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BASIC COURSE (B-COURSE) FOR DISASTER HEALTH MANAGEMENT (DHM) DEVELOPMENT AND ITS CHALLENGES FOR THE APPLICATION TO EACH ASEAN MEMBER STATES (AMS)

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List of Abbreviations

AIDHM : ASEAN Institute on Disaster Health Management

AMS : ASEAN Member State

ARCH project : The Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management

ASEAN : The Association of South East Asian Nations

ASEC : The ASEAN Secretariat

BDHM : The Basic Disaster Health Management training course

GPS : Global Positioning System

EMT : Emergency Medical Team

HNA : Health Need Assessment

I-EMT : International Emergency Medical Team

JICA : The Japan International Cooperation Agency

MOPH : Ministry of Public health

NIEM : The National Institute for Emergency Medicine

PLO : Program Learning Outcomes

PPE : Personal Protective Equipment

PWG : Project Working Group

RCC-DHM : Regional Coordination Committee on Disaster Health Management

WHO : World Health Organization

SOP : Standard Operating Procedure

SWG on CD : Sub-Working Group on Curriculum Development

ABSTRACT

Introduction: Capacities on health-related competencies of the disaster response team among ASEAN Member States (AMS) are diverse with different strengths and weaknesses. In order to maximize the optimal outcome of joint disaster response operations, a training program that provide common fundamental concepts on disaster health management is essential. The Basic Disaster Health Management training course (BDHM) is one of the proposals under the plan for the Project for strengthening the ASEAN Regional Capacity on Disaster Health Management (ARCH project) to provide a solution to this problem. **Objective:** To describe the development process of the BDHM course as well as the challenges for the application and ways forward. **Methods:** The main author reviewed all the reports of the Sub-Working Group meeting on curriculum development and related articles as well as described the observed outcome of the training activities of the BDHM course. **Result:** BDHM course is one of the outstanding results of the ARCH project. It aims to provide basic knowledge on disaster medicine, skills, and attitudes for the health-related disaster response team. The course was developed to include a module on constructing learners' competencies, content generation, and the planning of learning methodology. All processes have been conducted by the committee of the Sub-working Group on Curriculum Development and approved by the Project Working Group. Experts from the AMS and Japan have contributed to the development of this course. The course had already been implemented including the initiative course that had been conducted in Surat Thani, Thailand, and the mock-up course in Bangkok. The results of the very first implementations were fruitful, but there was still a lot of room for improvement. **Discussion and conclusion:** Further implementation in other member states is necessary to achieve the goal of the plan of action of the ARCH project and it is expected that the course will provide the standard guideline for the disaster response team in the AMS in the future.

Keywords: ARCH Project; Disaster Health Management Training Course

INTRODUCTION

Nowadays, the numbers of global citizens have suffered from various disastrous hazards, especially the southeast Asian nations which are one of the most vulnerable regions in the world. Apart from the general disaster management to respond to the crisis, the management of disrupted health systems is also an important issue, such as health needs assessment, medical treatment for casualties, as well as command, control, and coordination mechanisms. The Survey on the Current Situation of disaster and emergency medicine system in the ASEAN

Region which was conducted from November 2014 to August 2015 (1) indicates that the level of preparedness for emergency response differed among the ASEAN member states (AMS) from disaster-prone countries and upper-middle-income economies, to the developing country that could not obtain sufficient resources due to low-prioritization of disaster preparedness.

The formulation of the Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management (ARCH Project) in cooperation with the Japan International Cooperation Agency (JICA) was proposed and endorsed in 2016. Meanwhile, the ASEAN Leaders signed the ASEAN Declaration on "One ASEAN One Response" in September 2016, to increase the speed, scale and solidarity of ASEAN's response (2). To achieve the purpose of the project, the establishment of the academic network and the capacity-building activity to develop human resources for disaster health management were identified as expected outputs. The main question being asked when designing methods to encourage successful human resource development in the AMS is how to ensure that the AMS emergency medical teams in each country are able to operate in other countries.

One of the answers to these questions was the endorsement of the minimum requirements and qualification for members of the Emergency medical team (EMT) which is the output from ARCH project phase 1 (3). as shown in figure 1.

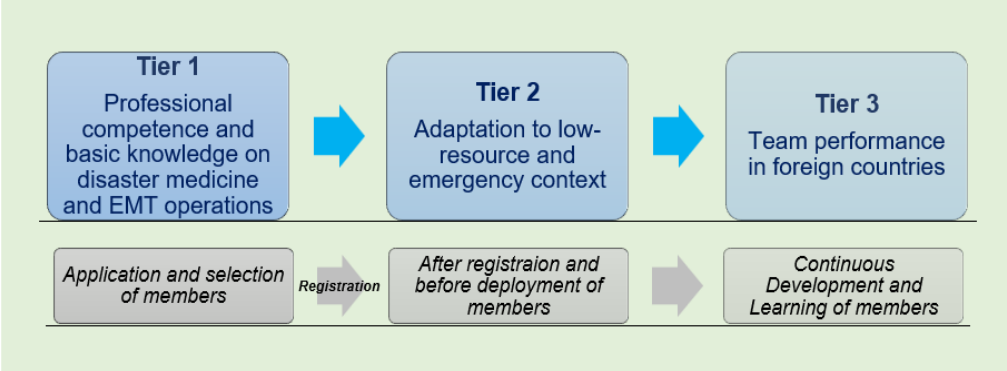

Figure 1. The minimum requirements and qualification for members of EMT

Source: 4th Project Working Group (PWG), 2017

The blue boxes are the definition and expected competencies of the ASEAN EMT. The lower tier is the regular health care team that should be developed to be in the higher tier to operate in the AMS. The gray boxes are the recruitment strategies and stages of development.

Vast discussion among project working group (PWG) 2 committee of the ARCH project concluded that each country wants to formulate a certified WHO standard I-EMT; however, it is very challenging to develop each AMS medical personnel to become a WHO verified I-EMT,

which required a lot of resources and budget. Therefore, there should be a standard training curriculum which will be the baseline for the AMS to provide basic knowledge in disaster medicine before proceeding to the advanced knowledge and skills to perform disaster medical response in other countries. According to the ASEAN Leaders' declaration, some countries already have their training program but these programs are designed for their own context. Therefore, it is essential for the AMS medical team to be able to perform harmonized operation, and the purpose of composite team may be possible (4) which stresses the importance of the standard curriculum for the AMS.

A systematic review on disaster training for healthcare workers (5) found that it was unclear which method is appropriate to provide knowledge and skills to the health care providers in order to operate effectively in actual disaster situation. To encourage a startup, the Sub-Working Group (SWG) for Curriculum Development has been founded in the extension phase of the ARCH project aiming to construct the consensual training programs for the AMS (6). The Basic Disaster Health Management (BDHM) is the first course that was proposed to the committee, responding to the inequality and heterogeneity of the capacity of disaster-related health personnel among each of the AMS' the need for a training program that provides the same idea of the fundamental concept is essential. The preliminary outcome of the curriculum development was mentioned in the previous article (7), this study will be further clarified in the next section.

OBJECTIVE

This study aims to describe the development process of Basic Disaster Health Management (BDHM) training course throughout the SWG on CD mechanism, the activities that need to be achieved along each process as well as the challenges for the application of the course during development and ways forward to implement the course in the AMS.

METHODS

The main author reviewed all the reports of the SWG for Curriculum Development and related articles as well as described the observed outcome of the training activities on the BDHM course.

RESULTS

The concept of standard training programs for the ASEAN disaster health management are described into 4 components (4).

Operational Health Care Team

In disaster response, the operational health care teams should be competent to provide health and medical services for victims in the affected area. It means the personnel in the team should be grounded in disaster theory; skillful in medical and logistical practices that are related to each type of incident; have disaster and humanitarian mindset; and should be able to work in teams while working well with others. The team might be classified into two levels; the basic level that will be deployed in domestic response and the advanced level, or composite team that is capable of being deployed to other countries.

1. Co-ordination unit. Operational teams would not perform their tasks smoothly without appropriate coordination processes. The co-ordination unit is one of the key elements in disaster management. The personnel who work in this unit should be well-educated in fundamental knowledge of disasters; understand the mechanism and organization in disaster responses and be able to perform effective communication in order to support the operational team.
2. Training of the trainers. To expand the numbers of operational teams and co-ordination units, the production of standardized instructors should be considered. The instructors should be competent in training methods and evaluation of participants as well as genuinely understand the content in each course.
3. Refreshing and recertification process. For sustainability and updating to changes in academic evidence, learners should be refreshed of their knowledge in certain periods.

Curriculum Development Plan

The curriculum development plan of this course began with identifying learning outcome and competencies. After the competencies had been generated, there would be the contents designated to comply with each competency. The material and teaching methods should be aligned with the contents that the curriculum developer designed to ensure that the participants would be given the comprehensive knowledge and skills.

The implementation of the course should be conducted. The proposal was planned in regards to the organization of the mock-up course for AMS representatives before launching out the full course. The most important issue is the evaluation and receiving feedback to ensure that all of the competencies and learning outcomes were achieved. Then, the cycle of curriculum development continues to be sustained and updated novel evidence in the future, as shown on

the figure 2. Every process of the plan was structuralized by searching for consensus in the meeting of SWG which consisted of the representatives from all the AMS.

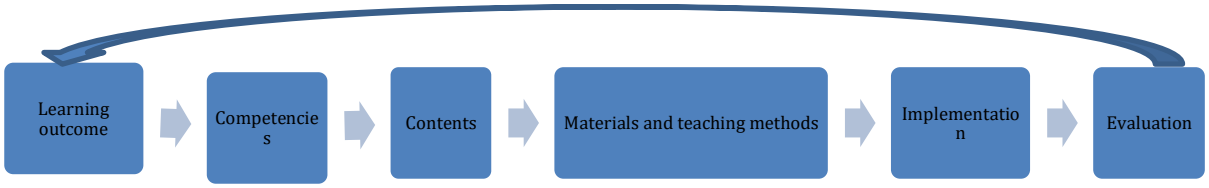

Figure 2. The curriculum development plan

Source: Saelim et al., 2025

What Is the BDHM Course: The Learning Outcome

As mentioned earlier, the variation of training programs for the disaster-related health personnel is the challenge to the harmonization among disaster response teams. The consensus of the meeting stated that the standard operational health care team training course should be conducted, starting with BDHM and can proceed to the bigger or more comprehensive one with the advanced course (8). The BDHM was proposed in the 1st SWG meeting. It aimed to develop a small, domestic, disaster-related, health care team that can perform medical and health operations together with various disaster missions regarding the health system. The most important purpose for the team is the disaster attitude in disaster (adaptation to the low resource and emergency context), the self-sufficiency as well as managerial skill in disaster operation, such as communication, coordination, and information management.

Furthermore, the logistic support, which is the necessity element in the team, will be part of the training program. The separated logistic knowledge and skills for the logisticians will be considered for this course together with medical personnel. The course originated and revised from the disaster health management course for a small medical emergency response team that have been trained in Thailand several times and apply the learning methodologies from the Japanese knowledge co-creation program. The benefit of developing the BDHM is solving the problem for the countries that have never had the training course before. However, the challenge of existing training courses in some countries led to the concept of using competency-based approaches.

The Competencies

The committee agreed with the competency-based approach for the start-up of the BDHM course. This approach makes the course more adjustable for existing courses available in other countries. Compiling these competencies together would ensure that the participants would

have the same fundamental knowledge, skills and attitudes to operate in disasters in the AMS, if they have to work together. The Sub-Working Group for Curriculum Development together with the Project Working Group 2 of the ARCH project had agreed and endorsed the competencies for the basic disaster health management curriculum. These competencies are the expected program learning outcomes (PLO) for the basic disaster health management training course for AMS countries, as shown in table 1.

Table 1. Core competencies and sub-competencies for the BDHM course: The 1st and the 2nd SWG

Core competencies	Sub-Competencies/Topics
I. Describe disaster health management and disaster risk reduction framework	1.1 Introduction on concepts of disaster health management 1.2 Other public health issues i.e. sanitation, rehabilitation, disease outbreak, public health surveillance 1.3 Health Needs Assessment 1.4 Infection prevention and control i.e. PPE, quarantine, etc. 1.5 Hazard vulnerability analysis (HVA) 1.6 Disaster Risk Reduction
II. Recognize identity/entities and mechanism of disaster health management	2.1 Composition of EMTs (number/qualification) 2.2 Regulations, legislations and laws on disaster management in affected countries 2.3 Minimum standard for humanitarian response 2.4 Emergency Operation Center (EOC) (Team coordination) 2.5 Incident command system (ICS) 2.6 Ethical issues
III. Demonstrate communication and information management	3.1 Communication theories (information >> Tool >> Reception) 3.2 Risk Communication 3.3 Information management (Minimum Data set)
IV. Demonstrate self-sufficiency in the disaster area	4.1 Self-sufficiency skill/survival skill 4.2 Introduction to working in hostile environment 4.3 GPS and map reading, navigation 4.4 Safety and security of team and facility
V. Demonstrate Critical resource management	5.1 Leadership management during disaster 5.2 Intersectionality 5.3 Demobilization plan 5.4 Business continuity plan and Contingency Plan 5.5 (SOPs) Standardized color coding and categorization for equipment 5.6 (SOPs) Waste management 5.7 (SOPs) Dead bodies management (Certificates of death)

Core competencies	Sub-Competencies/Topics
VI. Demonstrate specific medical care and Logistic support a. Medical care	6.1a Pre-hospital/in-hospital setting 6.2a Triage system (Physical and Psychological) 6.3a Psychological issues for EMT, volunteer, victims (first aid)
b. Logistic support	6.1b Basic radio communication, installations, etc. 6.2b Logistics management (Principles of logistics) 6.3b Finance and administration skill

Source: Saelim et al., 2025

Learning Processes

As described in the competencies, most items were focused on decision making and skills. There were many learning methods that concerning on instructing the learners to apply the knowledge to decide and practice. The SWG chose the blended-learning method. The blended-learning method is one of the andragogy techniques of teaching. It was first mentioned in a 1999 press release by the Interactive Learning Centers, an Atlanta-based education business (9). This approach combines online materials with traditional in-person learning methods. This method is reportedly more effective than traditional lecture (10). The learning process of this course was divided into 2 parts. The first part is the online learning material and face-to-face workshop.

Online Materials

In the meeting of SWG, after a constructive discussion, the committee agreed with modules' contents and objectives. Five AMS representatives voluntarily contributed to writing the module's content, which showed active participation of the AMS countries in this course. The preparation of online audiovisual on the brief lecture for each module was proposed in order to aid the participants' learning. Pre-test and post-test as well as certification of completion of the online self-learning were mentioned for the implementation of the course.The online materials consisted of 9 modules of lectures that covered the general knowledge of disaster health management. Additional 3 modules for the medical personnel and 3 modules for the logistic role. All models were created with the objectives which comply with the competencies and sub-competencies, as shown in the annex 1.

The Face-to-Face Workshop

The workshop is another important part of the BDHM course. This process provides application of the theories to practice. Various learning activities selected to be in the workshop

such as the scenario-based group discussion and brainstorming, problems identification topic and creative solving of the problems, inspirational and challenging scenarios (i.e. ethical and humanitarian issue) as well as the hand-on practice on communication and the essential skills and procedures which traditional lectures cannot provide to the learners. After those activities, the learners should have an opportunity to integrate all the contents to the simulated exercise. The participants should study the online learning modules to understand the contents of knowledge that the course provides, prior to taking part in face-to-face workshops.

During development, the workshop had been projected to be done by the five-days' workshop consisting of field exercise using simulated patients and realistic activities. From Thailand's experiences, the 5-day workshop consumed a large amount of both financial and human resources, which should be concerned when applying to other AMS. In the SWG meeting, the concise 3-days workshop had been proposed by integrating some topics. To instruct the comprehensive activities, the SWG decided to discard the field exercise and use the table-top exercise with simulated patient cards instead. This proposal was agreed by the committee that the revised 3-day workshop was feasible and manageable, as shown on table 2 (11). The objectives of each topic and material to be used in the activities including scenarios were done and endorsed in the SWG meeting.

<table>
<tr><th></th><th>0800-0900</th><th>0900-1000</th><th>1000-1100</th><th>1100-1200</th><th></th><th>1300-1400</th><th>1400-1500</th><th>1500-1600</th><th>1600-1700</th></tr>
<tr><td>Day 1</td><td>Course introduction</td><td colspan="3">Group discussion 1
Introduction to disaster and disaster health management</td><td rowspan="4">Lunch</td><td colspan="2">Activity 1
Incident command system and team management</td><td colspan="2">Group discussion 2
Lesson learnt and experience sharing</td></tr>
<tr><td rowspan="2">Day 2</td><td colspan="2" rowspan="2">Group discussion 3
Role and responsibility of BDHM team</td><td colspan="2" rowspan="2">Activity 2
Comprehension, communication and decision making</td><td colspan="2">Medical skill 1
Triage and disaster medical response</td><td colspan="2">Medical skill 2
HNA and Disaster medical data management</td></tr>
<tr><td colspan="2">Technical skill 1
Transportaion and safety operation</td><td colspan="2">Technical skill 2
Communication devices operation</td></tr>
<tr><td>Day 3</td><td colspan="4">Putting it all together
Table top exercise</td><td colspan="2">Group discussion 4
After action review and discussion</td><td colspan="2">Course evaluation and closing remarks</td></tr>
</table>

Figure 3: The suggested schedule for the BDHM face-to-face workshop

Source: Saelim et al., 2025

The Materials for Teaching Methods

The materials of each activity were described and documented in a manual for the workshop. This manual aims to facilitate the administrator of the course to prepare which items needed. The example of items required were the paper sheets, board, markers, multi-colors of sticky notes, printed documents and scenario, audiovisual equipment. These manual for the preparation was presented in the SWG meeting as the port of the implementation plan.

The Implementation of the BDHM

Amidst the SWG planning period, the trial BDHM was held in June 2022 at Surat Thani Province, Thailand, in cooperation with NIEM, Ministry of Public Health of Thailand and Chulabhorn Royal Academy. The purpose of this trial course is to find the feasibility to conduct the workshop with the objectives described in the curriculum by using a 3- day suggested schedule. Fifty Thai participants, observers from JICA and approximately 15 instructors from Thailand were included in this course. The Thai-taskforce course manager decided to give a day of traditional lectures instead of online material which were described in English, Thai language face-to-face activity and a field exercise together with the designated BDHM course, because of the language barrier from different levels of health personnel.

The implementation of the course was held in Bangkok in July 2023. This course was fully aligned with BDHM that was planned in the SWG, aiming to test the mechanism of online learning material together with the face-to-face workshop. About 30 participants from the AMS and Japan were invited to join the course. They were experienced health personnel who had the potential to be a course director or course manager in their country. They were expected to be the learners and evaluators at the same time. The online material consisted of 15 modules of online lectures with the articles that were given to the participants about 2 weeks before the participants attended the workshop. The face-to-face workshop was done according to the schedule followed by a half day of discussion and evaluation.

Evaluation

As mentioned above, the evaluation process was done by the participant's feedback at the end of each day's workshop. The course moderator collected the feedback. The half-day course evaluation workshop was conducted the day after the mockup course, and the meeting had a very fruitful discussion. It seems the BDHM course will be ready for implementation to other AMS as the option to train disaster-related health personnel, because some countries stated their interest in implementing the course in their country after the meeting.

DISCUSSION

The BDHM is one of the outcomes of the Project Working Group 2 of the ARCH Project. This course was expected to be the standard curriculum for the AMS that has never had the disaster training course before. The very good side of this course was using a competency-based approach which was reasonable in the academic aspect. Competency-based makes this course objective clear and compromised to the other existing courses in another country that is similar to this course and ensures that personnel who attended either this course or other can be harmonized in the operation.

According to the list of competencies, the latest study on mapping the competencies on health emergency and disaster risk management competencies and curricula (12) showed that leadership, teamwork and decision making are the most relevant competencies which are similar to the competencies that the SWG developed.This course didn't use the quantitative evaluation method to test effectiveness and improvement of the knowledge and skills of the participants because all participants are experienced health personnel in a disaster.

The challenges to implement this course in the AMS are the following,

1. The course contents in this edition are described in English. There will be some language barrier with some participants especially from AMS that are not using English as the official language. The course content may need some translation to be able to imply in those countries.
2. There is a limited number of the instructors for this course. Most of them are the Thai taskforce. To conduct this course in other AMS would need some original group of instructors to guide local instructors before they could conduct the course in their country. Regarding sustainability of organizing the course, interested AMS should identify their training center to conduct the course and coordinate with ASEAN institute for disaster health management (AIDHM) and academic network for mutual support and continuous improvement of the course such as online learning platform.
3. From the initiative and mock-up course, the expense of the course was calculated to be about $150 - $333 per person depending on the venue and numbers of facilitators. This approximate budget should be considerate to conduct this cost.
4. There should be the organization that has academic background acceptable to certify and give privilege to those who achieved this course. This issue will grant the team to be eligible to operate in the disaster as well as provide a career path to the disaster-

related health personnel. The AIDHM under Regional Coordination Committee on Disaster Health Management (RCC-DHM) might be able to respond on this process.

Further steps of the BDHM course are the quality assurance and improvement of the course. The plan of action of the ARCH project plans to implement the course in all the 10 countries of AMS. There should be the evaluation of each implementation and searching for the room of improvement. The next edition of the BDHM course should be in the plan of curriculum development under a responsible body. The way forward for the curriculum development are the courses that enhance the operational teams and make the capacity development of the AMS sustainable, such as Advance disaster health management course that focus on co-operation and international deployment, the Training for the trainer course and refreshing course.

LIMITATION

This is the first article mentioned on the developmental process of disaster health management curriculum in Southeast Asia, therefore there are no scientific methods in comparison to the outcome of the course implementation. Further research might be considered to test the competencies of the participants and the impact of the course on the building capacity for disaster health management.

CONCLUSION

The BDHM has now been successfully developed in cooperation and hard-working process of the Thai taskforce, Japanese experts and SWG on CD of the ARCH project. Further implementation in other member states will need to be done to achieve the goal of the action plan of the ARCH project and it is expected that the course will provide the standard guideline for the disaster response team in the AMS in the future.

ACKNOWLEDGMENT

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

FUNDING

This article has no financial grants.

APPENDIX

Table 2. Course Contents and Competencies

Module	Learning Objectives	Competency
Module 1. General knowledge in disaster	- To describe definition, types, extent of disaster. - To understand mechanism of each disaster's hazard. - To describe impact of disaster to affected area. - To understand disaster cycle and risk assessment.	1.1 1.5 1.6
Module 2. Disaster and disaster health management	- To describe general concept of disaster management in each process of disaster cycle. - To describe definition of health, health system and disaster health management. - To understand and discuss about disaster health management. - To compare general disaster management to disaster health management.	1.2 1.3 1.4
Module 3. Laws, regulations and administrations in disaster management	- To recognize important policy and framework. - To understand laws and regulations of disaster health management in local and national level. - To identify organizations which take part in disaster health management in local, national and ASEAN level. - To understand documentation, financial protocol and administration process in disaster management.	2.2 2.3 2.4 6.3b
Module 4. communication and coordination mechanism in disaster management	- To describe content, receiver, time interval, method and reason of communication in disaster situation. - To describe importance of minimal data set and reporting system in disaster management. - To describe coordination mechanism in local, national and ASEAN level in disaster situation.	3.1 3.2 3.3
Module 5.	- To describe role and responsibility of basic disaster management team.	2.1

Role and capability of Basic disaster management team	-To describe strengths and weaknesses of basic disaster management team.	
Module 6. Survival theories	- To understand factors to survive in critical situations. - To describe how to survive in critical situations. - To describe self-preparedness and team preparedness to survive in critical situations. - To describe how to conduct safety, adequate food and water, establishment of accommodation.	4.1 4.2 4.3 4.4
Module 7. Obligation to the affected area	- To describe environmental control during settlement. - To describe waste management.	5.6
Module 8. Critical resource management theory	- To understand concept of perception and situation awareness. - To understand comprehensive and holistic thinking. - To understand projection and critical thinking to resolve problems.	5.1 – 5.7
Module 9. Ethic and humanitarian issues	- To understand ethical issues in disaster management. To understand humanitarian issues on WASH, shelter and health system approach.	2.6
Module 10a. Basic disaster emergency response	(Health personnel ONLY) - To describe concept of disaster emergency response - To describe psychological response in disaster.	6.1 – 6.3
Module 11a. Specific hazard 1 - Earthquake / tsunami - Typhoon - Eruption	(Health personnel ONLY) - To describe concept of abrupt onset disaster. - To describe specific concern in clinical practice - High velocity laceration - Burn - Crush syndrome - Bomb injury/ chemical injury/Radiation injury	

- Building collapse Social unrest	- etc.	
Module 12a. Specific hazard 2 - Flooding - Drought - Wildfire Endemic disease	(Health personnel ONLY) - To describe concept of long-standing disaster. - To describe specific concern in clinical practice - Exacerbation of chronic disease - Weather related disease - Pollution related - Disease control and Health surveillance	
Module 10b. Communication devices installment and operation	(Logistician ONLY) - To understand component and mechanism of communication devices such as radio transmitter (Single sided band), satellite communication, or other innovations. - To describe strengths and weaknesses of each type of communication devices - To describe how to set-up devices and how to operate and control devices.	6.1b
Module 11b. Transportation and control	(Logistician ONLY) - To describe concept of transportation in disaster. - To describe appropriate type of transportation in each specific condition. - To describe how to perform safe transportation and control.	6.2 b
Module 12b. Facility installment	(Logistician ONLY) - To describe concept of basic facility such as accommodation, electricity, light, water, waste, included clinical facilities. To describe how to install the facilities effectively.	6.2 b

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