Way forward from the experiences of disaster preparedness and response at Patan Hospital during 2013-2020: Nepal

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ABSTRACT

The history of the disaster management plan at Patan Hospital goes back to 1995 AD (2051 BS). The plan was first written by Dr. Cleve Chevassut. This was a hospital-based disaster management plan and consisted of a hospital incident command system (HICS), triaging, patient flow, job description, and management protocol. This plan was regularly updated and tested with disaster drills. In the year 2013, the 10th revision of the disaster management plan was done. This plan was tested with a disaster drill and the template of this plan was circulated to different hospitals of Nepal. This document consists of a part of experiences and evidence of hospital-based disaster activity that took place inside Patan hospital and activities to establish hospital-based disaster management plan in different hospitals of the country from 2013 to 2020. This document does not cover the overall preparedness response of all hospitals and that of the country.

Keywords: disaster preparedness, emergency, Nepal

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INTRODUCTION

Disaster in any form causes disruption to the normally functioning society that causes human, economic and environmental losses. Nepal has been facing major and minor disaster regularly since 2015. Nepal has been in the risk of these disasters for a long period of time. In April 25, 2015 Nepal faced a severe earthquake of 7.8 magnitude.[1] This was followed by cholera outbreak in Kathmandu city, the capital city of Nepal in 2016[2] and in 2017[3] the cholera outbreak was in Lalitpur city, which is adjacent to Kathmandu. The year 2018 was eventful too, US Airbangla aircraft crash[4] led a great challenge to health sector. This was followed by Dengue outbreak in different parts of Nepal in the year 2019.[5] Pandemic of 2020 is a well-known fact. Such events are not only financial burden to the country but also slows down the development of the country.

Hospital-Based Disaster Management Plan

The disaster management plan of Patan hospital had a hospital incident command system, triaging criteria, treatment areas, patient flow route, communication, and debriefing. The tenth revision of this plan was done in 2013 in which hospital internal surge capacity was added along with the evacuation plan. This plan was tested with a disaster drill in August 2014 under the supervision of the Ministry of Health and Population (MoHP) and funding of the World Health Organization (WHO). In April 2015 Nepal faced a major earthquake with around 9000 casualties.[1] Management of victims at Patan hospital was done as per this disaster management plan. Surge capacity was a component that was one of the most useful components added to this plan and inter hospital coordination and communication was lacking in this plan. Following the earthquake, the 11th revision of this plan was done to incorporate communication and coordination. The concept of hub and satellite hospital model adapted by the Nepal government was incorporated in the planning. Government hospital or academic institution of the region was considered as a hub and other hospitals around the hub were termed as a satellite. Twenty-five hospitals in the country were considered as hub hospital.[6]

It was also learned that starting a field hospital without external assistance is not possible at a hospital level. Therefore, surge capacity was divided into three levels: level 1 to increase the capacity inside the hospital, level 2 to include satellite hospitals, and level three to ask for assistance for a field hospital. Along with this hub and satellite resource sharing and networking, the plan was also added in this revision. The cholera outbreak in 2016[7] and 2017[3] triggered development of an epidemic outbreak management plan for pandemic response. In technical assistance of Indiana University, USA, a draft plan was made with the help of technical experts: Dr. Josh Mugele, Dr. Darlen Rose House, and Dr. Michael Khouli. The plan was tested with an epidemic outbreak drill in February 2018 and the plan was finalized following this drill. So, this twelfth revision of the disaster management plan was implemented in 2018.[8] This plan included epidemic triage, the concept of isolation units, infection prevention, and control during a pandemic, and a plan for maintaining stock.[9]

Furthermore, this disaster management plan consisted mainly of preparedness and response cycle so to incorporate the mitigation and recovery part of the disaster cycle, the plan was modified as the thirteenth revision. As the plan was modified, we faced a COVID-19 pandemic, the response to COVID-19 was based on the 13th revision of the disaster management plan.[9]

Education, Training and Disaster Drill

Preparedness in 2013-2015 at Patan hospital included disaster drill which was conducted at Patan hospital including one of the health posts to test referral mechanism. This was followed by various activities on Water and Sanitation for Hospital (WASH). Drills on field hospitals and setting up tents were also conducted during this period. Furthermore, nonstructural retrofitting was also done at Patan hospital.

A hospital-based disaster management plan prepared and refined during this period was adopted into a template and training was designed under the supervision of MoHP and funding of WHO. This training was named Hospital Disaster Preparedness and Response plan (HDPR). This was an outcome-based training where each hospital had to make their disaster management plan and submit it. During this training, a drill was conducted at Bir Hospital which is one of the major tertiary hospitals along with one of its satellite hospitals in support of MoHP and Nepal Ambulance Service (NAS).[10] The major lesson learned was pertinent to the same issue of communication and coordination, which required the functioning of many components like command system, communion points, and collection and analysis of information. This was reflected during the US Bangla Air crash which had

49 casualties.[4] The disaster was managed well however; inter-hospital coordination was a major challenge. To improve inter-hospital coordination training was, done and following this Kathmandu valley drill was done by MoHP and funded by WHO in 2018.

The pandemic response was added to this hospital-based disaster management plan and it was tested by a disaster drill conducted in February 2018.[8] This component was inserted into HDPR and the training was continued in different hospitals in all seven provinces of Nepal. This was followed by disaster drill in province 1,2, 4, 5, 6, and 7. Few training was also conducted in Sindhupalchok and Nuwakot in 2019 in the initiation of local government and financial assistance of Handicap international.

To improve the management of infectious disease outbreaks Integrated Management of Adolescent and Adult Illness (IMAI) was piloted at Patan Hospital in 2016. This training was based on District Clinician Manual (DCM) developed by WHO[11] which included, emergency management, disease surveillance, infection prevention, and control, quality improvement-control and case management. This training was conducted in all seven provinces in coordination with EDCD and funding of WHO and UNICEF. During the years 207 and 2018, Early Warning and Reporting System (EWARS) training were funded and conducted by Epidemiology and Disease Control Division (EDCD), MoHP at Patan Hospital.

To improve child health in humanitarian crisis a training package "Newborn and Child Health Package on Humanitarian Settings" was developed by Save the Children in 2017. This training package consisted of basic emergency components like BLS, management of airway breathing and circulation, drowning, malnutrition, and child psychology during a humanitarian crisis. The training was piloted at Bardia and Bardibas under the sponsorship of Save the children.[12] The training had positive feedback and impact, however, it was discontinued due to administrative reasons.

During this period Hospital preparedness in emergency (HOPE) courses were also running for various hospitals in the country[13] which also had a positive impact in hospital-based disaster management in Nepal. This training consisted of preparedness, mitigation, response, and recovery of multi-hazard disasters.

Patan hospital is a teaching hospital of the Patan Academy of Health Sciences (PAHS). The academy took initiative in adding disaster management in the curriculum of undergraduates, post graduate (General practice and emergency medicine), and fellowship training (emergency medicine).[9] A flip classroom module was used week project in the undergraduate curriculum. During the final year posting in an emergency, they would learn about the hospital incident command system, triage, surge capacity, and stockpiling. This component was also added to the postgraduate medical education of general practice and emergency medicine. During their final year posting they get a day of training on the above-mentioned component plus hub and satellite concept, disaster planning, and inter-hospital and intra hospital coordination. The disaster curriculum has been added extensively into fellowship in emergency medicine where they spend one month of their posting in disaster medicine. During this posting, they learn all components of a disaster management plan including the constitution, laws, and policies related to disaster management in Nepal.

COVID Management

The lesson learned from previous activities helped responding to COVID-19. The core to the disaster management plan at PAHS the was hospital incident command system (HICS). The requirement of the dynamic protocol was found very important during a dengue outbreak in September 2019.[5] Changing evidence, ground scenario, and updates in case definitions were incorporated into this dynamic protocol to manage COVID-19.[14] Clinical characteristics of suspected COVID and conformed COVID were also important information for this protocol.[15]

Staff at the emergency department were oriented to running triage systems during the outbreak, surge capacity and isolation units were due to management of the Dengue outbreak.[16] During COVID-19, the regular triaging was changed to pandemic triage where primary and secondary triage system was started.[17] Research activities were conducted to see awareness, knowledge, practices, and willingness to work in COVID-19.[18–20] Besides this, collecting the right information at right time and delivering it to the right target at right time is important during the disaster, health information and intelligence management system were activated through external communication which was crucial for gathering information.[21]

The health care facility of the region was established as a hub and satellite system after the 2015 earthquake, the coordination between government, hub, and satellite system was an important support system during this pandemic.[22] The hospital was divided into COVID and non-COVID sections these two systems ran parallelly for patient management.[23] The hospital incident command system was the brain and infection prevention control was the spine for the management of this pandemic at Patan hospital.[24,25]

Way forward

Disaster management is possible through Intra and inter-sectorial coordination. This is possible through the proper coordinating mechanism. In the federal system of Nepal, coordination between health emergency operating systems at the central level, provincial health emergency operating center and provincial level, and hub and satellite hospitals at the local level is crucial to successful management of the disaster. This system should be associated strongly with policies and protocols.

The system should be strengthened by education and training. Disaster education should be embedded into medical education rather than some occasional training only. Undergraduate and postgraduate medical education should have the provision of disaster medicine in their curriculum. Moreover, to improve disaster management specialized courses and career opportunities need to be developed. This will help empowerment through education and research.

Understanding hazards, our local resources, ethnic and cultural impact, resilience and need assessment of all phases of disaster is crucial specifically for developing country like ours where we need to utilize resources carefully. Finally, regular training on incident command systems, disaster management, trauma management, and infectious disease management to enhance and update the skill is necessary.

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