initiate the use of an AED;

e. perform standard first aid and give oxygen supplement;

f. measure and monitor the patient's vital signs, i.e. pulse rate, blood pressure, temperature and respiratory rate and give oxygen saturation;

g. monitor intravenous peripheral lines and flow of drip of stable patients;

h. transfer and maintain patients with nasogastric tubes, tracheostomy tubes, and/or urinary catheters;

i. perform basic emergency procedures such as control of external bleeding and application of dressings, bandages, slings and splints;

j. establish contact with the receiving hospital if the need arises;

k. appropriately use PPE and apply standard precautions to prevent the transmission of infectious agents during patient care;

l. assist the crew leader in the conduct of the various procedures for the care of the patient who is being managed.

Paramedic

4.6 The Paramedic shall have the minimum qualifications and experience as follows:

a. be qualified under a Paramedic course approved by MOH (see Appendix 3);

b. hold valid certification in Basic Cardiac Life Support (BCLS) issued by a centre accredited by SRFAC, NRC or NFAC for the purpose; and

c. be certified in CPR and AED usage by a centre accredited by SRFAC, NRC or NFAC for the purpose.

4.7 The Paramedic shall undergo recertification of the above at least once every two years.

4.8 The Paramedic shall be able to perform the tasks as stipulated below:

a. assess and independently manage trauma and non-trauma emergencies in patients of all age groups in accordance with the Emergency Ambulance-SP's medical protocols;

b. organise and prioritise treatment and evacuation in multiple casualty incidents;

c. use various types of stretchers and body immobilisation devices provided by the Emergency Ambulance Service;

d. carry out emergency basic procedures to control external haemorrhage, apply dressings, bandages, slings and splints;

e. provide immediate care to casualties during the process of extrication and disentanglement from entrapments;

f. assess and maintain the patient's airway, including the use of adjuncts such as the oropharyngeal airway or Laryngeal Mask Airway (LMA);

g. perform basic life support on infants, children and adults;

h. perform a 12-lead electrocardiogram, monitor the patient's electrical rhythm and transmit the 12-lead electrocardiogram to the receiving hospital, if appropriate and required;

i. independently initiate the use of an AED;

j. obtain intravenous access, administer designated intravenous medications and perform intravenous infusions as per ambulance care protocols;

k. obtain capillary blood glucose sample and institute treatment for hypoglycaemia;

l. assess and manage an emergency childbirth;

m. administer basic emergency medications including nebulisation;

n. identify abnormal chest sounds through auscultation;

o. appropriately use PPE and apply standard precautions to prevent the transmission of infectious agents during patient care; and

p. manage patients with nasogastric tubes, intravenous plugs or urinary catheters or other tubes and cannula.

Ambulance Nurse

4.9 The Ambulance Nurse shall hold a valid practising certificate, and be assessed by the Clinical Director to be able to perform the tasks stipulated in paragraph 4.8.

4.10 The Ambulance Nurse who is serving in the crew leader role shall be registered with the Singapore Nursing Board as a registered nurse and hold valid certifications issued by a centre accredited by SRFAC or NRC for the purpose in (a) Life Support Course for Nurses (LSCN) or (b) Advanced Cardiac Life Support (ACLS).

4.11 The Ambulance Nurse who is serving in the crew member role shall be registered or enrolled with the Singapore Nursing Board and hold valid certifications in BCLS issued by centres accredited by the SRFAC, NRC or NFAC for the purpose.

Ambulance Doctor

4.12 The Ambulance Doctor shall be registered with Singapore Medical Council as a fully registered medical practitioner, hold a valid practising certificate, and assessed by the Clinical Director to be able to perform the tasks stipulated in paragraph 4.8.

4.13 The Ambulance Doctor shall hold valid certification in BCLS and ACLS issued by centres accredited by SRFAC or NRC for the purpose.

5. Emergency Ambulance and Medical Equipment

5.1 Each Emergency Ambulance shall be fitted and equipped with the following, and ensure they are in good working condition and properly maintained:

a. siren and wail sound horn or two tone-horn;

b. red beacon light;

c. VHF radio network communication or mobile phone or other ambulance to hospital communication equipment;

d. fire extinguisher;

e. current Singapore street directory or electronic equivalent;

f. global positioning system (GPS) /automatic vehicle location/ other navigation system;

g. passenger seat and safety belts;

h. attendant seat and safety belts;

i. frosted or tinted windows in patient compartment to ensure patient privacy;

j. clear side windows in driver's cabin;

k. medical equipment as specified in Appendix 4, which should be regularly checked, re-stocked and be in good working condition when the Emergency Ambulance is despatched; and

l. any other equipment specified by MOH or any other authority.

5.2 All Emergency Ambulance-SPs shall obtain and maintain all licences, permits, certifications and regulatory authorisations pertaining to the above equipment (including medical equipment) without any restriction or qualification whatsoever so as to enable them to fulfil these Standards.

Appendix 1

DEFINITION OF MEDICAL EMERGENCY

A “medical emergency” for the purposes of these Standards is an injury or a condition of acute or sudden onset that poses an immediate threat to a person's life or long term health. These include bleeding, severe or increasing pain or a change in the vital signs of life, such as the level of consciousness or signs of difficulty in breathing. A chronic condition or a condition for which a patient is currently receiving treatment may suddenly deteriorate into a medical emergency. A medical emergency does not include conditions that do not require immediate treatment and for which there is no imminent threat to the patient’s life or limb, pre-existing illnesses or injuries that are stable, and pre-existing conditions that give rise to problems of ambulation and mobility.

Common Medical Emergencies (Non-exhaustive)

Acute altered mental states and/or loss of consciousness
Acute chest pain, heart attack or other acute coronary syndromes
Acute, non-traumatic surgical emergencies
All limb threatening conditions
Bee and insect sting, snake or animal bite
Burn (thermal or chemical) or scald
Cardiac Arrest
Choking, shortness of breath or other breathing difficulties
Fracture of bones or dislocation of joints
Haemorrhagic or ischaemic stroke or other acute neurological disorders
Head injury
Internal bleeding, including haematuria, haematemesis or melena
Laceration, stabbing or other penetrating injury
Large or open wound
Multiple injuries
Near-drowning, poisoning or suicide
Patients requiring ventilation or on life support
Poisoning
Seizures
Sepsis
Severe allergic reaction (anaphylaxis)
Severe pain or increasing pain
Sudden onset weakness or paralysis
Trauma

NB The above descriptions serve only as a guide. Wherever possible, and in situations of doubt, appropriate medical advice should be sought from a registered medical practitioner.

Appendix 2

ROLES AND RESPONSIBILITIES OF CLINICAL DIRECTOR FOR EMERGENCY AMBULANCES

Introduction

Emergency Ambulance Services (EAS) play a crucial role in the response, assessment, management and transport of Emergency patients. The Emergency Ambulances are expected to maintain high standards in providing comprehensive emergency care. The Clinical Director needs to ensure these standards are maintained at all times. Their job scope would involve (but not restricted to) audit, training and protocol development for any Emergency Ambulance-SP. Agencies may refer to this document as a guide when engaging a Clinical Director to ensure that the potential candidate is qualified.

Qualifications

The Clinical Director should be:

a. a medical practitioner registered as a specialist in Emergency Medicine in the Singapore Medical Council (SMC) Register of Specialists with a valid practising certificate and in good standing with the SMC; or

b. a medical practitioner registered as a specialist in other disciplines* (which includes but not restricted to General Surgery, Anaesthesia, Intensive Care) in the SMC Register of Specialists with a valid practising certificate and in good standing with the SMC; or

c. a medical practitioner registered in the SMC Register of Medical Practitioners with at least 10 years of relevant experience in Emergency Medicine, or significant experience in related disciplines* (which includes but not restricted to General Surgery, Anaesthesia and Intensive Care) with a valid practising certificate and in good standing with the SMC.

* Subject to approval by MOH/MOH-appointed authorities

The Clinical Director must:

a. have attended and received certification from a MOH-endorsed Emergency Medical Services (EMS) Medical Directors workshop (described below); and

b. hold a valid certification in ACLS issued by a centre accredited by SRFAC or NRC for the purpose.

Other qualities preferred for an EAS Clinical Director which may be developed through training and experience include:

a. familiarity with local emergency medical services operations, such as, but not restricted to, handover processes to hospitals, and prevailing regulations governing emergency ambulances;
b. good understanding of the design and operation of an Emergency Ambulance Service;
c. familiarity with skillsets of Pre-Hospital and Emergency Care (PEC) personnel stipulated in paragraphs 4.5 and 4.8 of the Standards;
d. familiarity with Emergency Ambulance-SP's modes of communication with SCDF;
e. good understanding of medical dispatch and processes; and
f. knowledge of national mass casualty and disaster plans.

EMS Medical Director Workshop

The purpose of the workshop is to provide comprehensive information and sets the expected standard of potential and current Clinical Directors. This is a structured curriculum aimed at providing a level of understanding of the daily operations in managing a pre-hospital service, as well as raise awareness of roles in various situations such as mass disaster, Hazmat etc. This course is compulsory for all Clinical Directors of both EAS and Medical Transport Services (MTS).

Roles and Responsibilities of the EAS Clinical Director

Medical Oversight

1. The Clinical Director must develop, establish, implement and endorse clinical protocols adopted by the Emergency Ambulance-SP.

2. The Clinical Director should ensure that comprehensive clinical protocols are present for common and critical situations that may be encountered by Emergency Ambulance-SPs. Protocols should cover, but are not limited to, the following conditions:
   a. Chest pain/Acute myocardial infarction
   b. Acute pulmonary oedema
   c. Acute asthma/chronic obstructive pulmonary disease exacerbation
   d. Seizures
   e. Severe Trauma
   f. Cardiac arrest
   g. Stroke

3. Should the knowledge of the Clinical Director be limited in any specific area, it is the onus of the Clinical Director to inform the Emergency Ambulance-SP or seek assistance from UPEC or other specialists.

4. The Clinical Director shall conduct annual reviews of clinical protocols, and shall give the final endorsement. Protocols are subjected to review and inspection by MOH-appointed consultants.

5. The Clinical Director should also be involved in developing operational protocols pertaining to patient care, such as the handling and transport of patients. These include transport of critically ill patients or patients undergoing resuscitation.

6. The Clinical Director should be involved in developing strategies for mass disaster response and/or special circumstances e.g. Hazmat, infectious disease.

7. The Clinical Director should also apprise himself of and ensure adherence by the Emergency Ambulance-SP to prevailing measures related to provider health and safety, as well as infection control and safety from cross-contamination.

Clinical Quality Improvement

1. The Clinical Director should be involved in all audits of the Emergency Ambulance-SP conducted by MOH. He/she should be informed of all identified deficiencies and take subsequent measures to ensure these Standards are adhered to.

2. The Clinical Director must endorse all audit documents and reports.

3. It is the responsibility of the Clinical Director to follow up on any EAS deficiencies and ensure corrections are carried out within MOH's stipulated timeframe.

4. The Clinical Director must review all patient care-related adverse events.

5. The Clinical Director should also be informed of any other feedback pertaining to patient care, review such feedback and take such follow-up action as is necessary to rectify any problems identified.

Training and Education

1. The Clinical Director should ensure that the Emergency Ambulance Service Crew have relevant qualifications and training from MOH-recognised training institutions. This includes ensuring that all personnel maintain up-to-date and valid certifications in all relevant areas.

2. The Clinical Director should recommend relevant training courses for the Emergency Ambulance Service Crew at least once every six months, which may be in the form of lectures, simulation, practical sessions or

clinical discussion (journal review/mortality and morbidity). All training records should be documented.

3. The Clinical Director should ensure that the Emergency Ambulance Service Crew is kept up to date with latest clinical developments and protocols.

4. The Clinical Director should review the performance of the Emergency Ambulance Service Crew pertaining to delivery of patient care, safety of patient transfers, infection controls, documentation of patient records and overall level of competency, at least once every six months.

Other Responsibilities

1. The Clinical Director should provide clinical consultation and medical advice to the Emergency Ambulance-SP where necessary.

2. The Clinical Director can advise in scene management and control measures in event of field responses.

3. Upon request, the Clinical Director may be called upon to support mass casualty or disaster situations.

4. Upon request, the Clinical Director should attend meetings pertaining to prehospital care.

Appendix 3

LIST OF APPROVED EMT AND PARAMEDIC COURSES

Emergency Medical Technician

- WSQ Higher Certificate in Healthcare Support (Pre-Hospital Emergency Medical Services); or
- Certificate of Completion of Emergency Medical Technician Course [incorporating WSQ Higher Certificate in Healthcare (Nursing) and/or other relevant Technical Skills and Competencies as approved by SkillsFuture Singapore] issued by the following training institutions:
    - SingHealth Alice Lee Institute of Advanced Nursing;
    - SAF Medical Training Institute;
    - Civil Defence Academy;
    - HMI Institute of Health Sciences;
    - Co-operative of Singapore Civil Defence Force Employees; or
- Any other Emergency Medical Technician (Basic) qualification as approved by the Director of Medical Services from time to time.

Paramedic

- EMS Specialist Certification from SAF Medical Training Institute or Civil Defence Academy;
- Higher National Institute of Technical Education Certificate (NITEC) in Paramedic and Emergency Care;
- Justice Institute of British Columbia (JIBC) Paramedic Academy's 'Primary Care Paramedic';
- Diploma or Advanced Diploma in Paramedicine issued by a local institution; or
- Any other Paramedic qualification as approved by the Director of Medical Services from time to time.

Appendix 4

MEDICAL EQUIPMENT FOR EMERGENCY AMBULANCES

(Note: this list describes the MINIMUM STANDARDS required and is not intended to be a comprehensive list)

A. Airway and Ventilation Equipment

1. Portable or fixed suction apparatus with a regulator

    - Wide-bore tubing, rigid pharyngeal curved suction tip; tonsillar and flexible suction catheters (suction catheter size 10 F and 16 F, min 1 each)

2. Portable oxygen apparatus capable of metered flow with adequate tubing

3. Portable and fixed oxygen-supply equipment

    - Variable flow regulator

4. Oxygen-administration equipment

    - Adequate-length tubing; oxygen face mask (adult and child sizes), non-rebreathing mask (adult and child sizes), nebuliser mask (adult and child sizes); nasal cannulas, (min 1 each)

5. Bag-valve mask (manual resuscitator)

    - Hand-operated, self-re-expanding bag; adult (>1000 mL) and child (450–750 mL) sizes, with oxygen reservoir/accumulator; valve (clear, disposable); and mask (adult, child, infant, and neonate sizes)

6. Airways

    - Oropharyngeal (sizes 40 mm, 50 mm, 60 mm, 70 mm, 80 mm, 90 mm, 100 mm; adult, child, infant and neonate sizes, min 1 each)

7. 10-mL non-Luer lock (Luer slip) syringe; for LMA use (min 2)

8. Alternative airway devices (e.g. a rescue airway device such as the oesophageal-tracheal double-lumen airway [OTDLA], laryngeal tube, or laryngeal mask airway [LMA Sizes 2,3,4 and 5, min 1 each], for adult and children)

9. Lubricating jelly for LMA (water soluble)

B. Intravenous Equipment

1. Crystalloid solutions, such as Ringer's lactate or normal saline solution (min 4)

2. Alcohol swabs (min 6 pieces)
3. Intravenous-fluid pole or roof hook
4. Intravenous catheters (18G, 20G and 22G, min 2 each)
5. Venous tourniquet (min 1)
6. Syringes (3 ml, 5 ml and 10 ml, min 2 each)
7. Needles (1 at least 1½ inch for intramuscular injections, 21G and 23G, min 2 each)
8. Intravenous administration sets (min 2)
9. Transparent I.V. dressing (min 4)
10. Plasters (min 5)
11. Latex Glove, Non Sterile M (min 2 pairs)
12. Standard sharps containers, portable

C. Cardiac

1. Portable, battery-operated defibrillator, which should have paediatric capabilities, including child-sized pads and cables
2. Portable, battery-operated monitoring system capable of continuous cardiac rhythm, blood pressure and oxygen saturation monitoring
    - With printer/recorder, quick-look paddles or electrode, or hands-free pads, ECG 3 leads, adult and paediatric chest attachment electrodes

D. Immobilisation Devices

1. Cervical collars
    - Adult sizes (small, medium, large, and other available sizes or adjustable collar, min 1 each)
2. Head immobilisation device (not sandbags)
    - Firm padding or commercial device (adult size)
3. Upper and lower extremity immobilisation devices
    - Joint-above and joint-below fracture (sizes appropriate for adults), rigid support constructed with appropriate material (cardboard, metal, pneumatic, vacuum, wood, or plastic) at least 4
4. Pelvic immobiliser (adult size)

5. Impervious backboards (long, radiolucent preferred) and extrication device

    - Extrication device (head-to-pelvis length) and long (transport, head-to-feet length) with at least 3 appropriate restraint straps (adult size)

    - Scoop backboard with 3 appropriate restraints straps

E. Trauma Supplies/Equipment

1. Burn gels or equivalent (min 1)

2. Triangular bandages (min 5)

3. Elastic or crepe or gauze roll bandages (size 2.5 cm, 5 cm, 7.5 cm, 10 cm, 15 cm or nearest equivalent, min 2 each)

4. Sterile gauze pads (size 7.5 x 7.5 cm, 9 x 20 cm, 10 x 10 cm, 20 x 20 cm or nearest equivalent, min 2 each)

5. Adhesive tape, hypoallergenic (½" and 1", min 2 each)

6. Arterial tourniquet (windlass)

7. Plasters (min 10)

8. Pen torch/pen light

F. Miscellaneous

1. Manual sphygmomanometer

2. Adult stethoscope

3. Length/weight-based tape or appropriate reference material for paediatric equipment sizing and drug dosing based on estimated or known weight (Broselow Tape)

4. Ear thermometer or digital thermometer (ear probe covers, min 5 or thermometer probe covers, min 5)

5. Paramedic scissors for cutting clothing, belts, and boots

6. Cold packs (min 1)

7. Sterile saline solution for irrigation (500 ml, min 1)

8. Flashlights (min 2)

9. Blankets, trolley sheets or linens and pillows (min 2 each)
10. Incontinence sheets (min 2)
11. Triage tags (min 20)
12. Disposable emesis bags or basins (min 5)
13. Wheeled cot
14. Folding stretcher with restrainers
15. Patient care charts/forms (min 5)
16. Glucometer or blood glucose measuring device (with reagent strips)
17. Canvas litter (min 2)

G. Infection Control Equipment

1. Eye protection (e.g. full peripheral glasses or goggles, face shield, min 4/number of crew)
2. Face protection (e.g. surgical masks, min 4/number of crew)
3. Gloves, non-sterile, size M (min 4 pairs/number of crew)
4. Coveralls or gowns (min 4/number of crew)
5. Hair covers (min 4/number of crew)
6. Shoe covers (min 4 pairs/number of crew)
7. Hand sanitizer (min 1)
8. Disinfectant solution for cleaning equipment (min 1)
9. Disposable trash bags for disposing of bio hazardous waste (min 4)
10. Respiratory protection (e.g. N95, or N100 respirator, min 4/number of crew)

H. Injury-Prevention Equipment

1. Traffic-signalling devices (reflective material triangles or other reflective, non-igniting devices)
2. Reflective safety wear for each crew member

I. Medications (Pre-loaded Syringes When Available)
Medications should minimally include two doses of the following, and should be properly stored and not expired:

1. Nitroglycerin
2. Aspirin (300mg/dose)
3. Salbutamol
4. Dextrose 10% solution
5. Adrenaline
6. Analgesics; e.g. Entonox or Penthrox
7. Anti-seizure medication, e.g. Rectal diazepam

OPTIONAL EQUIPMENT

This is intended to assist Emergency Ambulance-SPs in choosing equipment that can be used to ensure delivery of quality pre-hospital care. Use should be based on certified capability of providers.

1. Large-bore needle (should be at least 3.25 in long for needle chest decompression in large adults)
2. Neonatal blood pressure cuff
3. Infant cervical immobilisation device
4. Topical haemostatic agent
5. Appropriate chemical, biological, radiologic, nuclear, explosive personal protective equipment (CBRNE PPE), including respiratory and body protection
6. Applicable chemical antidote autoinjectors (at a minimum for crew members' protection; additional for victim treatment based on local protocol; appropriate for adults and children)
7. Respirator
8. Volume-cycled, on/off operation, 100% oxygen, 40–50 psi pressure (child/infant capabilities)
9. Blood-sample tubes, adult and paediatric
10. Nasogastric tubes, paediatric feeding tube sizes 5F and 8F, sump tube sizes 8F–16F
11. Paediatric laryngoscope handle

12. Size 1 curved laryngoscope blade

13. 3.5- to 5.5-mm cuffed endotracheal tubes

14. Needle cricothyrotomy capability and/or cricothyrotomy capability (surgical cricothyrotomy can be performed in older children in whom the cricothyroid membrane is easily palpable, usually by the age of 12 years)

15. Laryngoscope handle with extra batteries and bulbs

16. Laryngoscope blades, sizes 0–4, straight; sizes 2–4, curved

17. Endotracheal tubes, sizes 2.5–5.5 mm uncuffed and 6–8 mm cuffed (2 each), other sizes optional

18. Meconium aspirator adaptor

19. Stylettes for endotracheal tubes, adult and paediatric

20. Magill forceps, adult and paediatric

21. End-tidal CO2–detection capability

22. Colourimetric (adult and paediatric) or quantitative capnometry

23. Transcutaneous cardiac pacemaker, including paediatric pads and cables, either stand-alone unit or integrated into monitor/defibrillator

24. Protective helmet

25. Intra-osseous needles or alternative vascular access devices appropriate for children and adults

26. Mechanical CPR device

27. Stair chair or carry chair

28. Saline drops for infants

29. Short backboard

30. Cervical collars – rigid for children aged 2 years or older (child sizes)

31. Head immobilisation device (not sandbags)

    - Firm padding or commercial device (child sizes)

32. Lower extremity (femur) traction devices

    - Lower extremity limb-support slings, padded ankle hitch, padded pelvic support, traction strap (adult and child sizes)

33. Upper and lower extremity immobilisation devices

- Joint-above and joint-below fracture (sizes appropriate for child), rigid support constructed with appropriate material (cardboard, metal, pneumatic, vacuum, wood, or plastic)

34. Impervious backboards (long, radiolucent preferred) and extrication device

    - Extrication device (head-to-pelvis length) and long (transport, head-to-feet length) with at least 3 appropriate restraint straps (chin strap alone should not be used for head immobilisation) and with padding for children and handholds for moving patients (child sizes)

35. Paediatric backboard and extremity splints

36. Obstetric Kit/Bag

    - Kit (separate sterile kit)

    - Towels, bulb suction, self-retaining cord clump, umbilical cord scissors, artery forceps, cotton ball, under pad (incontinence sheet), tray, gallipot, poly sheet, mucus extractor, sanitary pad, sterile gloves, syringe, needle

    - Neonatal blanket and head cover, aluminium-foil roll, or appropriate

37. Defibrillator with 12-leads ECG monitoring/transmission capability

38. Intravenous arm boards, adult and paediatric

OPTIONAL MEDICATIONS

1. Adrenaline autoinjector (adrenaline for anaphylaxis)
2. Oral glucose
3. Atropine, antiarrhythmic agents (e.g. adenosine and amiodarone), calcium-channel blockers, β blockers, vasopressor for infusion
4. Ipratropium bromide, 1:1000 epinephrine, furosemide
5. 50% dextrose solution (and sterile diluent or 25% dextrose solution for paediatrics)
6. Sodium bicarbonate, magnesium sulphate, glucagon, naloxone hydrochloride, calcium chloride
7. Sterile water for injection
8. Oxytocin/Ergometrine (Syntometrin)
9. Tramadol