

# **INDIVIDUAL EMERGENCY MEDICAL PACKS FOR IMMEDIATE DEPLOYMENT OF MEDICAL PERSONNEL TO INTERNATIONAL DISASTERS IN RESOURCE POOR ENVIRONMENTS**

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## **Introduction**

Direct Relief International (DRI), have developed an important project that will allow them to utilise and harness the human resources and skills of trained medical providers that respond to disasters and emergencies around the world. DRI recognise that firstly, there are people in the disaster zones that are in critical need of immediate assistance, and anything that DRI can do to get medical professionals to the people that need help is crucial. In addition, doing so advances and strengthens DRI's mission of providing the most needed medical care to the people who need it most. However, just getting health care providers to people in need may not be enough, and DRI has created a project that can provide emergency responders with the supplies they need and expedite the process of getting their help to where help is needed.

The project, essentially, provides a tested and proven emergency medical pack of medical supplies and equipment that are specifically suited for (a) the type of disaster or emergency situation that is being responded to (flood, earthquake, hurricane, fire) and (b) to a range of medical providers that are offering their assistance (midwife, nurse, doctor, surgeon).

With the help of DRI's trusted partner Australian Aid International (AAI) and their medical staff who routinely donate their time and medical expertise to intervene to emergencies all over the world, a standard Individual Emergency Medical Pack (IEMP) has been developed. This standard IEMP consists of the medical supplies that are always needed in the field and can be utilised no matter the disaster or the specific level of training of the medical provider. To complement the IEMP, a number of more specific or supplementary modules has been developed that will be able to reflect the type of disaster being responded to and the level of training the responder has.

## **Emergency Medical Relief in International Disasters**

Emergency medicine during international disasters in resource poor environments (developing countries), is a unique field of medicine with relatively limited research on the subject. Most research and medical expertise in emergency medicine relates to developed country situations or by developed country militaries in the form of field medicine in remote locations. An international disaster, in a resource poor environment, requires differing approaches to emergency medicine than which are undertaken in developed countries or within the military. Experts in the field of emergency medicine in developed countries struggle with understanding the unique environment that medical aid experts experience daily in their humanitarian work during international disasters.

International disasters often create emergencies that overwhelm local health resources - human, physical and material - in affected areas. A rapid emergency response and inflow of medical resources is vital to treat injuries and illnesses, prevent the outbreak of infectious diseases, and maintain ongoing access to healthcare for the affected populations.

DRI has 60 years of experience responding to health emergencies caused by natural and manmade disasters and is often requested to equip medical personnel deploying to

emergencies. This long experience has highlighted the need for pre-pack emergency medical packs that can be used by emergency medical personnel deploying to a disaster. Australian Aid International (AAI) is an experienced medical emergency response organisation that provides relief in international disasters and is well experienced in the provision of international emergency medical aid in austere environments.

AAI in collaboration with DRI using leading experts with vast experience responding to international medical emergencies have developed an inventory of medicines, equipment and supplies that can be carried by individuals or teams in the form of IEMP's into international disasters. Causes of disasters can include earthquakes, tsunamis, flooding, conflicts or complex emergencies that create enormous numbers of traumatic injuries, disease outbreaks and population displacement. The development of the IEMP is cutting edge in international relief and will allow an individual or team to conduct immediate emergency medical assistance upon arriving into a disaster location. The IEMP's are designed in order that personnel can provide immediate short-term medical care to an affected population until such time as further medical supplies are obtained to sustain continued operations.

DRI will locate and pre-screen organisations and medical providers that are willing to respond in the case of an international disaster. Once approved, the standard IEMP will be provided to medical personnel so that they can use the IEMP to respond at a moment's notice to an international disaster. If there is additional time, supplementary modules will immediately be sent to them to complement the basic module. Upon return home of the medical professional, a new IEMP will be provided to them as the original IEMP will have been left in the field so that any remaining medical supplies can be used by medical staff still responding to the disaster.

Due to size and weight limitations of any equipment that individuals or teams need to carry into a disaster zone IEMP's must be man portable and be able to be transported readily by any means of transportation that medical personnel are required to use to deploy into affected areas. Humanitarian medical teams in most circumstances will not have the luxury of being transported from their place of departure directly to the affected area. In most circumstances, teams will have to use a variety of types of transport to arrive at their final destination perhaps using a mixture of civilian, military and even United Nations (UN) forms of transport. The travelling time will often be long and teams will be loading and unloading supplies continuously as they change from one form of transportation to another to meet various connections.

The weight and size limitations of equipment, due to the transportation difficulties, therefore dictate the number of casualties that can be treated and length of time treatment will be available. Therefore, triage and priorities of treatment will be proportional to the number of medical personal and equipment available.

### **Rapid Deployment of Emergency Medical Personnel**

During an international disaster many humanitarian organisations will, in most instances, deploy an assessment team into a disaster zone. This will be an initial response in order to provide organisational program directors adequate information to formulate plans for possible follow on humanitarian responses. AAI and only a few other organisations differ from many NGOs in that they will immediately respond to a disaster while concurrently conducting an assessment. During an international emergency, for example, AAI will deploy a Disaster Assessment and Response Team (DART). A DART may consist of 4-6 personnel with medical personnel comprising  $\frac{3}{4}$  of the team. However, all members of the DART can

carry additional medical supplies to ensure the team has the maximum amount of medical supplies to begin immediate emergency medical relief while simultaneously conducting assessments.

The DART has a myriad of operational tasks to ensure that the best assessment and planning for follow up operations can occur within a minimal amount of time. This paper however, focuses on the medical aspects of the response more specifically and the first 2-10 days post disaster in which these teams can provide emergency medical care to the most number of critical patients within limitation of personnel and supplies. The medical team will normally be tasked with identifying the most suitable location, within the disaster affected areas, to provide medical care that will have the greatest impact on the surviving members of the affected community. This will depend on organisational mission statements and capabilities; whether that is the establishment for follow on field hospitals, primary healthcare clinics, mobile medical clinics, or remote area medical care. At a minimum, medical teams must be able to provide emergency medical care and begin to triage, treat and refer, or evacuate large numbers of casualties. The first initial days of the disaster are crucial for medical teams to set the standard of medical capabilities of the organisation and for the establishment of longer-term healthcare projects during the emergency and recovery periods.

AAI will generally deploy a four to six man DART consisting of Team leader/medic, doctor, medic/nurse, and logistician/administrator. A team should be able to land in a disaster zone, formulate a response plan and provide enough medical care with their hand carried supplies for the first 2-10 days, in which time more supplies would be secured and the development of a longer-term project will be established.

### **The Rational for the Individual Emergency Medical Packs (IEMP) for International Disasters**

In order to provide an initial medical capability, prior knowledge and planning of the type and quantity of medical supplies that can be hand carried into the disaster area is essential. Also as important, is the ability to have the medical supplies packed in a logical order and ready to deploy or pre-pack for short notice response. In the event of an international disaster, there is limited time for organisations or team members to source and pack medical supplies. Vital time will already be used preparing for the deployment and organisation of personal equipment. There is little time for organisations and individuals to also then determine the appropriate medical equipment required. An important aspect of the IEMP is that the supplies are easily replaceable even in resource poor environments; therefore, the selection of multi use supplies and equipment and the knowledge of the use of improvised devices for all equipment in the packs is crucial. Supplies are packed in a logical order so that all team members are aware of the contents and locations of supplies in the IEMP. Individuals may wish to arrange packs for personal use however, supplies should still be packed in easy recognizable groups to allow anyone in the medical team to be able to use the supplies quickly and efficiently without having to search the entire contents of the packs to find a piece of equipment or supply that is urgently needed. Efficiency and speed in use of the IEMP is essential in emergency medicine.

International humanitarian disaster response operations, by definition, require medical professionals to operate using modified standards of healthcare as compared to their home country health system or their host country under non disaster conditions. The standard of care and protocols for humanitarian operations must be at a level that is sustainable, allow working in the field often without advanced levels of healthcare, and often with no form of medical evacuations to secondary healthcare facilities. Due to vast numbers of casualties

and limited resources medical personnel must follow standard codes of ethics to provide the best possible medical care within the limitations and do no harm. Often in an international disaster, there are few supplies and equipment available, limited possibilities of resupply, very basic facilities or conditions, and an overwhelming numbers of patients.

The concept of the IEMP is for a standard module to suit a range of disaster situations, which can then have additional, supplementary modules depending upon the specific emergency. By multiplying the number of standard modules, numbers of patients and time in location will be increased proportionally. The standard IEMP is packed to suit varying levels of medical expertise and therefore can be used by either doctors, nurses, paramedics and other health specialists. Even if an individual does not have, the required skills to use all supplies within the packs, the supplies are available for use as medical expertise becomes available. Medical personnel must know the limits of their capabilities and only use the supplies that they are trained and competent use. In most situations, there are minimal opportunities to order further supplies rapidly as more medical expertise becomes available; therefore all IEMP's are standardised for more advance medical expertise, which include the ability to provide emergency field surgery, and drug administration for a range of treatment protocols and prevention of diseases.

The basic module of the IEMP consists of supplies for standard international emergencies (50% trauma and 50% primary healthcare supplies). The list of specific items is detailed in Attachment 1. Supplementary modules have been designed together with the IEMP to suit a specific disaster or if more detailed information is provided before the medical team is deployed. The supplementary modules include; field surgical, primary healthcare, blood transfusion and disease specific modules (i.e. cholera, avian flu, sever malnourishment etc). Refer to Attachment 2 for a detailed list of items in supplementary modules.

The backpacks, themselves, must be robust, man portable, segregated with pockets/compartments, and complete with the most appropriate equipment on the market (while still being able to be resupplied with alternatives in location from locally available resources). This is where the experience of the team and their skills of improvisation come into play. The pack that AAI have recommended can fit approximately 80 litres of supplies and is designed with multiple pockets that are colour coded and removable from the pack. This allows for the differing supplies to be packed into groups and the groups can be removed from the packs easily, which will minimize confusion in selection of supplies and supplies being repacked out of order.

The IEMP has been designed to be deployed with one or multiple members of a team. However, a 4-6 man team are usually the minimum number of members required for a response. Each member will carry his or her own personal gear plus an IEMP. Depending upon the environment each member would have approx 20 kg of personal equipment. Therefore, the IEMPs should not exceed 23 kg (50 lb) in weight. The goal of the 23 kg weight restriction and 115 cm (62 inches) length sized pack is that airlines are more likely to allow each member of the team to have an additional excess baggage of up to 23 kg. Furthermore, each IEMP must be man portable for members of the team to easily carry through airports and on to the area of operation (AO). Any baggage weighting more than 23 kgs is impractical to transport for an individual and has additional restrictions placed on by the transportation carriers.

## **Individual Emergency Medical Pack Supplies and Equipment**

All supplies and equipment for the IEMP have been chosen due to their ease of availability and replacement potential in the developing world, the ability to treat a range of traumatic conditions and diseases likely to be encountered in international disasters, capability of multi use, and to treat the greatest number of patients with the minimal amount of preparations. It has been determined that the more simple and basic the supplies and equipment, the greater the utility during an international emergency.

IEMP's will also need to be supplemented while in the disaster location to complete the standard list of supplies and equipment with those materials that can not be transported internationally due to size, weight and air-carrier and international customs prohibited goods restrictions. The in-county procured supplements as detailed on Attachment 1 are easily purchased and accessible in developing countries even during the emergency.

Whilst every attempt to use non-narcotic and non addictive medications that have limited restrictions has been designed for the IEMP, every country will have differing requirements on the entry of medicines. Individuals carrying an IEMP must also have an accompanying letter from their own organisations medical director stating the intent and purpose of the medical supplies being transported internationally. The list of medicines in the IEMP contains mostly prescription medications and a declaration of the medicines in the pack must be provided when crossing international borders. Individuals carrying an IEMP must have knowledge of the individual county regulations on the entry of medications and ensure that all medicines have been declared before going through customs. There are generally strict restrictions on carrying medicines into a foreign country, where they have not been prescribed and for personal use. In many large international disasters, the affected country may invoke the international disaster law, which will ease restrictions on medical teams providing medical supplies, and equipment however, ensuring custom approval is even more important where a number of countries must be entered to reach the final destination of the disaster.

The IEMP's are packed grouped into eight major treatment categories for ease of use and to minimize time in preparing the necessary supplies in order to provide treatment. The following are the eight major groups;

- Group 1 - Airway and breathing
- Group 2 – Circulation
- Group 3 – Wounds
- Group 4 – Orthopaedics
- Group 5 – Cleaning and sterilisation
- Group 6 – Miscellaneous supplies
- Group 7 – Miscellaneous equipment
- Group 8 – Medications – Injectable, inhaled, topical, and oral

## **Supplementary Modules Supplies and Equipment**

Supplementary modules have been designed where further information on the specific disaster and medical need of the population has been obtained. The supplementary modules suite the most likely needs that may occur in a disaster however would not be included in the IEMP as there use will be only on specific requirements and with personnel trained in the use of supplies and equipment in the supplementary modules. The following are the supplementary modules provided by DRI. Refer to Attachment 2 for a detailed list of items in supplementary modules.

Supplementary Module 1 - Field surgical  
Supplementary Module 2 - Primary healthcare  
Supplementary Module 3 - Blood transfusion

Disease Specific Supplementary Modules  
Cholera Outbreak Module  
Avian flu Outbreak Module  
Sever malnourishment Module

## **Manufacture and supply IEMP's and supplementary modules**

Awaiting DRI information...

### **Discussion**

The IEMP is unique to international emergency healthcare in resource poor environments where, due to a continued lack of resources, practitioners must use the graceful degradation of healthcare from best care to acceptable care, reverse triage, and limited or no hospital or specialty care (if medical evacuations are not possible). These three principals dictate the type of supplies, which although useful where there are resources or medical evacuations to advanced levels of healthcare, would be useless in an international disaster in a resource poor environment.

Examples of standard supplies and equipment used in emergency medicine that are not suitable for use in resource poor environments include such things as oxygen, portable defibrillators, single use medications etc. These supplies and equipment are difficult to transport, cannot be resupplied readily, and take up a vast amount of volume and weight. In a disaster situation, patients that require ongoing advanced life support often require more resources than are available and therefore precious time cannot be spent keeping these patients alive while there are vast numbers of patients that can be saved without using all the supplies and time of the medical team. The overarching goal is to the most good for the largest number of victims.

### **Conclusion**

The benefits of this program are numerous:

- 1) Emergency medical responders with the skills and willingness to offer assistance in resource-poor environments will be able to respond quickly, effectively, responsibly and cheaply to disasters or emergencies anywhere in the world.
- 2) Victims of disasters will more quickly benefit from medical care that is suited to their situation.
- 3) Critically needed medical supplies can be quickly infused into the emergency situation where it can otherwise take many days before adequate medical resources can arrive.
- 4) Direct Relief International's mission is advanced by "...improve[ing] the health and lives of people affected by poverty, disaster, and civil unrest."