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SCENARIO

You are the director of a type 2 EMT that has answered a request for surgical support for a country struck by a large earthquake.

At the request of the MoH you were sent to a remote area several hours outside the capital city, and have been there for approximately one week.

The caseload has been slightly heavier than expected and you are starting to run low on a few key supplies. Unfortunately, recent rains have made the roads essentially impassable for the time being.

- » What responsibilities and options are available regarding your own resupply?
- » What needs might a surgical EMT have that differ from other humanitarian operations?



Figure 1. Transit and transport can become difficult or impassable resulting in increasing logistics challenges. (Norton)



TYPE 1

STERILIZATION – Must be able to provide basic steam autoclave for instruments
LAB AND BLOOD BANK- Type 1 EMTs must be able to provide basic outpatient tests by finger prick including glucose, point of care hemoglobin and white blood cell count, and some form of rapid malaria detection.



TYPE 2

STERILIZATION – Full autoclave function with traceability
LAB AND BLOOD BANK – Type 1 level tests plus urinary electrolytes.
 Must be able to collect blood and microbiology specimens for outside analysis.
 Must be able to provide for safe blood transfusions from volunteers or family with testing for blood type, HIV, Hepatitis B and C, Syphilis and any endemic blood borne diseases.



TYPE 3

Type 3 facilities must be able to perform all of the above functions along with electrolyte, blood gas and microbiology testing.
 They must be able to provide the same services for safe blood transfusions as type 2 EMTs.

LOGISTICS AND SELF-SUFFICIENCY

EMTs must be self-sufficient to arrive at and operate within an SOD. A correct understanding of the term self-sufficient is crucial to an understanding of this core standard.

- » EMTs should bring at least a 2 week supply of food. Identifying a local food supply can be very difficult in the first hours following arrival.
- » EMTs that have robust local supply chains that are pre-planned and with a positive rather than a negative impact on the local economy can be termed self-sufficient.

FACILITIES

- » EMTs must articulate whether they are offering to work inside an existing facility or will provide a field hospital. Field hospitals must be self-sufficient for all supplies but local fuel and water access will be required.
- » Teams embedding into existing facilities require at least some supplies to cover the work required.
- » All facilities must comply with the WHO EMT minimum standards.



Figure 2. The running of complex EMTs such as this, require robust logistics and support operations. (Norton)

PITFALL

- The ability to have a local supply chain requires extensive experience and local connections particularly in the aftermath of a SOD. EMTs that do not have standard operating procedures (SOPs) and experience in developing such supply chains should be self-sufficient by bringing in sufficient supplies to care for the entire team.
- It is unacceptable for EMTs to comply with standards initially but allow their standard of care to deteriorate as they run low on supplies. The minimum standards must be met at all times. If circumstance arise during which teams cannot meet the standards then they should inform the MoH or plan to withdraw.

LOGISTICS STANDARDS

EMTs must provide a safe environment in which to operate and avoid having a negative impact on the community. The below are a summary of the guidelines to reach minimum standards as an EMT.

For complete guidelines, please refer to the *WHO's Classifications and Minimum Standards for Emergency Medical Teams in Sudden Onset Disasters*.

WATER – Access to adequate water for all team members for washing and drinking must be available.

POWER AND LIGHTING – Access to reliable electrical power should not be assumed and teams should be prepared to provide for lighting without interruption in patient areas, operating theatres, and for instruments or patient care devices requiring power.

FOOD – Adequate food supply for staff and patients must be brought and/or purchased without affecting the local food supply.

SHELTER - Staff should be housed in an area away from clinical work and in safe conditions that allow adequate rest between shifts.

MEDICAL WASTE DISPOSAL - The guiding principle remains that **waste disposal should not have a negative impact on the community**.

This is especially important for medical waste. EMTs are responsible for the safe disposal of medical waste from their own facilities. If operating from within a local facility, teams should encourage the safe disposal of waste from that facility.

Contaminated waste and sharps should be separated into adequately designed yellow labeled receptacles and dealt with appropriately.

For more information on adequately dealing with medical waste, see the ICRC or WHO policies on medical waste management cited at the end of this chapter.

KEY POINT

Ensuring an adequate water supply is a crucial part of EMT logistics. The water needs of an EMT will vary based on size and type of clinical activity. Water demands for surgical EMTs can be very high. For example, a type 2 EMT may require as much as 7,000 -10,000 L per day. A rough guide for calculating water needs is below:

- 60-100 L per person per day for staff
- 100 L per surgical case
- 5 L per outpatient visit
- 50 L per inpatient per day



Figure 3. Appropriate staff shelter for a deployed EMT. (Norton)

SANITATION – EMTs must ensure that they have plans for management of the sanitation needs of their own staff, as well as culturally appropriate toileting facilities for patients receiving and awaiting care.

Providing areas for hand washing and scrub areas for surgery is a crucial part of sanitation logistics. Viable options for washing can range from wash basins with reticulating faucets to pre-filled jerry cans. The key is to provide easy and reliable access to clean water for washing.

The SPHERE standards state that ensuring the optimal use of all water supply and sanitation facilities and practicing safe hygiene will result in the greatest impact on public health. The standards provide minimum standards and guidance toward achieving these goals.

TRANSPORT – EMTs should state when and where they will arrive and either arrange for their own transport to their agreed area of work, or arrange for support from the host government or local partners.

COMMUNICATIONS – EMTs must consider robust, redundant communications system to be mandatory. This means prioritizing an ability to communicate and coordinate with the host government coordination center. Additionally, daily reporting of activities to the MoH or designated authorities is an important consideration.



Figure 4. Robust and redundant communications for EMTs are mandatory. Consideration should be given to having means of communications that function independent of the potentially damaged infrastructure of a country. (Norton)



Figure 5. Appropriate facilities must be provided for both staff and patients. The facilities pictured include access for injured or disabled patients. (Jamieson)

TRAINING FOR EMTS

RECOMMENDED 3-STEP LEARNING PROCESS FOR EMT MEMBERS

EMTs must prepare and rehearse for delivery of care as well as for the anticipated context on the ground. The development of both professional skills as well as situational preparedness is important for an effective response to both disasters and conflict.

To ensure appropriate EMT performance all EMT members should go through a learning process encompassing the following steps:

1. Ensure **professional competence and license to practice**
2. Support adaptation of technical and non-technical professional capacities into low-resource and emergency **contexts**
3. Prepare for an effective **team** performance in the field as part of an EMT organization

EXAMPLE:

AN ORTHOPAEDIC SURGEON DEPLOYING WITHIN AN EMT

TECHNICAL TRAINING

- **Validated medical degree and specialization in orthopaedic surgery with license to practice in the country of origin.**

ADAPTIVE TRAINING

- **Course in Global Health and/or Disasters**
- **Workshop about surgery in disaster contexts, with both theoretical and practical sessions**

TEAM ORGANIZATION AND PRE-DEPLOYMENT TRAINING

- **Pre-deployment course provided by the EMT organization, including presentation of SOPs, safety procedures, equipment, preparation for life in the field, and team dynamics**



Figure 6. EMTs deployed to Tacloban (NCCTRC)

CONSIDERATIONS FOR TRAINING

- » Both **individual and team training** are needed. EMT training improves surgical outcomes!
- » Theoretical lessons should always be combined with practical sessions. Role-playing, simulations, and virtual reality formats are options for putting theory into practice. The development of soft skills should be encouraged through team based learning.
- » The teams should be constituted by professionals with different and complementary knowledge and skills, in accordance with the needs identified in the field. Members with different levels of experience should be incorporated (i.e. combine senior and new EMT members).
- » **JUST IN TIME TRAINING** – effective training method to disseminate new concepts or seldom-performed procedures. Just in time training modules will introduce additional skills and knowledge to the staff before deploying into a specific context (i.e. review national guidelines of the disaster affected country).

SUGGESTED RESOURCES

1. Camacho NA, Hughes A, Burkle Jr FM, et al. Education and Training of Emergency Medical Teams: Recommendations for a Global Operational Learning Framework. *PLOS Currents Disasters* 2016.
2. Willems A, Waxman B, Bacon AK, Smith J, Kitto S. Interprofessional non-technical skills for surgeons in disaster response: a literature review. *Journal of Interprofessional Care* 2013; **27**(5): 380-6.

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1. Neily J, Mills PD, Young-Xu Y, et al. Association between implementation of a medical team training program and surgical mortality. *JAMA* 2010; **304**(15): 1693-700.
2. Stoler GB, Johnston JR, Stevenson JA, Suyama J. Preparing emergency personnel in dialysis: A just-in-time training program for additional staffing during disasters. *Disaster Medicine and Public Health Preparedness* 2013; **7**(03): 272-7.
3. Norton I, Von Schreeb J, Aitken P, Herard P, Lajolo C. Classification and minimum standards for foreign medical teams in sudden onset disasters. *Geneva: World Health Organization* 2013.
4. ICRC: Sterilization Guidelines. ICRC: International Committee of the Red Cross; 2014.
5. Communicable disease control in emergencies: A field manual. Online: World Health Organization. 2005.
6. The sphere project: humanitarian charter and minimum standards in disaster response. 1st ed. Oxford: Oxfam; 2011.

EMT Website: <https://extranet.who.int/emt/page/home>
 AO/ICRC/WHO Training Resources: <http://www.aofoundation.org/icrc>