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Role of Pharmacists in Responding to Humanitarian Crisis

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Learning Objectives

1. Introduction to the concepts of humanitarian aid and types of humanitarian crisis.
2. Identification of the role of the pharmacists in responding to humanitarian crisis.
3. Understanding responsibilities of pharmacists toward handling of medicines during crisis.
4. Learning from good and bad cases of donation of medicines.
5. Understanding the role of technology in the development of pharmacist’s role in provision of professional services in emergency condition.

Take Home Lessons/What Needs to be Done

1. Pharmacist is an essential component of the humanitarian aid team and must be involved in all segments of its planning and execution.
2. The donation supply and management needs to be an ongoing process of learning and need to be evidence based.
3. Supply chain management is an integral part of the pharmacist’s role during health emergencies.
4. Rationality and ensuring responsible use of medicine must be at the core of the planning of pharmacy services.
5. Awareness and training regarding disaster management is needed for health-care professionals.

Background

Medical and pharmaceutical responses are crucial for saving precious lives during any humanitarian crisis. These responses include provision of both supplies as well as skilled human resource. Increasing number of humanitarian crisis situations are happening due to natural (owing to global warming, climatic change, and natural geographic processes) as well as global sociopolitical scenario with rising number of unresolved conflicts, economic turmoils, and international disputes (The World Economic Forum, 2019). Hence, health professional’s response to humanitarian crisis have evolved as a permanent feature of the global health-care scene.
Pharmacists as the essential member of health-care team, are incorporated in the health system network globally, also including their presence in the emergency conditions. The role of pharmacist is transforming globally to patient-centered approach. Similarly, in emergency medicine, pharmacists have not only struggled to advance their role in the logistic management but also focussed on rationality and safety, in accordance with the needs of the population.

**Types of Humanitarian Crisis**

The events that result in threatening situations toward safety, health, and well-being of single person or community are identified as humanitarian crisis. Such events influence the community’s capacity to cope with physical, environmental, or economic damages that arise due to these events.

Centre for research on the epidemiology of disasters (CRED) and the international disaster database (EM-DAT) have categorized the human disasters as in Fig. 1.

These crises can also be classified on the basis of resource needs, operational challenges, and overall requirements (1). This includes

1. Small-scale injury/illness events: tornado, small level disease breakout, bus crash.
2. Large-scale natural disasters: tsunamis, hurricanes, flooding, moderate earthquake.
3. Complex events: terrorism activity (multiple shooting of bombing), mass burn events, limited outbreak of infectious disease such as severe acute respiratory syndrome (SARS), and Avian Influenza.
4. Catastrophic health events: major earthquake, bioterrorism, pandemic, or nuclear detonation.

**Health-Care System During Crisis Conditions**

Implementation of emergency response emphasizes the importance of sustaining the resources of primary health-care system and reflecting these services into primary health-care strategies, policies, and services (Swathi et al., 2017). For instance, a number of health policies have been implemented by the United Nations and International Federation of Red Cross (with Non-Governmental Organizations) in collaboration with the local governments. The essential components of primary health-care system have been adopted to devise these policies. Reduction in events of disaster associated chances of morbidities and mortalities have also augmented the importance of implementing these policies. Moreover, standalone emergency response (trauma care, management of chronic situations, immunization, psychological support) has been recognized as an essential component of primary health-care system (Swathi et al., 2017).
The need of a design and implementation of an integrated health-care system for humanitarian crisis management framework was felt due to the lack of framework, competency in disaster management, and appropriate skills. Despite understanding of levels of disasters and their types (Fig. 1), meager efforts have been made to invest on strategies to cope and treat the aftermaths of such threatening events. The available policies do not train health-care professional students (physicians, pharmacists, nurses, and so on) to directly excel in disaster management competencies. Disaster management has classically not been part of the core curricula in health systems and mostly opted as an additional course delivered by the international or regional humanitarian aid organizations. The limited web-based programs and conferences only target the professional health-care workers and not the students.

An iconic disaster management system is envisioned of preparedness and rescue, which is regionalized, tiered, adaptive, and resilient. It can cope with all the different types and levels of humanitarian crisis. This system should be based upon networks of disaster management health-care centers and community-based resilience. Long-lasting success of this system is based on the alliance of three major components, that is, a resilient community, specialized disaster management hospitals/centers, and network of skillful health-care professionals (Toner et al., 2018).

The Phases of Response to Humanitarian Crisis and the Health-Care Professionals

The phases of crisis have been studied under prevention, incident preparation, response generation, and recovery efforts. A more comprehensive scheme includes six stages including warning, risk assessment, response, management, resolution, and recovery. The nature and severity and type of needs may vary tremendously in the initial phase of the emergency. The initial acute phase of 24 h needs can be further split into the immediate needs (0–2 h) and the extended phase (12–24 h) (Hurd and Mount, 2008).

Preparedness

Crisis is declared when the health-care needs exceed the capacity of the available infrastructure. The scale, intensity, and the short time in which these demands arise warrant the need of prior preparedness of the health system to deal with any emergency. Following key components of the emergency preparedness are identified in the literature (Hurd and Mount, 2008).

Planning

Anticipation of the role of health-care providers and identifying the types of disasters needed to be covered in planning are of important national and organizational concerns. The key health-care providers identified for responding to crisis are also called first responders. In the United States, pharmacists have been identified as part of the planning team for the crisis management since 1960s. Disaster preparedness is part of the requirement for accreditation of hospitals by the Joint Commission on Accreditation of Health Organization. According to a national survey in the United States, all hospitals have plans for responding to natural disasters, whereas most hospitals also have plans for chemical, biological, explosive, or nuclear/radiological events.

A diverse range of professionals are involved in response to the disasters. The personnel coming in first contact are termed first responders and include police, security, or other law enforcement personnel, firefighters, rescue personnel and paramedics, and ambulance attendants. Evacuation helpers, drivers, air lifters, and divers may also be engaged in depending upon the nature of emergency. Professional health-care personnel are mostly involved at second level, in the health-care facility or clinic whether permanent or in a make shift capacity. A good number of volunteers and public works personnel are also involved (Hurd and Mount, 2008).

Emergency department (ED) pharmacist has a key role in planning and responding to intentional (man-made) or unintentional (natural) disastrous events. ED pharmacist should be connected to regional and national emergency networks and should be involved in planning and policy-making decisions. Selection of pharmaceuticals and associated provisions for emergency inventories can be decided by involving ED pharmacist in disaster planning committees. The competence of ED pharmacist can help developing the guidelines for the treatment of disaster victims, postexposure symptoms, prophylaxis, patient isolation, and the provision of antidote in all emergency-related health-care centers. Another important role for ED pharmacist is to rationalize the procedures to obtain antidote from national stock in case of insufficient supplies available in the local emergency centers. ED pharmacist can provide antidote in case of bioterrorism event and can effectively participate in actions concerned with prophylaxis, treatment, and counseling. The pharmacist can also help in the provision of mass supply of appropriate medications and advise to physicians for rational prescribing.

Rescue

Search and rescue (SAR) is one of the most important and dynamic operation in disaster management. To do so, there are some principle methods, which can be applied. Security and safety should be always fully considered for both staff and victims. Generally, the initial SAR phase could last for hours or days after the crisis. However, a prompt response is required to save the lives from imminent danger. This phase usually passes in few days and actions turn toward providing support to the affected people.

The personnel engaged should be familiar with the role of rescue services in work on-scene, incident command structure, and international standards for rescue missions. In the crisis of Hurricane Katrina in 2005, SAR phase extended to 4 weeks. People remained trapped in their houses with limited food availability. Houses were surrounded by flood and most shared the emergency
supplied foods with neighbors until disaster teams rescued them. It was only possible with the collaborative effort of health-care professionals and local authorities. Immediate rescue concerns in emergencies that are more focused on health issues may warrant the need of arrangement of immediate medical supplies, which may be followed by setting up a temporary structure for pharmacy (bus or trailer or mobile van) rather than establishing a permanent structure.

Rehabilitation

The rescue and respond activities are followed by recovery, reconstruction, and rehabilitation. This is the most challenging phase of the disaster cycle and covers a wide range of actions. Perhaps the most demanding element is to review and evaluate the disaster management process to see whether it could have been managed better in preparation for possible future disasters. This phase may include spatial planning, developing infrastructure, communication, water, hygiene, and sanitation, housing, livelihoods, social security, transport, agriculture, and evaluation. This transition phase from the temporary and ad hoc structures to permanent ones may call for exceptional service designs from the health-care professionals. Like temporary relaxation of pharmacy dispensing procedures to ensure that health coverage is not compromised among masses following the crisis situation (Hurd and Mount, 2008).

Role of Pharmacists

Pharmacy professionals can deliver various roles in disasters, emergency situations, conflicts, wars, and disease out breaks as a part of the humanitarian aid organizations or being a part of the health facilities of the affected region. These include

1. Planning and purchasing of pharmaceuticals and related supplies
2. Monitoring and evaluation of the stocks received
3. Establishing drug supply system
4. Carrying out pharmacovigilance activities and monitoring the supply chain for any infiltration of substandard and falsified medicines
5. Ensuring rational use of medicines
6. Preventing antimicrobial resistance
7. Counseling and ensuring medication adherence
8. Preventing wastage of medicine
9. Controlling and preventing misuse and abuse of medicines
10. Minimizing communication barrier between affected community and pharmacy professionals to ensure proper counseling and understanding of the social and cultural preferences.

Policy and legal framework, drug supply management, and management support are three main levels of pharmacist’s role in health facilities (WHO Regional Office for Africa, 2004).

Pharmacists can play the role of a health-care volunteer, a regulator, a team member. He can help development of indigenous guidelines drug donations to cater the needs of the local population specially in settings that are particularly vulnerable to disaster or crisis. Once donations are received at the relief camps pharmacy professionals are responsible to ensure that the supply is utilized in a rational and safe manner.

Delivering Pharmacy Services According to the Sociobehavioral and Cultural Needs of People

Health-care services of societies are closely aligned with the cultural, social, and religious beliefs of the people. It is important for the pharmacists to ensure this in its planning, procurement, and service design activities. The sensitive scenario of humanitarian crisis where many lives are at stake and people are already facing trauma, loss, and insecurity careful analysis of their social needs enable the pharmacist to implement its role in an effective manner.

The humanistic needs of the aid provision are important component. Pharmacists in humanitarian aid organizations can also be involved in managing advocacy campaigns or working. To understand the actual needs of the community, it is important for some of the professional members to work in field projects. Understanding patients’ behavior and psychology is inevitable to ensure the proper delivery of pharmaceutical services to the population.

Preventing Antimicrobial Resistance and Disease Outbreaks

Epidemics and infectious diseases are an identified threat during any manmade or natural disaster situation. Scarcity of clean water and proper toilets pose problems of water borne diseases such as diarrhea, cholera, and gastroenteritis. The situation can become an urgent threat to the lives of population, which may be practically cutoff from the regular supplies or food and medicine. Cholera outbreaks were reported in the past in many natural and man-made disasters including the civil war in Sierra Leone (Dyer, 1995), floods (Tordrup et al., 2013), and post-earthquake (Bukhari et al., 2010) in Pakistan.
Apart from cholera malaria, tuberculosis and skin infections including scabies were also reported in such situations, due to people living in confined settings where they have poor sanitation, poor ventilation, and no sunlight. Apart from drug supply shortages, poor quality of pharmaceuticals has also been identified as the one of the problems encountered. Substandard antimalarial was found to be the cause of poor prognosis and emergence of multidrug-resistant malaria in an Afghan refugee camp in Pakistan (Leslie et al., 2009). Hence, adoption of a concrete policy for the quality assurance of the supplies is warranted in the disaster management programs. WHO prequalification system has been used as an effective tool in this regard (Bukhari et al., 2010). Rational use of medicines and efficient inventory management ensure the availability of antimicrobials as well as their safe and effective use. The shortage of trained staff in such situations are compensated using predesigned and standardized dosing protocols as used by relief and rescue organizations such as Medicines Sans Francis.

In order to develop a cautious approach to the public health issues regarding infectious diseases and their outbreaks, pharmacists must be equipped with the skills to understand and effectively use the epidemiological tools such as World Health Organization’s (WHO) Disease Early Warning System (DEWS) for estimation and planning of pharmaceutical supplies in need. WHO established DEWS for early detection of diseases in the war-stricken regions of Iraq, Sudan, Serbia, and Afghanistan in early 2000s (World Health Organization, 2019). The key components of this system include infectious disease monitoring, outbreak investigation, disease control coordination, logistical support, and quality control (U.S. Agency for International Development, 2013).

Irrational supplies, poor-quality medicines, absence of trained health professionals, and lack of prescribing protocols for safe and rational use of antimicrobials need to be proactively addressed to prevent emergence of resistant pathogens in the resource constraints environment such as refugee camps.

A specialized logistic system needs to be established that entails the responsibility of safe use of pharmaceutical in the circumstances where affected people are more vulnerable to damage than in normal circumstances.

Antibiotic needs of the population are likely to be different in emergency situation than during peacetime (World Health Organization, 2011). AMR guidelines (antibiotic choices, doses, duration of treatment) for emergency situations must be evaluated. It is challenging to decide on a single appropriate guideline in such situation due to difference in nature of each type of hazard (i.e., trauma, flooding, earthquake, blasts, or volcanic eruptions) as each produce different medical problems and infections. Hence, no single approach can be adopted as a guiding principle.

Absence of laboratory support is also an important area that demands an alternate strategy for supporting diagnosis for use during the crisis situations. However, adopting AMR as a priority in the response planning may present a difficult task due to different priorities of the crisis management settings (World Health Organization, 2011).

**Good Donation Practices**

Initially introduced in 1996 (World Health Organization, 1999), the guidelines for medicines donation by WHO were revised in 2010 to interagency guidelines (World Health Organization, 2010). The document incorporates experiences of major international humanitarian agencies. It provides lessons from medicines donations carried out around the globe during the last decade. These Interagency Guidelines for Drug Donations are developed and endorsed by Caritas Internationalis, Churches Action for Health of the World Council of Churches, International Committee of the Red Cross, International Federation of Red Cross and Red Crescent Societies, International Pharmaceutical Federation, Medicines Sans Frontieres (MSF), Oxfam, Pharmaciens Sans Frontieres, The Joint United Nations Commission on HIV and AIDS (UNAIDS), United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA), the United Nations High Commission for Refugees (UNHCR), United Nations International Children’s Emergency Fund (UNICEF), World Bank, and WHO.

The guidelines describe medicine donation problems by using the examples from the earthquake in Gujarat, India (2001), the Tsunami in Sri Lanka (2004), and the inconsistent and insufficient supply of medicines in Tanzania.

Administration of veterinary eyedrops to women in Lithuania (1993) causing temporary eyesight loss, supply of large quantities of useless items (contact lenses) in Sudan (1990), donations of thousands of tonnes of poor-quality pharmaceuticals to Bosnia and Herzegovina during 1992–96, and inappropriate quantities of unsorted items delivered to Armenia (1998) are the historical examples quoted in the guidelines documents to enable the understanding of the recipient countries to be aware of rationalizing the donation process (World Health Organization, 1999, 2010).

In addition to the type, packaging, labeling, and quality issues, several other ethical issues are also identified regarding medicines donations. These include donation of returned, expired, or short expiry drugs, and so on. Hence, not being able to foresee the hazards of receiving uncontrolled donations may result in a bigger financial and ethical liability then controlling the damage caused by medicine shortage (World Health Organization, 2010).

Core principles of guidelines for drug donations according to interagency guidelines issued by WHO (World Health Organization, 1999, 2010).

1. Donations should be aimed at the benefit of the recipient
2. Recipient has the right to exercise its authority and wish in choosing the nature and quantities of the donations
3. Care should be taken to watch against double standards in quality (supply of medicines not registered in the donating country or banned in donor country, near expiry, or expired drugs donation, compromised or damaged stock or returned or controversial, doubtful stocks)
4. Effective communication between donor and recipients is needed
Examples of Bad Medicines Donation

Banda Aceh province in Indonesia was hit by Tsunami in December 2004. WHO has funded a study to evaluate the drug donation situation and its handling following the disaster. Pharmaciens Sans Frontieres Comité International carried out this comprehensive study that provides the factual analysis of the situation.

The report is an excellent source to help humanitarian aid workers, organizations, and governmental organizations, who have a stern stance on donation policies during humanitarian crisis. The report states that nearly 60% of donated medicines were not listed in the national List of Essential Drugs and 10% had expired before reaching the destination. Thirty percent of donated medicines had just 6 months or less shelf life, also they had missing expiry dates. This was a result of accepting the unasked donations of 4000 tonnes for a population of 2 million people (Pharmaciens Sans Frontieres Comité International, 2005).

Similarly, in 2004, during the Tsunami crisis in Sri Lanka, a large bulk of medicines was donated by 278 donors, including 150 International organizations and 30 foreign governments. Medicines were labeled in more than 16 foreign languages. In 2005, the use of poorly stored spinal anesthesia from these stocks led to the growth of Aspergillus sp., resulting in meningitis in three pregnant women. It also resulted in Health Ministry in Sri Lanka paying for the huge costs not only for the storage, shipment, and handling of donations but also for the cost of the medicine disposal (Benaragamama and Fernandopulle, 2007).

Case Stories Pharmacists Serving in Humanitarian Crisis Globally

FIP and Capacity Building of Pharmacist Working in Humanitarian Crisis

The International Federation of Pharmaceuticals combines the role of emergency pharmacist and the military services under the umbrella of military and emergency pharmacists (MEPS) since 1994 (International Pharmaceutical Federation (FIP), 2019). The organization provides extensive framework of activities including the meeting of the MEPS colleagues during annual congress of FIP, webinars, newsletters, and special projects including the FIP pictogram project and development of guidelines for emergency preparedness of pharmacists during disaster situation.

In Chronic Disease Management

As global political conflicts continue to increase, more and more refugees are facing urgent challenges such as the unavailability of proper medical care. Many of the Syrian refugees now living in Jordan (the entire group accounts for one-tenth of that country’s population) are struggling with at least one chronic disease, placing tremendous strain on existing health and humanitarian resources as a result.

A 3-month long-single blinded randomized study was carried out in three cities of Jordan with the majority Syrian refugee population. The total number of patients recruited was 109. Treatment-related problems (TRPs) were identified and resolved using the pharmacist-delivered Home Medication Management Review (HMMR) service based on the Australian HMMR protocol. Significant differences were observed between the intervention and control groups with the percentage of TRPs resolved/improved in the intervention group being 66.8% in comparison to 1.5% in the control group. The postintervention evaluation showed that only 19.7% of the TRPs remained unresolved in the group receiving medication review by the pharmacists (Fig. 2). The study demonstrates that pharmacists can play a vital role in closing treatment gaps for managing chronic health conditions among this underserved population. The interventions were received positively by the physicians as well as by the patients, and the authors recommend that this service can be of vital significance in designing effective refugee health programs (Al Alawneh et al., 2018).

![Figure 2](https://example.com/image.png)  
Figure 2  Outcome on TRPs observed in the Syrian refugee population undertaking pharmacist led Home Medication Management Review in Jordanian cities.
Ensuring the Adequate Supply of Quality Essential Medicines in a Country with Poor Access to Essential Medicines (2005–2013)

In 2005, earthquakes hit the northern regions of Pakistan, and the federal capital and the task of essential medicines availability were closely managed by a team of pharmacists that grew from few pharmacists to an expanded team working in nation-wide disaster management offices under World Health Organization (Bukhari et al., 2010).

For a country where pharmacist was still to be recognized as an essential health-care team member, the pharmacists managed to provide essential medicines to the far flung regions in the country. WHO acted as a hub for receiving and rationalizing the donations for many donor agencies, and this centralized framework was the main reason for a low pharmaceutical waste documented during this humanitarian operation.

Emergency pharmacists were trained along with the establishment of central warehouse and satellite facilities. Apart from logistic supplies, it was ensured that the medicines were provided with the training of paramedics delivering the services of catering the remote facilities. Storage, dispensing, and prescribing protocols were developed, and the huge number of pharmacists and paramedics were trained to work in close collaboration with the public health experts and epidemiologist to enhance the effectiveness of emergency response.

The concept of health-care kit supplies was used to ensure rational and complete provision of the treatment needs. The whole process was aided with the development of an upgraded software (LSS upgradation to Pharmacy Information System (PIMS)) that linked the central warehouse with the regional units. Two types of customized kits were designed to cater different types of health-care needs and speed up the delivery and demand process (Bukhari et al., 2010).

Advances in Management of Humanitarian Crisis—Use of Technology and Involvement of Multidisciplinary Approach

The use of information technology can aid the pharmaceutical need in humanitarian crisis by making the processes more efficient and cost-effective by minimizing the wastage. Along with the classical use of logistic software such as Logistic Support Service by WHO, use of online access to dosing protocols, the use of pictogram-based software has also been used to promote health literacy and to improve patient counseling.

In 2004, the International Pharmaceutical Federation (FIP) in collaboration with its Military and Emergency Pharmacy Section (MEPS) with the Children Hospital of East Ontario (CHEO) started the Pictograms Project. The project is designed to provide easy to understand pictograms to provide information on the proper and safe use of medicines for use in illiterate patients or patients with language barriers as seen with immigrants and during the humanitarian aid projects. The project has wide application and was tested for its use during the Syrian refugee crisis when a number of immigrants who were non-English speaking women, children, and elderly reached Europe. The software is called PictoRx and the Arabic version was added to the software in 2015 to help the refugees. The previously available languages included English, French, Spanish, Dutch, Maori, German, Chinese, and Polish. PictoRx software is used to aid local pharmacists in routine dispensing by ensuring that patients receiving the medicines are provided with the proper counseling using pictograms and printed labels. It has been tested in several communities across the globe, including Germany, the recipient of largest number of Syrian refugees. The project has been granted WHO Grant on Patient Safety in 2010 and the 2009 Canada Post Community Literacy Award. An improved version of the software is developed by Applied Research and Innovation at the Algonquin College, Ottawa, Canada. The software is available as online or offline version from the home page (www.fip.org/pictograms, https://www.fip.org/pictogramsofsoftware). The software provides printable material and labels for use as the counseling aids to the patient. Various modalities are provided in the software to promote comprehensive medicine information to the patient in the form of an information sheet as well as prescription calendar, which incorporates several medicines for a patient at one place (Vaillancourt et al., 2012).

Technological advances and their usage in humanitarian crises have led to the transformation of the aid process and added a greater diversity to its needs and resources attached. The modern plan of aiding in humanitarian crisis shifts from giving aid in kind to cash, collecting data for development purposes, private sector partnerships, use of blockchain, keeping the recipients right as priority, use of unmanned aerial vehicles, tracking and identifying aids including 2D-bar code, and Radio Frequency Identification tags and labels.

Simple and cost-effective aids are also in use along with the universal adoption of Track and Trace systems for tracking and identification of authenticity of pharmaceutical supplies in order to prevent the influx of substandard and falsified medicines in the supply chain (Rasheed et al., 2018).

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