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Medical support to demining operations in Sri Lanka

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Warning

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Introduction

The demining organisations in Sri Lanka are responsible to provide and to maintain a safe workplace for their employees. Safety and Occupational Health are achieved through the development of safe work practices and operating procedures, effective supervision, and control, appropriate education and training, equipment of inherently safe design, the provision of effective personal protective equipment and clothing and the correct prophylactics against disease.

Good management and supervision will reduce the likelihood of harm, but there will always be the potential for demining accidents to occur. Demining organisations and employees must therefore be properly trained and equipped to respond to demining accidents. Developing a capacity to provide an appropriate response to a demining accident requires good planning, well trained staff and the availability of medical services able to provide effective emergency treatment. Notwithstanding the legal and moral obligations placed on managers to provide the best medical support possible, in particular at the demining worksite, planning must acknowledge the reality of field operations.

The aim of this standard is to provide specifications and guidance for the provision of appropriate medical support to demining operations in the field.

Medical support to demining operations

1. Scope

This ENMAS provides specifications and guidelines for the development of medical support to demining operations.

Medical support to demining activities in Sri Lanka is very important due to some remote areas where demining is taking place as well as the time it takes during casualty evacuation due to the current condition of the roads and traffic congestion. It is important that medical care be provided to casualties as soon as possible after an accident to stabilise the patient and prepare him/her for the road transport to the next medical facility.

2. General Standards

No mine/UXO clearance operations shall commence without an acceptable level of medical support and a casualty/medical evacuation plan that everyone involved fully understands, and has practised.

Appropriate medical support and a workable casualty evacuation procedure is one of the principles of demining and will always be a compulsory requirement for demining.

If the medical cover stipulated in this SLNMAS is removed or unavailable, clearance shall cease immediately until it has been restored.

Teams shall formally exercise casualty evacuation at least once a month and upon changing worksites. These exercises shall be recorded in the clearance task log.

Every demining and EOD activity will make provision for adequate medical cover and casualty evacuation. Demining organisations shall state clearly what medical cover is provided at each demining worksite. The minimum requirement is:

- a. At each work site, the demining organisation shall have a medical orderly equipped as per Annex C that is able to conduct casualty collection and Advanced Life Support¹ (ALS) within 5 minutes from the casualty. Every medical orderly must have within 15 minutes access to an emergency vehicle (see Annex D) and driver, which, during activity hours is used for no other purpose. The vehicle shall be suitable to transport a casualty quickly and safely to the nearest appropriate medical facility or identified Helicopter Landing Site (HLS) or airstrip.
- b. For survey teams (non-technical and technical) a medical orderly must be at the same state of availability and the survey team must maintain appropriate communications, as for demining and EOD operations.
- c. The medical support coverage must be sufficient to stabilize large-scale shrapnel injuries, to dress traumatic amputation and multiple fragmentation wounds and administer saline drip within 15 minutes, and provide direct access to trauma surgery in a properly equipped hospital.
- d. Organisations are responsible for ensuring that a proper equipped surgery hospital with a qualified medical doctor is available within 60 minutes travelling time of any mine clearance team.

¹ *Advanced Life Support* (ALS) is provided by a Medical Technician with equipment and practical skills to effectively manage trauma, cardio-respiratory arrest, peri-arrest situations and other special circumstances and to treat the casualty(ies) until transfer to a critical care area is possible.

- e. All organisations are to clearly state in their SOP and implementation plans the intended means of evacuation of casualties. Where this changes from different site locations, this shall also be clearly shown.

If such medical cover is removed or unavailable, demining will cease immediately until it has been restored.

The method of casualty evacuation in the event of an accident must always be specified and understood by all. The primary method of evacuation is by road to the nearest hospital with a surgery capacity.

3. Preparations before Mine/ERW clearance commence

Before commencement of any mine/UXO clearance activity clearance organisations are responsible for the following:

- a. Medical health checks shall be conducted before recruitment of clearance personnel, and include both sight and hearing checks.
- b. A record of known blood groups, allergies and infections of all working personnel shall be available on the site. Any member having Haemophilia shall be clearly indicated in this record.
- c. An appointed person that shall be responsible for all preparations related to the medical support and evacuation plans.
- d. Ensure that all Medical staff members recruited by the organisation are qualified in accordance with SLNMAS 03 Training and Qualifications. The medical orderly shall be qualified and have the knowledge and experience of using the medical equipment according to the organisations SOP.
- e. Ensure that all personnel, who are deployed to the site, have passed at least a basic first aid course. Refresher course should be held at least on annual basis. Courses should be recorded and result submitted to NMAC. If necessary, arrange refresher courses for personnel in first aid.
- f. Locate, visit and establish the necessary contacts and agreements with the most appropriate medical facility in the vicinity. A list of appropriate medical facilities and their locations shall be maintained by demining organisations.
- g. Ensure a valid CASEVAC plan to a level two medical support facility in theatre and if required a MEDEVAC plan to a level three medical support facility in or out of theatre.
- h. Should further surgical treatment or rehabilitation at a level four medical facility be required, ensure relevant insurance coverage for all members.
- i. If helicopter support is available ensure that a HLS is identified and marked in close vicinity of the clearance site. HLS should be a minimum 300 metres from the known hazardous area. The HLS coordinates should be provided to the DMAO office.
- j. Ensure that effective communication lines are always functional and that every work site has communications with its own headquarters and with its medical support.
- k. All medical personnel shall have correct medical equipment and material to undertake their role in providing medical support to casualties and general health care. Equipment and material are to be replaced before the stated expiry date.
- l. There shall be a minimum of one medical trauma kit per work site. The medical trauma kit shall remain under the control of the work site medical orderly.

- m. All medics should have immediate access to a copy of the organisations emergency drug administration protocols when deployed in support of mine/UXO clearance operations. If the medical orderlies don't speak or read English, treatment protocols and emergency protocols should be made available in Tamil and Sinhalese.

4. Preparations for a casualty evacuation

To ensure effective casualty/medical evacuation in the event of an accident, the following preparations shall be conducted before clearance commences. The site Supervisor shall:

- a. Identify and nominate a road evacuation route from the clearance site to the nearest appropriate medical facility.
- b. Clear and mark a HLS in accordance with regulations if required.
- c. Ensure effective communication to headquarters **is maintained during operations.**
- d. Ensure that an appropriate and serviceable evacuation method is available on site at all times during operations. If this is a vehicle it should be parked so that it can be loaded with a casualty and leave the site without having to manoeuvre. The driver shall be available at all times. Ignition key should be left in the ignition of the vehicle at all times when parked at the work site.
- e. Ensure that the medics are available to the site at all times during clearance operations and located a maximum of 5 minutes away from the site. The medics should be easily identified from a distance as medical support personnel.
- f. Ensure that all personnel involved in the operation are competent in basic first aid, casualty evacuation procedures, and with procedures for loading a casualty and/or stretcher into the identified evacuation vehicle.

5. Casualty evacuation procedures

Although the medical evacuation procedure may differ for every demining work site, the responsibilities of personnel within the operation remain the same. The following responsibilities apply.

- a. Deminers:
 - Stop demining immediately.
 - Clear the base line of personnel and equipment not required for the medical evacuation.
 - Start to give first aid to the casualty at the location of accident.
 - All Team leaders report to the supervisor.
- b. Supervisor/Senior uninjured person:
 - Assesses the scene of the accident, including the location and condition of the casualty and possible presence of other mines/ERW.
 - Organise casualty into the nearest cleared area (if necessary organise deminers to clear lanes to the casualty).
 - Maintains radio contact with the Medic and, if possible, provide information on the condition of the casualty.
 - Maintains overall responsibility for the safety of all personnel during the casualty evacuation procedure.
 - Maintains overall responsibility for the execution of the casualty evacuation.
 - In the event that the Medic is a mine/UXO victim, takes over the responsibility for the execution of the casualty evacuation procedure.

- Maintains radio communications with the organisation headquarters and provide the correct information when required.
- c. Medical Orderly:
- Utilises personnel to bring the stretcher and medical equipment to a point close to the casualty, but still within a cleared area.
 - Once the casualty has been brought to the cleared area, takes the appropriate action to stabilise and evacuate the casualty.
 - Recommends the method of evacuation, in accordance with the extent of the casualties' injuries (by air or road).
 - Stays with the casualty and report to the next level of medical facility.
 - The medical orderly shall monitor and record a medical journal of the casualty's vital signs and the treatment that has been given. A copy of this documentation should follow the casualty.

6. In the event of an accident

6.1. Accident planning

A demining accident response plan must be developed and maintained by the demining organisation for each demining workplace. The plan must identify:

- a. the training and qualification needs of all employees at the demining workplace, in particular demining workers and medical support staff with responsibilities for casualty evacuation and initial treatment;
- b. the equipment and materials required to implement the demining accident response plan, including: first aid and medical equipment, supplies and drugs; transportation required to move victims from the accident site to medical facilities offering treatment; and communications to call forward assistance and/or to provide details of the nature and extent of injuries; and
- c. the location of a suitably equipped and staffed hospital. Mine injuries are usually severe, and specialist surgery is often required. The nearest suitably equipped and staffed hospital may be in the country capital, or even in a neighbouring country.

6.2. Preparation

Preparation for a demining accident must include:

- a. the development and maintenance of work practices designed to reduce both the risk of demining accidents and the risk of multiple victims resulting from a demining accident;
- b. the pre-positioning of staff with the first aid and medical skills and resources required to respond to a demining accident;
- c. the development and maintenance of:
 - demining worksite management documentation that includes details of the blood group and known allergies for each demining worker;
 - a capacity to transport victims to an appropriate treatment facility or surgical hospital or insurance to cover the cost of transport to a suitably equipped and staffed hospital;
 - insurance to cover the cost of surgical care and treatment, including prosthetics, for victims of demining accidents;

- insurance to provide an appropriate disability pension to demining workers who become victims of demining accidents; and
- d. the periodic testing of emergency procedures and evacuation procedures from the time of the accident through to the delivery of a victim to an appropriate treatment or surgical care facility.

6.3. Procedure in the event of an accident

In the event of an accident the following procedure shall be adopted:

- a. Stop all work and inform the Supervisor and Medic that an accident has occurred.
- b. Supervisor shall organise team members to clear around the casualty, if he/she is in an uncleared area, and then move the casualty to a safe area.
- c. The Supervisor informs the headquarters that there has been an accident.
- d. The Medic shall assess and stabilise the casualty in the safe area and arrange evacuation by stretcher from the safe area to the identified evacuation vehicle.
- e. Transport casualty to the nearest HLS or surgical hospital. The Medic and the medical kit for trauma injuries shall where necessary accompany with the casualty until they are at the higher level of medical facility.
- f. Transfer the casualty from the vehicle to the helicopter /hospital under the supervision of the Medic.
- g. The headquarters shall confirm the method of evacuation away from the task site. If communications are lost, then evacuate by road to the nearest appropriate medical facility.
- h. If evacuation is by road, the vehicle should be driven carefully and if possible, escorted by a second vehicle.
- i. The headquarters shall ensure the receiving hospital is notified and arrange all administrative support.
- j. An accident log should be kept of all communications and events during the evacuation process for reference during the post accident investigation.

6.4. Procedure following the accident

Subsequent to an accident, the following procedure is to be adopted:

- a. Account for all personnel and make sure no one else is injured.
- b. Support those personnel shocked by the accident.
- c. Account for all equipment and stores.
- d. Close off the lanes and area of the accident.
- e. List all the people who witnessed the accident or worked in the immediate area, where possible separate them and assist them to write their statements.
- f. Return to the base and assist the headquarters staff to conduct an investigation.
- g. Start preparations for the Accident Investigation according to SLNMAS 11. As soon as possible implement the accident investigation.

- h. A debrief should be conducted with all people that were involved in the accident.
- i. Make available professional counselling services to those shocked by the accident who request professional psychological assistance.
- j. An IMSMA Mine/UXO Accident Report shall be completed and submitted to the RMAO within 24 hours after the accident occurred.

7. Responsibilities

7.1. The Sri Lankan National Mine Action Centre (SLNMAC)

The SLNMAC shall:

- a. establish and maintain documented standards and procedures for medical support to demining operations;
- b. monitor demining organisations' development and maintenance of demining accident response and evacuation plans;
- c. assist in the co-ordination of appropriate responses to demining accidents, including supporting demining organisations in overcoming security constraints in the execution of a response plan;
- d. evaluate the effectiveness of emergency response plans and assist in implementing appropriate corrective action;
- e. establish and maintain standards and procedures for the investigation of demining accidents; and
- f. establish and maintain standards for insurance cover for medical treatment for demining workers, and standards for invalid pensions for demining workers.

7.2. Demining Organisations

Demining organisations shall:

- a. develop and maintain SOPs which aim to reduce the risk of demining incidents occurring;
- b. develop and maintain SOPs which aim to reduce the risk of harm resulting from demining accidents;
- c. develop and maintain demining accident response plans for each demining workplace;
- d. provide the training and resources needed for the implementation of the demining accident response plan;
- e. provide an appropriate health plan for the demining workforce; and
- f. ensure that CASEVAC drills are practised.

7.3. Demining workers

Demining workers, including medical support staff shall:

- a. apply SOPs which aim to reduce the risk of a demining incident;
- b. apply SOPs which aim to reduce the risk of harm resulting from a demining accident;

- c. develop and maintain skills needed to respond to demining accident emergencies;
- d. identify and report opportunities to improve work practices to reduce the risk of a demining incident occurring and improve the organisation's demining accident response plan; and
- e. carry out all the actions recommended by the medical authorities for the maintenance of occupational health.

7.4. Medical Co-ordinator

Before commencement of any demining activity a Medical Co-ordinator (organisation senior medical orderly) should be nominated and be responsible for all preparations related to the medical support and evacuation plans. The responsibilities of the Medical Co-ordinator are to:

- a. Ensure that all personnel, who are deployed to site, have passed at least a basic first aid course. If necessary, arrange refresher courses monthly, in first aid, for personnel.
- b. Prepare, or confirm individual site casualty evacuation plans.
- c. Locate, visit and establish the necessary contacts and agreements with the most suitable hospital in the vicinity. Any casualty must be at the hospital within 60 minutes from the time of injury.
- d. Establish agreements for onward evacuation, from the local hospital, to a suitable hospital for long-term treatment.
- e. Select a location between demining teams for the emergency vehicle, ensure easy access for the vehicle to all the demining sites it is to support and ensure radio contact between the sites and the vehicles.
- f. When required and arranged with SLAF select and mark a helicopter landing site (where helicopter support is available), (radius 20 meters cleared area) making co-ordinates and exact location details available up the chain of command and to the entity that will provide helicopter support.
- g. Ensure that communication lines are always functional and that every demining site has communications with it's own headquarters and with it's medical support.

Annex A

Terms and definitions

Casevac: (Casualty Evacuation). The evacuation of a casualty from the scene of an accident to the nearest appropriate medical facility that can stabilise and treat the injuries.

Medevac: (Medical Evacuation). The evacuation of a patient between one medical facility and another, usually for further treatment or treatment not available at the first medical facility.

Level One Medical Support: Casualty Evacuation and a Level One medical capability. Located on the operational site, the organisation shall be able to conduct casualty collection and Basic Life Support and have Advanced Life Support available within 15 minutes. Off-site it should be able to tend to basic medical treatment and advise on preventative measures for mental and physical health. Off-site Level One Medical Support should be able to tend to basic medical treatments and advise on preventative measures against disease and stress.

Level Two Medical Support: Casualty sustainment and a Level Two medical capability. Consists of additional paramedics and equipment to sustain the casualty and assist evacuation. Used when the site is more than 2 hours from a Level Three facility.

Level Three Medical Support: A medical facility (hospital) with life saving surgical capability. Provide facilities for Level One and Level Two medical support and be able to conduct life and limb saving surgery. Be able to investigate, diagnose and treat patients suffering from serious or life threatening conditions. Should have dental facilities and where possible provide hygiene support, supervision and medical investigation.

Level Four Medical Support: Definitive care – A medical facility (hospital) with the capability for reconstructive surgery and rehabilitation. Full medical support facilities.

Annex B Minimum Equipment for a ALS medical orderly

The following are the minimum medical supplies and equipment that need to be with the medical orderly at a demining work site.

Item	Quantity
IV solution 500 ml	4
Ringers IV solution 1000 ml	4
IV giving set	4
IV Cannulae	6
2 ml Syringes	2
10 ml Syringes	2
21 Gauge needles	4
Nubain 10 mg / 1 ml or Tramadol 100 mg or Ketorolac 30 mg	10 amps 5 amps 2 vials
Penicillin 600 mg vials	2 vials
Water for injection 10 ml	10 amps
Scissors	1 pair
Splints	2
Tourniquet for inserting cannula	1
Gloves	5 pairs
Iodine 10% 500 ml	1
Field dressings	8
Gauze swabs	12 packets
Triangular bandage	2
Zinc Oxide plaster	2
Cotton wool roll	1
Stretcher or a spine board	1

Annex C

Minimum Equipment: Emergency vehicle (Ambulance)

ITEMS	QUANTITIES
Stretcher	1
Scoop Stretcher (or similar)	1
Blankets	2
Oxygen	900 litres*
Oxygen manometer and regulator with minimum flow of 10 l/minute	1
Oxygen mask with reservoir	1
Suction pump set	1
Water container	10 litres
VHF and HF radio communication	1
Signal smoke (if possible)	1

Notes:

- All equipment must be fixed safely in the vehicle when it is used as an Ambulance.
- If the vehicle is used as an Emergency vehicle it must have blue or red alarm lights and the driver must be trained in driving an Emergency vehicle.
- It should be remembered that the comfort and safety of the casualty in transit is more important than speed.

* (E.g. 1 Oxygen cylinder of 5 litres and a pressure of 200 Bar = 1000 litres).

