

LETTER TO THE EDITOR

WORKSHOP IN HRADEC KRÁLOVÉ, CZECH REPUBLIC, ON STATES OF PREPAREDNESS FOR MASS-CASUALTY SITUATIONS

On 28th November 2012, the Social Health Academy, the Regional Emergency Medical Service, and the Department of Military Surgery at the University of Defence together held a workshop on States of Preparedness for Emergency- and Mass-Casualty Situations (MCS). The speakers were Dr. Moshe Michaelson (Director, Teaching Centre for Trauma, Emergency and Mass-Casualty Situations) and Mrs. Gila Hyams, RN (Director of Nursing and Trauma Co-ordinator) at the Rambam Hospital in Haifa, Israel. Altogether, thirty medical and emergency specialists attended the workshop.

The Rambam hospital in Haifa is situated about 30 km south of the Lebanese border. It is the largest trauma centre in the North of Israel and has repeatedly experienced mass-casualty admissions during war and

after terrorist attacks. There are 24 state-owned hospitals in Israel that can be included in an emergency medical system. Military hospitals are non-existent. The present integrated system of pre-hospital care and standardised procedures, approved by the Ministry of Health, were put into place following events of the last decade and consequent mass-admissions to hospitals.

A mass-casualty situation is divided into two phases:

Phase 1 – from the declaration of an emergency to the admission of the last patient wounded or otherwise affected by such a situation

Phase 2 – follows the above, and lasts until the discharge of the last patient from hospital.



Figure 1. Main organizers and lecturers of the Workshop: J. Mašek, MD., L. Klein, MD., and G. Hyams, RN, M. Michaelson, MD.

Emergency situations can be divided, depending on the threat, into conventional, chemical, biological, or radiation incidents. The greatest emphasis is on conventional incidents which have been the most common occurrence in Israel: then follow chemical and radiation incidents. A biological threat is seen in a different category. This is because there is an incubation period after contamination, and so the situation needs a differ-

ent approach. During hospital admission, patients are triaged depending on their type of trauma, i.e. physical or psychological. Extreme care in planning and thorough rehearsal need to take place in order to manage a classical mass-disaster. The main prerequisite is that each hospital admit and treat a particular number of patients. All state-hospitals must be ready to provide 20 % of their bed-capacity at any given time.



Figure 2. Participants of the Workshop listening to a lecture.

The aim is to place patients in a hospital according to its capacity, specialisation and distance in order to ensure the maximum survival rate. At the scene of the disaster, patients are triaged quickly according to their treatment priorities: minor injury – treatment postponed; moderate/severe injury – immediate treatment; critical condition (expectant) – patients treated after surviving first-aid phase. Medical care provided at the scene of a disaster is only a basic “scoop-and-run” application, because of “booby-trap” risk following a terrorist attack. Thence, casualties must be transferred rapidly to hospital.

The level of “minimally acceptable treatment” is decided upon during a mass-disaster. This means that only basic, life-saving care is provided.

In total, there are 6 types of standardised procedures to follow during hospital mass-admissions:

- Transport and triage of patients (hospitalisation or discharge)
- On-call personnel notification
- Preparation of essential equipment
- Preparation of other areas for 100 patients – e.g. a dining-room for minor injuries equipped with medical-gas supplies
- Provision of imaging techniques (X-ray, ultrasonography)
- Organisation of team-reinforcement

Extra staff is provided by additional departments (e.g. medical) who must be pre-trained to the job.

Emergency-department (ED) cases are visited by a doctor, an ED nurse and a nurse from the additional staff-resources. However, overstaffing is not ideal. There should be 10 doctors and 20 nurses tending 10 patients!

Documentation during a mass-admission is temporary – each patient receives a number with his medical notes, which can then be used permanently in his future records. Deciding factors for pre-hospital interventions such as intubation, intravenous cannula placement and administration of fluids, checking physiological function-status (vital signs), drawing blood samples, etc. are routine. Similarly, relevant factors are considered when deciding on discharges. Emphasis is put on the one-way passage of a patient from hospital-admission to discharge. This helps to avoid any mistakes or confusion. Efforts are made to gradually vacate the emergency spaces and enable the admission of other patients.

During a mass-admission, all information is processed using special software so that the influx of patients remains under control. This includes patients in emergency-units, under treatment and discharges. Furthermore, patients' photos are taken together with their allocated number for ease of identification. Their personal information, including their photo, is then sent electronically to the National Register of Patients.

A non-governmental organisation called the Magen David Adom (MDA) – the David Red Star, has been the only official provider of emergency medical services in Israel since 1950. It runs 11 operational centres, employs 1200 people and operates with over 8000 volunteers (60 % of whom are young adults). MDA has 170 vehicles dedicated to Advanced Life Support (ALS), 470 ambulances and 280 other vehicles with drivers only. So-called Mass-Casualty Response-Vehicles (MCRV) are equipped with special first-aid materiel and used in MCIs. This equipment can be used by all volunteers, who assemble after a pager-announcement from the nearest disaster-area operational centre.

Regarding pre-hospital care, there are protocols for sector operations, the organisation of work and medical interventions. A disaster-area is divided into sectors with one member of staff with ALS training (a medic or a paramedic) and several others with Basic Life Support (BLS) training (emergency medical technicians or volunteers)

being responsible for each sector. Patients undergo triage (emergency, unstable; emergency, stable; and non-emergency cases), and the acute ones are transferred to the nearest suitable hospital. An operational centre controls the movement of ambulances. Each disaster-area is under the command of a Senior Police Officer, while health professionals are led by an experienced paramedic who also supervises the triage of patients. Moreover, a further Officer has responsibility for the transportation and distribution of patients to hospitals. He also ensures that ambulances are



Figure 3. Dr. Michaelson discussing a problem of medical support.

used to their full capacity. Severe cases are directed to a Level-One trauma centre, while mild-to-moderate cases are sent to other hospitals. It is crucial that hospitals be evenly used to their full capacity and with consideration for their specializations. Hospitals liaise with the MDA, the MDA sends staff directly to hospitals to assess the situation and, in some cases, hospitals send their deputies to the operational centre of the MDA. At the end of a rescue-operation, the MDA holds debriefs which discuss organisational procedures. An evaluation by medical staff also takes place on the following day.

Should a terrorist attack or any other Mass-Casualty Incident occur, Israel has planned a special course of action. Due to the high number of casualties, these situations are called Mega – Mass-Casualty Incidents (Mega-MCI). Incidents are graded according to the number of casualties: up to 500; up to 1000; 2000 and more. Of the total number of casualties, it is expected to see 15 % dead, 25 % severely wounded and 60 % lightly wounded. About 15 % of patients would require emergency care, and about 10 % would require surgery.

Reinforcement of rescue-services is planned – i.e. an increase in the number of response-vehicles and rescue-team members. Severely-wounded patients would be prioritised for transfer to hospital;

the nearest hospitals would perform as triage hospitals and provide life-saving treatment only. The use of imaging-technology (X-rays, CT scans) would be limited, and so-called damage-control surgery would be performed. Patients would be situated in the appropriate area (i.e. pre-transport area) for 50 – 100 people. Most of them would be medically stable and ready for transfer to other hospitals. Only patients undergoing the damage-control surgery would remain in the main hospital. Minor casualties would be transported later to more distant hospitals outside the affected region. The whole rescue-operation would be under the command of the National Crisis Team with members from the Ministry of Health, the Ministry of Defence and the Home Office.



Figure 4. Gila Hyams and Moshe Michaelson teaching and explaining triage principles.

A practice-drill is one of the ways of preparing for a mass-incident with casualties. The emphasis is on the organisation of the rescue-work. In Israel, all hospital personnel have been trained for such situations. A drill-protocol must be established, and sometimes it is necessary to focus on one particular aspect of a drill. Umpires are often appointed from

the staff of different hospitals, but always with similar levels of expertise.

A large-area drill must be prepared in advance. It gives a more comprehensive insight into the real situation and it motivates staff more. Its organisation, however, is economically demanding and interferes

with a hospital's daily routine. Nonetheless, drills should represent the first step in hospitals' preparation for a MCI.

An alternative method is to hold a cheaper and more synthetic version of a drill that is not announced in advance – a “surprise drill”. For example, the admission of several “wounded” patients during a night duty to a particular ward could be effected. It would provide an all-round real-life situation, but would deal with only a part of it. Its application to all the rescue-processes relevant to an MCI would be limited.

The whole-day workshop with Israeli speakers was very beneficial for all attendees. It took the form of lectures, video-presentations (of synthetic as well as real situations), group-work, and group-led discussions. Everyone was able to actively contribute in solving the given situations. The highly-erudite tutors shared ideas and experiences that could be related by members of the audience to their own workplaces. Thanks to positive feedback, the organisers are already speculating on having another similar workshop in approximately two or three years' time.



Figure 5. Participants divided in smaller groups preparing their answers for solution of a given scenario.

A so-called “table-top drill” is, in effect, practising a solution-approach, and is used among team-leaders also using some ward-staff. A model situation is proposed, including bed- and staff-availability, and possible solutions to the problems are investigated using sketches and maps. A debrief follows each practice and aims to analyse the experience in order to reach a better outcome the next time. The new, accepted findings are then incorporated into the standard procedures.



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