

Development and update of hospital disaster preparedness and response plan of 25 hub hospitals of Nepal – process documentation

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ABSTRACT

Hospital disaster preparation involves creating systems and processes to enhance a hospital's readiness for emergencies. The first step in crisis management is having a disaster management strategy, mandated by international agreements like the Sendai Framework. The 2015 Nepal earthquake highlighted hospitals' capacity concerns, leading to the inclusion of hub and satellite hospitals in disaster plans. Later, infectious disease management and lessons from COVID-19 were incorporated. The disaster plans for Nepal's 25 hub hospitals, collaborating with Health Emergency Operation Center (HEOC) and Provincial Health Emergency Center (PHEOC), were updated. Workshops aimed to empower participants to own hospital plans. The Hospital Disaster Preparedness and Response Plan (HDPRP) addresses preparedness, response, and recovery, including COVID-19 management. Developed through testing, the HDPRP, along with workshops and engagement strategies, bolsters hospitals' disaster response capabilities.

Keywords: disaster, hospital, plan, preparedness, response

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INTRODUCTION

Hospital disaster preparation refers to the systems, processes, and actions planned and put in place before a major disaster in order to improve the hospital's capacity and readiness to handle emergencies and catastrophes. The first step to successfully managing a crisis is to have a hospital disaster management strategy. This is a first effort to save as many lives as possible. This is also mandated by the international agreement, of the Sendai Framework of disaster risk reduction.^{1,2}

The devastating earthquake that struck Nepal in 2015 and the challenges encountered following its relief raised concerns about the capacity of Nepal's hospitals to handle such catastrophes.³ The concept of hub and satellite hospitals was included in the disaster management plan to improve the coordination of the hospital.⁴ Later the infectious disease management plan was also included in the disaster plan of the hospitals.⁵ The lesson learned from COVID-19 was added to the disaster management plan revised in 2022. Therefore, it was necessary to update the disaster management plan of all hospitals in Nepal. To start with, 25 hub hospitals that the Government of Nepal had identified were focused. These hospitals collaborate with the Health Emergency Operation Center (HEOC) and Provincial Health Emergency

Center (PHEOC). The workshop was designed to help the participants to take ownership of the hospital plan. This workshop has adopted the analogical method of teaching and learning principle where activities are designed over the principles of cognitive and metacognitive learning.

Hospital Disaster Preparedness and Response Plan (HDPRP)

The HDPRP document has plan of action for preparedness, mitigation, response and recovery phase of the disaster, incident action plan, triage system, hospital routes and gates, roles and responsibilities of hospital staff, internal and external communication, resources mapping of hub hospitals, management of differently able person during disaster, addressing reproductive health during disaster, gender-based violence during disaster, and COVID-19 management. The document was based on the disaster management plan of Patan Hospital which was tested and revised for nearly a decade. In 2016, group of experts developed the plan in a form of template which could be used for development of hospital-based disaster management plan. The first training was conducted for Bir Hospital on 28 July 2016 which was supported by Ministry of Health and Population and World Health Organization. The basic framework of HDPRP is in the figure 1.

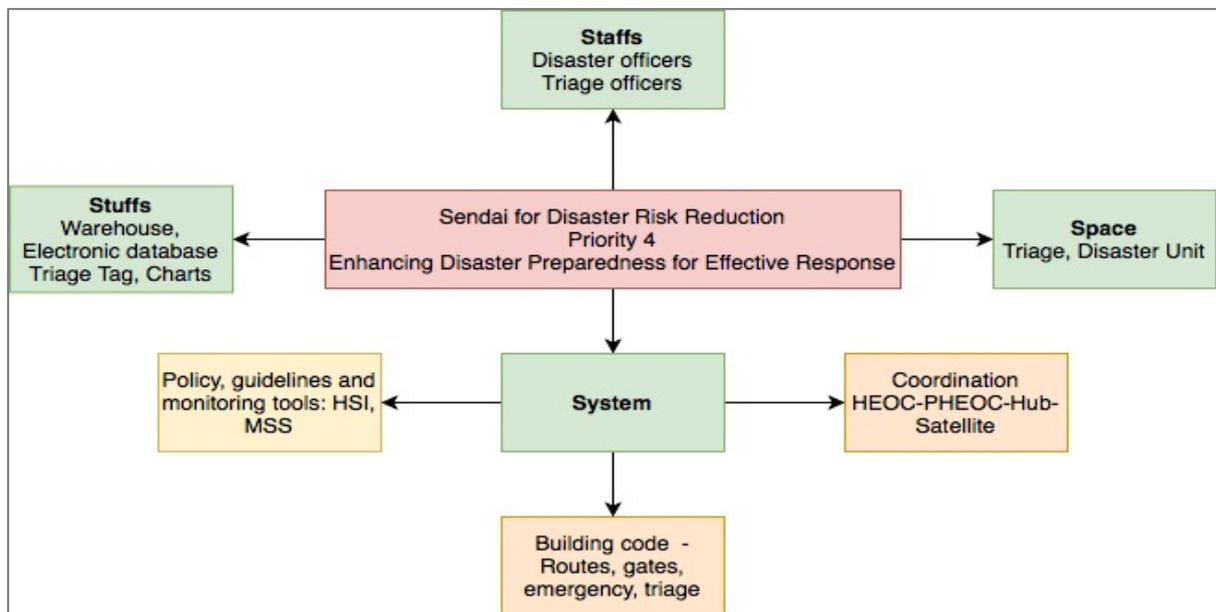


Figure 1. Basic concept of HDPRP template

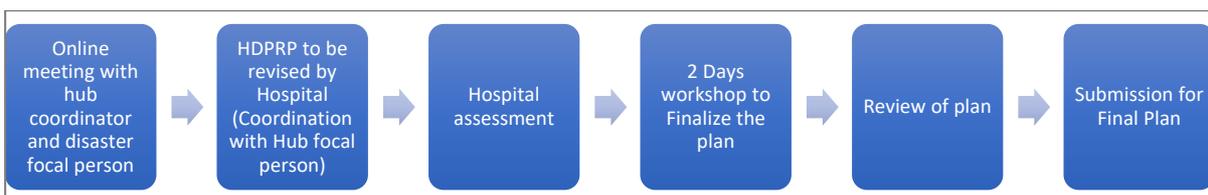


Figure 2. Processes undertaken for conducting HDPRP

Process

We conducted a pre-workshop where an online meeting between the focal person of all hub-hospitals and HEOC representative with an agenda of gathering information about status of disaster management plan in hospital. (Annex 1) Then a staff from NSEDRM followed up the plan and once revision is received, the plan was sent to reviewer for revision. The reviewer used checklist as shown in annex 2 to evaluate the plan. After revision of the plan information was sent to the hub hospital via HEOC for the HDPRP workshop. The invited participants contained at least medical superintendent, emergency in-charge, nursing in-charge/Matron, doctors and nurses working in emergency and ward, administration staff, Store staff, infection prevention and control officer. In addition, two online modules namely hospital disaster preparedness and response plan and hospital incident command system were made available after first review meeting to improve understanding of the participants.

Total 402 hospital staffs from 25 hub hospitals participated in the HDPRP workshop. Prior to the initiation of workshop, hospital was visited and checklist containing tools for evaluation of hospital was filled (annex 3). The workshop has few didactic sessions, more group work and a table top exercise. Power point presentation was given at the beginning of workshop to make participant have clear understanding of what needs to be filled up in HDPRP document. Then participants were divided into three to four groups and each one to two group was assigned with one facilitator. Facilitator assisted the participant to fill up HDPRP. This was followed by table top exercise which visualized mega earthquake and tested the response and coordination between Hub and Satellite hospitals

The methodology used for successful implementation of HDPRP in all 25 hub hospitals is shown in figure 2.

Technical Process**Online meeting**

Introduction: An initial online pre-workshop meeting was conducted, attended by hub coordinators, hub focal persons, representatives from HEOC, and WHO. The first session encompassed Provinces 2, 6, and 7, followed by a second session after activities in these provinces were completed. The second meeting focused on

Provinces 1, 4, and 5, while a third meeting took place following activities in Province 3.

Objectives: The purpose of these meetings was to inform hub coordinators and focal persons about the upcoming workshop, provide an orientation on the HDPRP, and discuss participant details and support required at hub hospitals during the workshop.

Process: Formal letters were dispatched from HEOC, extending invitations to hub coordinators and focal persons at least one week prior to the meetings. Participants received online links via email from HEOC. Staff from NSEDRM followed up with coordinators and focal persons through phone calls.

Challenges: Securing appropriate participants for the meetings proved challenging due to uncertainty regarding hub coordinators and focal persons' designations in many hospitals. Consequently, participation was often ad hoc from select hospitals.

Online platform

Introduction: An online platform was established to provide participants with access to all necessary materials prior to the workshop. The platform included instructional videos on completing the HDPRP template.

Objectives: This platform aimed to familiarize participants with HDPRP and encourage them to fill out the template before the training.

Process: Information about the platform was conveyed during online meetings, and the link to the online platform was included in the workshop information letter sent to hospitals via email.

Challenges: Due to a failure in email communication, some participants were unaware of the HDPRP and hadn't completed the template.

Social Media Group

Introduction: In the initial phase, communicating with participants before the workshop posed a significant challenge. As a response, social media groups were established for each hub hospital during the second and third phases.

Objectives: These social media groups were created to facilitate swift communication and information sharing (such as HDPRP templates, schedules, and online training links) related to the workshop.

Process: After sending workshop information letters to hub hospitals via HEOC, NSEDRM staff followed up with hub coordinators and focal persons, whose details were available at HEOC. Participant names and phone numbers were collected, and based on this information, social media groups were formed.

Challenges: Challenges encountered included uncertain participant lists, last-minute participation, and participants unfamiliar with using social media.

HDPRP revision

Introduction: The HDPRP was initially developed across numerous hospitals in 2018, resulting in the need for revisions in some cases and the creation of new plans in others.

Objectives: The HDPRP template encompassed vital capacity and coordination information (contact details) that couldn't be readily gathered solely on the workshop day. Hence, the template was distributed ahead of the workshop, ensuring participants could assemble the necessary data.

Process: Initially, in the first phase, the HDPRP template was accessible through an online platform. Subsequently, in the second and third phases, the template was shared directly with participants via social media groups.

Challenges: During the initial phase, none of the participants engaged with the template; however, in the subsequent phases, some participants did review it. Nonetheless, in all three phases, the required information for completing the template wasn't collected before the workshop.

Online Training

Introduction: In the first phase, it became evident that familiarizing participants with certain theoretical aspects of disaster management could enhance the workshop process. Consequently, during the second and third phases of the workshop, two online training modules (HDPRP and Hospital Incident Command System) were introduced.

Objectives: The aim was to enhance participants' comprehension of the HDPRP template and the Hospital Incident Command System.

Process: Interactive self-paced online training modules were developed on the Moodle platform. Each module required approximately two hours to

complete and awarded certification upon successful completion. Participants were encouraged to enroll in the course via the social media group. An instructional video guiding enrollment was created and shared within the social media group.

Challenges: While some individuals participated in the HDPRP module, few engaged in the Hospital Incident Command System module. Overcoming challenges related to intrinsic motivation and the time commitment required for completing the modules was evident.

HDPRP participants

Introduction: Diverse individuals from hospital, emergency, administration, housekeeping, maintenance, and record sections were extended invitations for participation. A total of 20 participants were invited for each workshop.

Objectives: The varied participation aimed to facilitate the collection of necessary information for the HDPRP. This approach also offered diverse perspectives on the template.

Process: The participant categories were communicated to all hub hospitals, who were then requested to nominate and share their participant lists. Follow-up calls were conducted with hub focal persons and coordinators to ensure the participant lists were obtained.

Challenges: Only a few hub hospitals provided an official participant list. First-phase workshops experienced last-minute finalizations or enrollments. Maintaining participant engagement was challenging in workshops held within hospital premises.

Hospital evaluation

Introduction: A hospital assessment was conducted one day before the workshop, which involved observing the ambulance bay, routes, and the emergency and hospital infrastructure.

Objectives: The hospital evaluation was undertaken to assist workshop participants and gain insights into the hospital's capacity.

Process: Upon reaching the hospital, the team established contact with the hospital's focal person. This individual or another designated representative provided an introduction to the hospital. A checklist was employed by the facilitator to assess the hospital's facilities.

Challenges: This process was generally conducted smoothly, with the exception of one instance where identifying the person responsible for introducing the hospital posed a challenge.

HDPRP workshop

Introduction: This two-day workshop was designed to take place within the hospital premises for efficient confirmation of the facility's structure and swift access to necessary information. The initial day focused on formulating a disaster plan, encompassing disaster committees, the hospital incident command system, triage procedures, routes, roles and responsibilities, treatment areas, surge capacity, internal-external communication, and aspects of sexual-reproductive health and disability inclusiveness. The second day was dedicated to a tabletop exercise aimed at testing the plan's viability.

Objectives: The primary goals of this two-day workshop were to finalize the HDPRP template and evaluate the plan's effectiveness through a tabletop exercise.

Process: Participants were requested to bring laptops. The workshop involved introducing content through PowerPoint presentations, followed by in-depth theoretical discussions. Subsequently, participants were divided into two groups, each assigned different sections of the HDPRP. Both groups were supervised by respective facilitators. At the conclusion of the day, information gathered from both groups was consolidated.

Challenges: While the process generally proceeded smoothly, certain challenges arose, including difficulty in collecting information at some locations and maintaining participant engagement in certain instances.

Review of plan

Introduction: The plan underwent revision to validate the information presented.

Objective: The purpose of revising the plan was to verify the accuracy of the information and include any missing details.

Process: Upon the conclusion of the second day, participants were instructed to submit an electronic version of their plan. An expert not affiliated with the workshop and the facilitators reviewed the plans. Any absent information was acquired through telephone discussions.

Challenges: One hospital declined to share the comprehensive HDPRP plan due to administrative procedures. The available HDPRP information was submitted to HEOC, while obtaining the missing information would necessitate additional time.

Administrative Process

Human Resources: The workshop involved eleven facilitators, four co-facilitators, and one program officer. On-site support was provided by a WHO medical officer, and the program's supervision and monitoring were overseen by HEOC and WHO staff.

Travel: The program was segmented into three phases, and travel arrangements were tailored accordingly. Hub hospitals within each province were grouped together, allowing facilitators to travel by air to the province and then utilize ground transportation to conduct workshops at various hub hospitals.

Workshop: A team of facilitators led a maximum of three consecutive workshops. Although the workshops were conducted sequentially, there were instances where up to three workshops were held concurrently at distinct locations by three separate teams.

Finance: A site budget was formulated, and expenses were managed based on this budget. An advance payment sheet was created, and the process adhered to government-standard protocols. The coordination of this process was managed by NSEDRM's accountant. During the initial phase, participant travel allowances were disbursed on-site, but due to a lack of an official participant list, verification was challenging. Consequently, online payments were adopted in the second and third phases, contingent on verified participant lists. Bank account details were collected for this purpose.

DISCUSSION

The Hospital Disaster Preparedness and Response Plan (HDPRP) is a fundamental component of disaster management. Formulating this written strategy marks a significant milestone in preparing hospitals for emergencies. In Nepal, the hospital disaster management plan has been rigorously developed and refined through tabletop exercises and simulations over the years.⁶ The HDPRP provides a comprehensive overview of disaster preparedness to hospital staff. Workshops and training programs in disaster management contribute to enhancing the hospital's capacity and yield substantial benefits for both the hospital and

its departments.⁷ However, effective coordination in disaster capacity building, along with the accumulation of information for future use, demands a careful selection of participants. Proactive communication with hospitals well in advance, along with the identification and communication with hub coordinators and focal persons within each hospital, is necessary to clarify roles and the importance of participation, ensuring a strong participant selection. Developing a concise participant list to ensure the inclusion of the right individuals is indispensable.

Ensuring participants are informed ahead of the training is a crucial step for a successful workshop. This involves employing various communication channels, including sending email invitations, following up with text messages, phone calls, and notifications on social media groups. Implementing a confirmation system is vital to ensure participants acknowledge and comprehend the information. Utilizing social media groups can effectively facilitate this communication, but it necessitates providing clear instructions on how to navigate these platforms. Emphasizing the advantages of swift communication and information sharing through social media, along with providing training sessions or webinars for those unfamiliar with these platforms, can prove beneficial.

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Although sending the HDPRP template well in advance of the workshop was not particularly effective, it's noteworthy that online courses and resources offering both technical and pedagogical training have proven to be highly beneficial.⁸ To enhance the process, conducting pre-workshop webinars or training sessions to guide participants in completing the template and stressing the

importance of having the necessary information ready for productive discussions during the workshop is vital. Consequently, an online training module with flexible schedules was provided to facilitate the process and accommodate participants' availability. Recognizing those who complete the modules could have been valuable for motivating other group members. Additionally, the easy accessibility of mobile devices, internet services, online resources, and personalized learning experiences serves as further motivating factors.⁹

Participant engagement posed a significant challenge, particularly when the workshop took place within the hospital premises. Communicating the workshops' value and impact is vital to sustaining participant interest. Furthermore, linking these workshops to personal or institutional accreditation systems can enhance participant motivation. Clarity regarding the workshop's objectives is crucial for participants. In the case of this workshop, providing explicit guidelines on information gathering and presentation is imperative. Notably, during the workshop, it was evident that creating an engaging environment through interactive activities, case studies, and group discussions proved beneficial.

CONCLUSION

The Hospital Disaster Preparedness and Response Plan (HDPRP) is crucial for effective healthcare disaster management. Developed through testing and simulation, it equips hospital staff and facilitates capacity building via workshops. Communication with participants through various channels and social media enhances engagement. Prioritizing online training modules and recognition for completion drives involvement. Challenges in engagement can be addressed by highlighting workshop value, accreditation links, and clear guidelines. Interactive elements within workshops enhance understanding. Overall, HDPRP, coupled with strategic workshops and engagement, strengthens hospitals' disaster response capabilities, ensuring patient and staff well-being.

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