



NMAS 10.40

Safety and Occupational Health – Medical Support to Demining Operations

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Edition 2.1

Lebanon Mine Action Center-LMAC

Chekri Ghanem Casern–Fayadieh

Tel: +961 5 956143, Fax: +961 5 956192

Email: info@lebmac.org

Website: <http://www.lebmac.org/>

Warning

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Tel: +961 5 956143,

Fax: +961 5 956192

Email: info@lebmac.org

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Foreword

The National Mine Action Standards (NMAS) of Lebanon were first developed in the form of Technical Standards and Guidelines (TSG). These TSG were edited into the first edition of the NMAS in 2010 and were written to comply with the first edition of the International Mine Action Standards (IMAS). Since then, the scope of the IMAS has been expanded to include more components of mine action and amended to mirror the most recent changes to standards as required in today's operations. These changes, as well as changes in the local context of Lebanon, have necessitated a review and update of the NMAS.

As detailed in the National Mine Action Policy of 2007, the Lebanon Mine Action Center (LMAC) has the responsibility to execute and coordinate the Lebanon Mine Action Program (LMAP) on behalf of the Lebanon Mine Action Authority (LMAA), including the development and amendment of standards. Such standards shall be developed in a participatory approach that shall involve international, governmental, and nongovernmental organizations.

The NMAS shall be reviewed as needed to reflect amendments in the IMAS as well as incorporate changes to international obligations and local requirements. Such revisions shall be made available on the LMAC's website www.lebmac.org or can be obtained through contacting the LMAC via the email info@lebmac.org.

Acronyms

CASEVAC	Casualty Evacuation
CPR	Cardiopulmonary Resuscitation
ERW	Explosive Remnants of War
HLS	Helicopter Landing Site
HMA	Humanitarian Mine Action
IA	Implementing Agency
LMAA	Lebanon Mine Action Authority
LMAC	Lebanon Mine Action Center
LMAP	Lebanon Mine Action Program
NMAS	National Mine Action Standards
PPE	Personal Protective Equipment
S&OH	Safety and Occupational Health
SOPs	Standard Operating Procedures
TSG	Technical Standards and Guidelines
UXO	Unexploded Ordnance
VHF	Very High Frequency

Introduction

Demining necessarily involves risk but, by ensuring that demining staff are adequately trained, supported and supervised, and that safe work practices are applied, the level of risk can be minimized. However, the uncontrollable variables in the varied worksite contexts and in the type and condition of the varied EO hazards means that there is always a risk of an accident during demining.

The LMAC and IAs shall ensure that all demining staff have an adequate level of training and protection to ensure that risks are managed and avoided or mitigated whenever possible. They shall also ensure that all field staff are appropriately trained and equipped to respond to demining accidents/incidents, and that high quality medical support is readily available at every demining worksite in Lebanon.

Each IA shall have a well-developed organizational accident and incident response capacity that involves careful planning, the provision of well-trained staff, and the availability of medical supplies, services and support to provide effective emergency treatment. Medical support is not only about support for the demining tasks themselves, but also includes all of the preparatory and preliminary requirements to ensure that demining staff are fit to work and have confidence that their organizations will look after them in an emergency.

As the authority responsible for safety and efficiency in HMA in Lebanon, the LMAC is responsible for establishing the minimum requirements for medical support to demining operations and ensuring compliance with these requirements.

Safety and Occupational Health Medical Support to Demining Operations

1. Scope

This NMAS provides standards and guidance requirements for the provision of medical support to demining operations in Lebanon. It outlines the minimum requirements for medical preparedness and training required of the IAs conducting HMA interventions in the field. Relevant HMA interventions include TS, area Clearance, BAC and EOD interventions at worksites.

If the required medical support is not available, the demining activity shall not be conducted until the support is available.

This NMAS should be read in conjunction with the rest of the NMAS 10 series of standards and NMAS 07.14 Risk Management. All IAs intending to engage in mine action interventions (including the transportation, storage, and handling of EO and demolition consumables) shall abide by these standards.

2. References

A list of normative and informative references is provided in Annex A.

Normative references provide cross-referencing to other standards referred to in this standard and which form an integral part of the provisions of this standard.

Informative references provide a list of documents that may be consulted for a clearer understanding of this standard.

3. Key Terms and Definitions

The following terms and definitions relate to medical support and casualty evacuation (CASEVAC), and are used in this NMAS:

- *CASEVAC*: an abbreviation of casualty evacuation, generally used in terms of evacuating staff who have suffered an injury during work. The term MEDEVAC (medical evacuation) may be preferred because not all medical emergencies are accident casualties.
- *Co-located sites*: adjacent demining worksites, which are separated by less than a five-minute walking distance and that are covered by the same medical team and ambulance services.
- *Demining accident*: any accident involving an explosive hazard that occurs at a demining worksite or involves demining staff during working hours. Any non-explosive related

accident that causes injury requiring surgical treatment that occurs during demining activities. Also, any injurious accident involving an explosive hazard that occurs at a former SHA/CHA that has been 'released'.

- *Demining accident response plan*: a plan that outlines the response to be adopted in case of a demining accident, including the procedures to be applied for casualty evacuation to an appropriate medical care facility.
- *Demining incident*: an incident involving an explosive hazard that occurs at a demining worksite or to demining staff during working hours that does not result in injury. Also, any non injurious incident involving an explosive hazard that occurs at a former SHA/CHA that has been 'released'.
- *Prophylactics*: medication or treatment designed, administered, or taken to prevent disease.

In addition to the above terms, NMAS 04.10 provides a glossary of terms and definitions used across all standards.

As in the IMAS, the terms 'shall', 'should' and 'may' are used across all standards to indicate the required degree of compliance. For any organization working in Lebanon, the use of 'shall' indicates a compulsory requirement. The term 'should' indicates the national preference which may be varied with LMAC approval. The term 'may' indicates a suggestion that is not obligatory.

4. General Requirements

4.1 Planning and Preparation

The LMAC coordinates with IAs to ensure the development and maintenance of suitable working practices that are designed to reduce the probability of demining accidents and incidents occurring, and to limit the severity of injury should an accident still occur.

In the event of an accident or incident, the immediate response shall be coordinated between the IA and the LMAC, relevant LAs, and appropriate medical support services. This post-accident response shall ensure that the severity of the injuries suffered in an accident are managed and their long-term consequences are minimized.

Before the start of any demining activity, the IA shall appoint a staff member to act as Medical Coordinator with the responsibility for ensuring that all medical support is in readiness and that each demining worksite has a written, up-to date and practical CASEVAC plan. The Medical Coordinator, or another delegated person, shall also ensure that communications between the worksite supervisor and the LMAC Operations room are established before any demining activity is started.

4.1.1 Accident Response Planning

Before starting any demining operations, the LMAC and IAs shall take appropriate measures to ensure that needed medical support is in place within a reasonable distance from the demining worksite. To comply with this standard, a demining accident response plan shall be developed for each demining worksite.

A demining accident response plan should ensure that the following provisions are in place, as a minimum.

- a. At least one trained medical assistant with a Trauma Care Pack equipped as outlined in Annex B shall be sited within five minutes of each team conducting demining activities in the field. The medical assistant shall also have immediate access to an ambulance service during working hours. The ambulance service should be proven capable of transporting accident victims to a fully equipped hospital for surgery within 60 minutes of an injurious event occurring.
- b. A suitably trained and equipped medical capacity that is able to reliably stabilize severe traumatic injuries shall be available within 15 minutes transit time.
- c. Demining worksite management documentation shall include details of each person on site's blood group, allergies, infections and existing medical conditions.
- d. Medical insurance shall be provided for every demining worker to cover the full cost of surgical and subsequent medical treatment including, when appropriate, prosthetic provision. The insurance shall also provide an approved schedule of compensation for injuries received leading to incapacity and/or death. In line with the IMAS, the insurance provision is intended to serve as a 'pension' for those suffering long-term incapacity. Details of the insurance provision shall be made available to the LMAC on request.
- e. Each IA shall have SOPs covering their medical provision, including CASEVAC, and shall submit them to the LMAC for prior approval before engaging in demining activities.

The above applies to all TS, BAC, demining and EOD worksite tasks. When NTS teams are active in the field, a Medical Coordinator should be on standby and the survey team shall ensure that a reliable means of communication with the Medical Coordinator is available.

4.1.2 Occupational Health Planning

In addition to planning appropriately for accidents, each IA shall have an occupational health plan that includes:

- the briefing of all staff on health hazards, including insect, water-borne, and other easily transmittable diseases native to the demining area;
- the provision of prophylactics against disease whenever appropriate;
- the provision of periodic staff health checks by medical professionals; and

- the provision of vaccines and injections against communicable diseases, including hepatitis.

4.2 Accident Response Planning

4.2.1 General Requirements

In addition to accident planning requirements, the LMAC and IAs shall maintain a demining accident response plan, including a worksite specific CASEVAC plan, to be made available to all staff, and which shall detail the following:

- available and required equipment for emergency use in case of accidents;
- SOPs for CASEVAC procedures. The SOPs shall also detail actions to be taken by deminers/searchers, site supervisors, medics and the Medical Coordinator following an accident or incident; and
- necessary contact details and agreements with the closest suitably equipped and staffed hospital. It is the responsibility of the Medical Coordinator to locate, visit, and establish the necessary contacts and agreements with the most suitable hospital in the vicinity.

When applicable, the IA (or the LMAC) may select and mark a Helicopter Landing Site (HLS) with a minimum radius of 20 meters cleared area, making coordinates and exact location details (UTM grid reference) available to the LMAC and the IA headquarters. (Further information about HLS sites is available in NMAS 10.20).

IAs shall regularly practice their 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.

4.2.2 Ambulances and Evacuation Vehicles

The evacuation vehicle shall have the capacity to carry at least one stretcher and should be equipped with the equipment detailed in Annex C.

Evacuation vehicles should comply with the following as minimum standards:

- all heavy equipment shall be firmly attached to the vehicle when it is used as an ambulance;
- ambulances should have at least one blue or red flashing light and a siren;
- the vehicle shall have sufficient space in the rear for the transportation of at least one injured person lying flat and for an additional person to administer effective medical treatment;
- the vehicle shall at all times maintain a sufficient supply of fuel to drive to the nearest health facility;

- the vehicle shall undergo regular maintenance checks to ensure that it is in good working condition; and
- the driver shall be licensed to drive the vehicle and trained to drive it in an appropriate manner as an ambulance.

During working times, the ambulance or evacuation vehicle should be parked so that it can be loaded with a casualty and leave the site without having to maneuver. The driver should be available at all times. The ignition key should be left with the ambulance at all times when parked at a task site.

4.5 Co-Located Operational Worksites

The LMAC may authorize a reduced level of medical support and casualty evacuation in cases of co-located operational worksites. The minimum medical support and CASEVAC requirements for co-located operational worksites are:

1. A minimum of one accredited medic and one dedicated ambulance vehicle may service up to thirty field staff at up to three working sites when the ambulance and the medic are positioned no more than 5 minutes away from each of the working sites they are allocated to support.
2. In the event of an accident on any of the sites that the medic and ambulance are supporting, operations shall cease on all of the supported sites until medical coverage has been reinstated and the LMAC has authorized the demining activity to continue.
3. The location of the ambulance and the medic shall be known to all IA staff at all supported worksites.
4. Adequate communications shall be ensured at all times between the worksite supervisors, the Medical Coordinator, the medic and the ambulance driver.
5. The ambulance shall have all of the necessary medical equipment to service the co-located operational sites.
6. The response time shall be confirmed by rehearsal before starting demining operations, including perimeter marking.
7. One ambulance shall be required to support a maximum of 30 staff working at the combined worksites.

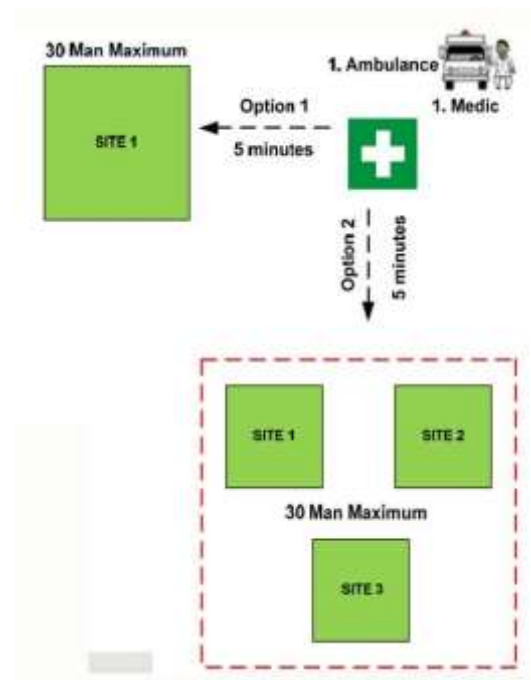


Figure 1: Examples of Minimum Medical Support Requirements for Co-Located Operational Sites

4.6 Training

All staff at a worksite shall have passed a first-aid course and shall have been trained to conduct the procedures for accidents and CASEVAC that are in the IA's LMAC approved SOPs.

In addition staff should:

- receive refresher or continuation first-aid training courses on a regular basis;
- be trained to: clean and dress wounds; stabilize fractures; administer analgesia; conduct cardiopulmonary resuscitation (CPR); temporarily control blood loss; and load the stretcher and victim into the ambulance or helicopter; and
- formally practice CASEVAC procedures at each new worksite, at least at monthly intervals, and whenever there are staff changes at the worksite.

5. General Responsibilities

5.1 Responsibilities of the LMAC

The LMAC shall:

- assess the IA's medical and accident response SOPs and, when appropriate, approve their use;
- monitor the use and maintenance of accident response plans and their compliance with approved SOPs;
- assist IAs to overcome any difficulties in the execution of an accident response plan, either before or during a medical emergency;

- evaluate the effectiveness of emergency response plans and assist IAs in the implementation of appropriate corrective actions where needed;
- establish and maintain medical support SOPs for its own teams;
- undertake the investigation of demining accidents and incidents with a view to determining root causes and preventing repetition; and
- ensure that all staff insurance cover is adequate and has no gender bias.

5.2 Responsibilities of IAs


In their capacity as demining organizations, IAs shall:

- submit appropriate and effective SOPs covering their medical and CASEVAC provision to the LMAC and receive approval before their use;
- appoint a staff member to act as Medical Coordinator;
- ensure that appropriate medical support is in place at a reasonable distance from each demining worksite during any work at the worksite;
- submit a demining accident response plan for each demining worksite to the LMAC for approval;
- ensure that all staff deployed to the worksite have passed a first-aid course and are trained in the procedures required in response to accidents and CASEVAC as required in the IA's LMAC approved SOPs;
- provide refresher/continuation first-aid training courses to their teams regularly;
- maintain detailed medical training and qualification records for all staff;
- ensure the adequate maintenance of emergency vehicles, equipment and supplies; and
- provide appropriate medical and accidental injury insurance coverage to all of their employees.

5.3 Responsibilities of Employees

Employees of IAs shall:

- apply the SOPs of their IA, in line with the guidelines and standards laid out in this NMAS;
- make every effort to retain knowledge gained during training, and commit to applying that knowledge in emergencies; and
- identify and report opportunities to improve work practices to reduce the risk of a demining accident/incident occurring and to improve the IA's demining accident response plan.

	LEBANON NATIONAL MINE ACTION STANDARDS		Edition 2.1	NMAS 10.40
	ANNEX A: Normative and Informative References			
				March 2020

The documents listed below constitute normative references, which form an integral part of the provisions of this standard.

- Current LMAC and IMSMA reporting formats (request copies from the LMAC);
- NMAS 07.14 Risk Management;
- NMAS 10.10 General Guidelines for the Development of S&OH Systems;
- NMAS 10.20 Demining Worksite Safety;
- NMAS 10.30 Personal Protective Equipment;
- NMAS 10.60 Reporting/Investigation of Demining Incidents;
- NMAS 10.70 Protection of the Environment;
- NMAS 04.10 Glossary of Mine Action Terms, Definitions, & Abbreviations used in the Second Edition of the NMAS; and
- Annexes B, C and D to this NMAS.

In addition to the normative references listed above, the following informative reference may be consulted:

- IMAS 10.40 – S&OH – Medical Support to Demining Operations; and
- The LMAC Database of Demining Accidents and Incidents in Lebanon.

**ANNEX B: Minimum Medical Equipment for a Trauma Care Pack**

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The equipment listed below should be included in every trauma care pack and may be augmented as the IA thinks fit. Alternatives should be approved by the LMAC.

ITEM	QUANTITY
Manual ventilation bag with oxygen reservoir and masks	1
Oral airway disposable size 2	1
Oral airway disposable size 3	1
Oral airway disposable size 4	1
Universal scissors	1
Artery forceps	2
Stethoscope	1
Blood pressure manometer	1
Tourniquet	1
Burn dressing set	2
Gauze pads, medium	25
Elastic bandage	5 rolls
Absorbent dressing, medium	10
Absorbent dressing, large	5
Adhesive tape	1 roll
Personal field dressing	5
Abdominal/chest dressing	2
Triangular bandage	2
Syringe 1 ml	2
Syringe 5 ml	5
Syringe 10 ml	5
Injection needle	5
Injection needle, s.c.	5
Injection needle, i.m.	5
Infusion set	5
Intravenous cannula 16-20 G	5

Continued:

Cervical collar set	1
Splint for upper limb	1
Splint for lower limb	1
Antiseptic solution	100 ml
Alcohol swabs	25
Surgical gloves	5 pairs
Injection Morphine 10 mg/ml (or similar)	5 x 1 ml
Injection Naloxon 0.4 mg/ml (if using opioid)	5 x 1 ml
Injection Anti-emetic drug (if using opioid)	2 amp.
Injection Adrenaline 1 mg/ml (or similar)	3 x 1 ml
NaCl 9% for injection	10 x 10 ml
Ringer solution (or similar)	2 x 1000 ml

**ANNEX C: Minimum Medical Equipment for Casualty Evacuation**

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The following lists shows the minimum medical equipment that should be available at a worksite to support casualty evacuation in the event of an accident. Alternative should be approved by the IMAC.

ITEM	QUANTITY
Stretcher	1
Scoop stretcher (or similar)	1
Blanket	2
Oxygen	1000 liters
Oxygen manometer & regulator with a minimum flow of 10 liters/minute	1
Oxygen mask with reservoir	1
Suction pump set	1
Water container	10 liters
VHF communication radio	1
Signal smokes (when appropriate)	1

It is anticipated that many IAs will have their own comprehensive list of equipment which should include the above.

NMAS 10.40, Edition 2.1: Amendment Record

The NMAS are subject to a comprehensive or partial review by the Review Board periodically. Changes in the context as well as safety requirements and efficiency considerations may necessitate amendments to individual NMAS standards more frequently. If this occurs, such amendments shall be given a number, dated, and detailed in the table below. The amendment should also be indicated on the header under the NMAS edition number.

Whenever the formal review of the NMAS is completed, a new edition shall be issued. Amendments that have taken place before the review date shall be incorporated in the new edition and the amendment record table cleared. Consequently, the recording of amendments shall start again until the next review.

The most recent revisions of the NMAS shall be posted on the Lebanon Mine Action Center (LMAC) website on www.lebmac.org.

Number	Date	Amendment Details
1	March 2020	Minor revisions throughout.