

Military Pharmacist Experience in Emergency Relief Mission – The Haiyan Super Typhoon in Tacloban, Philippines

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ABSTRACT

BACKGROUND The strongest typhoon Yolanda (Haiyan) hit the Philippines and claimed more than 6,300 lives in 2013. Malaysian National Security Council had established and deployed an emergency relief team to provide medical aid to the survivors in Tacloban district. This paper is to document common diseases after a typhoon, to list essential medications and to share experience during the mission. Top 2 clinical diseases recorded were upper and lower respiratory infections (54.0%) and infected wounds and lacerations (14.0%). Top 2 age groups treated were 13-65 year old (66.0%) and 1-12-year-old (34.0%). The 3 fast moving medicines were Diphenhydramine expectorant, Chlorpheniramine Maleate Syrup and Cloxacillin Sodium Capsule. Extreme tropical weather contributed to not only high respiratory illnesses but created logistics issues, especially during outreach programs. Communicable diseases such as leptospirosis and dengue amplified 2 weeks after a disaster. Survivors had to live in an area without clean water supply and poor sanitation. Military Pharmacist was involved in supplying clean and safe drinking water by using Malaysian invention of Field Water Purification System known as JERNIH. In a water-based disaster, a high number of patients presenting with an acute respiratory disease as well as infected wounds and lacerations should be expected. Data collected can be used to further improve disaster response procedures in the future.

KEYWORDS Typhoon Yolanda (Haiyan), Malaysian National Security Council, Tacloban district, Military Pharmacists, Field Water Purification System

INTRODUCTION

On 8th November 2013, the strongest and the deadliest typhoon Haiyan, locally known as Yolanda hit the Philippines. Haiyan was the 23rd tropical cyclone for the year 2013 and the 9th that made landfall. This worst typhoon in the world with record winds approaching more than 300km per hour followed by a deadly tsunami with water levels reaching above 20 feet height. A total of 6,300 individual were reported dead and 28,688 injured¹. Damages nation-wide were estimated at USD 14.5 billion and more than 30 countries provided various aid to the survivors. The Malaysian National Security Council established and deployed a disaster relief team with a pharmacist to provide medical aid to the survivors in Tacloban district.

located 360 miles (580 km) southeast of Manila. Malaysia was among the earliest 10 International Medical Teams (IMT) deployed to the Philippines namely from Australia, Canada, France, Germany, Israel, Japan, Korea, United Kingdom and United States of America².

OBJECTIVES

The paper is to document common diseases after typhoon Haiyan, to list essential medications and to share experience gained from the mission.

MISSION MODULE

The Malaysian Government through the Malaysian National Security Council had deployed a total number of 51 personnel using National Blue Ocean Strategy (NBOS) – 1Nation Approach. The team member consists of The Malaysian National Security Council (2 personnel), Malaysian Armed Forces (MAF) (22 personnel), Ministry of Health (MOH) (6 personnel), Malaysian SMART (Special Malaysian Disaster Assistance & Rescue Team) (9 personnel), Puncak Niaga Holdings Berhad (PNHB) (4 personnel) and SAPURA (Communication government-link company) (4 personnel). Twelve (12) sorties of C-130 RMAF (Royal Malaysian Air Force) involved throughout this mission.

Malaysian Medical Team (MMT) composed of 4 x Emergency Physicians (1 x MAF and 3 x MOH), 4 x Medical Officers (MAF), 1 x Pharmacist (MAF), 1 x Medical Officer Assistants (MOH), 1 x Nurse (MOH) and 7 x Paramedics (MAF).

MMT main objective was to provide medical and health care to injured and affected survivors in an acute phase of an emergency relief mission. The provision of health care was given static Level 1 Forward Hospital and also Mobile Outreach Clinics. 2 x Forward Hospitals had been set up at Tacloban Airport and at the MAF campsite. MMT also had reached out at least 6 remote vicinities namely Palo, Carigara, Tanauen, Malaguicay, Santa Elena as well as Tacloban City throughout Mobile Outreach Clinics. Total numbers of patients who had received medical care from MMT was 2038 within 2 week time.

PHARMACY ACTIVITIES

In terms of pharmacy activities during this disaster relief mission, they were not prescriptive and well defined

until the team established. For this mission, pharmacy activities can be categorized into 3 phases which are pre-deployment, deployment and post-deployment.

During pre-deployment phase, military pharmacists were actively involved in planning medical and pharmacologic matters to determine the list of medical supplies to bring and also preparing Load Manifest of medical supplies to meet transporting requirement of RMAF C-130 aircraft. A military pharmacist also managed provision of vaccines and prophylactic agent i.e. doxycycline which required to protect the troops. Among the vaccines provided to the troops were tetanus, hepatitis A and B, cholera and typhoid vaccines.

During the deployment phase, the main part of military pharmacist activities was managing the medical store, distributing and replenishing medical supplies and dispensing the medicine as well as giving counselling of medicine during outreach clinics. The military pharmacist dealt directly with patients in dispensing medications at the static forward hospital and during outreach clinics. Spare times were spent by distributing blankets, communicating with traumatized survivors and giving them moral support when interacting with them. Apart from that, the military pharmacist assisted the MMT commander in managing public health issues such as sanitation, hygiene and minimizing vector-borne disease risk among MMT troops. Communicable diseases such as dengue amplified 2 weeks after the disaster due to debris accumulating rainwater which became breeding grounds for dengue-causing mosquitoes like *Aedes aegypti* that breed in clear stagnant waters³. The military pharmacist also worked and helped other volunteer pharmacists, local and foreign NGOs and local health authority in providing medical care to the survivors and in managing medical supply issues.

Military pharmacists also liaised with the International Pharmaceutical Federation (FIP) and the Philippine Pharmacists Association representatives in coordinating assistance from these 2 agencies. Towards mission completion, military pharmacists had prepared medicines and medical supplies properly, and handed them over to the local Bethany Hospital.

Apart from managing medication and logistic issues, the military pharmacist also involved in providing clean and safe drinking water to survivors by using Malaysian invented portable Field Water Purification System patented and named as JERNIH. JERNIH is an innovative product resulted from a collaboration between MAF and PNHB. It produces 3,000 litres of clean and safe drinking water per day and had benefited the survivors within the locality as well as MMT troops. By having clean water, basic hygiene practices were possible among the survivors as well as the troop. By end of the mission, JERNIH had been donated to the Local Government Unit of Carigara to be used for Carigara community.

For post-deployment phase, the military pharmacist had prepared relevant reports and statistics to be shared for future use. Several presentations on military pharmacist experience during post-disaster humanitarian mission have been delivered during conferences at national as well as the Asia Pacific level.

STATISTICS

From 2,038 patients treated during 2 weeks of this mission, 66.0% were adult and 34.0% were children below 12 years old. By looking into clinical spectrum of disease, majority of the cases involved respiratory system (54.0%), followed by wound and injuries (14.0%), gastrointestinal tract (10.0%), skin (10.0%), musculoskeletal (6.0%), cardiovascular system (4.0%) and eye, ear, nose and throat system (2.0%) (Figure 1).

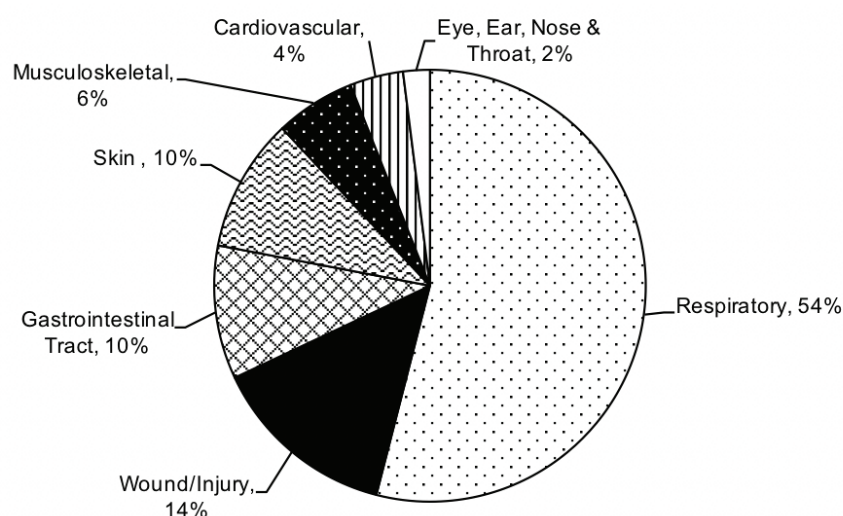


Figure 1. Distribution of Diseases Encountered During the Mission Group by System (n=2038)

In order to support this mission, 169 medicines and 32 medical supplies had been used in the treatment of survivors. There were 3 sources of medications and medical supplies brought to the mission area. In terms of line item quantity, 39.4% were from MOH, 38.3% from MAF and 22.3% donated by 1Malaysian Development Berhad (1MDB). In terms of value, a total value of medicines and medical supplies brought were USD 18,000 and USD 1,750 respectively. MOH had contributed the highest value which was USD 12,308.52 (62.3%) followed by MAF (22.2%) and 1MDB (15.5%).

Top 5 most valued pharmacological classes among all medications used were anti-infective (USD 3,792.68, 21.0%), alimentary tract (USD 2,984.34, 16.6%), respiratory system (USD 2,733.91, 15.2%), dermatological (USD 2,226.41, 12.6%) and nervous system (USD 1,903.94, 10.6%). Figure 2 shows the whole range of pharmacological class value in USD.

Top 5 medications used were Diphenhydramine HCL Expectorant - 2000 bottles of 90ml, Paracetamol 120mg/5ml Syrup - 800 bottles of 100ml, Chlorpheniramine Maleate 2mg/5ml Syrup - 400 bottles of 60ml, Cloxacillin Sodium 250mg Capsule - 10 boxes of 1000's and Diclofenac Sodium 50mg Tablet - 10 boxes of 1000's.

CHALLENGES

Those who had involved in HADR (Humanitarian Assistance and Disaster Relief) mission might face problems gaining trust of the local population due to their suspicion of foreigners. For MMT case, we did not have any issue with this and the locals were looking forward to us and appreciated the assistance given. HADR military personnel normally are not allowed to carry weapons even for self-defence and have to choose between maintaining security and rescuing lives.

The gravity of this issue can be appreciated considering that supplies and equipment are sometimes robbed and sold at the black market ⁴. In this mission, MMT also had to adhere to such standard operating procedure set by The Armed Forces of the Philippines (AFP). However, in exchange for that, AFP had provided 24-hour security surveillance at our camp and escorted us during all outreach programs.

Among challenges faced by MMT in providing quality and safe medical care to the survivors as well as managing pharmacologistics in this disaster-struck environment was meeting the quantity of demands and also specific needs of victims. Other than that was extreme and erratic weather. The harsh weather of Tacloban with its tropical rainforest climate presented by a very high temperature that went up to 41 degree Celsius and humidity 86% with occasional heavy rainstorms and strong wind affects medicine stored at storage area at the medical base as well as medicine brought for outreach clinics. Movement of MMT to remote and needy areas hindered by the severe condition of the roads. Uprooted trees were scattered everywhere including on the main roads. MMT managed to get to the intended areas by the assistance of SMART member who cleared debris from the road using tools and machineries brought along with them. The other challenge for the military pharmacist was the language barrier, especially among elderly patients. This challenge is commonly faced by an international pharmacist who involved in such mission abroad and can be tackled in a lot of creative ways ⁵. The dispensing and medication counselling to this population were made easier by engaging teenagers who speak very fluent English and they became our translators during those sessions. Learning common local words also made dispensing and counselling a lot easier and fun.

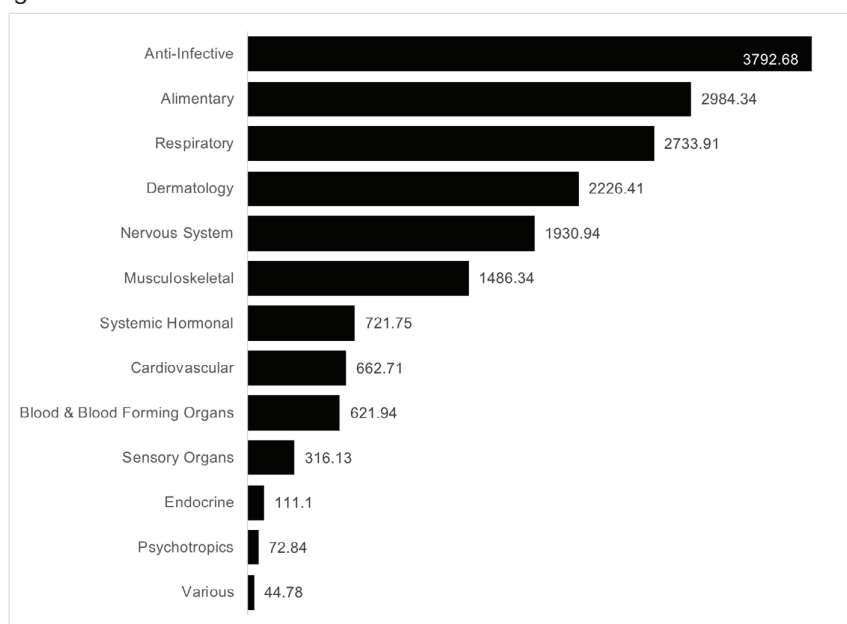


Figure 2. Pharmacological Class Value of Medications Used During Mission (in USD)

RECOMMENDATIONS

Lessons learned from this mission can become guidance for health service support in emergency and disaster relief mission especially in pharmacologic support in future engagement. Future improvement can be focused and categorized into 3 aspects. The first one is in terms of medication selection. For water-based disaster like a typhoon, medications that should be focused more are for the treatment of respiratory-related illnesses, wound and soft tissue injuries as well as gastrointestinal tract diseases. A high number of patients presenting with infected wounds and lacerations should be expected. During initial planning, MMT anticipated a lot of chronic disease patients will come to our clinics to get their supplies which might be destroyed by the typhoon. However, from this experience, antidiabetics and antihypertensive agents were not commonly required hence can be considered to bring them in limited quantity in the future. This can be due to the nature of giving medical assistance during the first phase of disaster in which the highest priority would be saving lives and limbs. The need of these two agents can become more important only at the later phase of the disaster and normally under the responsibility of field hospital or by the local health authority.

The second aspect is in terms of equipment. By having comprehensive assessment and intelligence about the climate and weather patterns of the mission area, pharmacologic planner should come out with a proper medication storage area that can protect medications and medical supplies from direct contact with water during heavy rainstorms. Usage of pallets and waterproof containers are vital. Mobile outreach clinics would be easier by having portable, transparent, well compartmentalized, containers that can be easily assembled and disassembled, as well as light-weighted to ease mobility.

The third aspect that can be improved in future mission is the storage area. It is best to have a close system storage area with air-conditioned tentage which can protect medicines from high and erratic temperature, humidity and rainstorm.

RECOGNITIONS

Malaysia involvement and contribution in this relief and recovery operation in Tacloban had received numerous recognitions namely from ASEAN Secretary-General Le Luong Minh as the ASEAN Humanitarian Assistance Coordinator and Philippines Secretary of Foreign Affairs Albert del Rosario. They had expressed their gratitude from their visits to MMT forward hospital as well as the contribution of JERNIH during the operation ⁶.

Apart from that, Carigara Local Government Unit Mayor and Philippine National Police Chief treasured MMT contribution during the operation. US Marines and other non-governmental organisations (NGOs), as well as international governmental organisations (IGOs), had also praised MMT for providing clean and safe drinking water for their troops and volunteers.

CONCLUSIONS

MMT had successfully accomplished the mission's objective of providing medical and health care during the emergency relief phase of disaster to survivors and gave a huge positive impact on Malaysia image. By multitasking effectively and professionally during such mission, the military pharmacist was indispensable to the team. The experience gained in managing medical and pharmacologic support during water-based-disaster relief together with the data collected is useful to further improve disaster response policy and procedures as well as to define roles of the military pharmacist in the future. The needs of pharmaceutical support depend heavily on nature of the disaster, climate, geographical location, as well as socioeconomic status. Good networking with other pharmacists, local health authorities and other volunteers on the ground had contributed in coordinating and sustaining medical logistics effectively.

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