

# DISASTER HEALTH MANAGEMENT FRAMEWORK AND THE ASEAN COLLECTIVE MEASURES FOR RAPID, EFFECTIVE AND QUALITY OPERATIONS OF EMERGENCY MEDICAL TEAMS IN THE ASEAN REGION

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## List of Abbreviations

AADMER	:ASEAN Agreement on Disaster Management and Emergency Response
ACM	:ASEAN Collective Measures
AHA Centre	:ASEAN Coordinating Centre for Humanitarian Assistance on disaster management
AIDHM	:ASEAN Institute for Disaster Health Management
ALD DHM	:ASEAN Leaders' Declaration on Disaster Health Management
AMS	:ASEAN Member States
APHDA	:ASEAN Post 2015 Health Development Agenda
ARCH Project	:Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management
ASEAN	:Association of Southeast Asian Nations
CIQ	:Customs, Immigration, and Quarantine
DELSA	:Disaster Emergency Logistic System for ASEAN
DHM	:Disaster Health Management
EMT	:Emergency Medical Team

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EMT-MR	:Emergency Medical Team minimum requirements
EMTCC	:Emergency Medical Team Coordination Cell
ERU	:Emergency Response Unit
I-EMT	:International Emergency Medical Team
IFRC	:International Federation of Red Cross and Red Crescent Societies
JDR	:Japan Disaster Relief
KCCP	:Knowledge Co-Creation Program
MC	:Medical Coordinator
MCI	:Mass Casualty Incident
MOH	:Ministry of Health
MOPH	:Ministry of Public Health
NIEM	:National Institute for Emergency Medicine
NT	:National level Target
OAOR	:One ASEAN One Response
POA	:Plan of Action
PWG	:Project Working Group
RCD	:Regional Collaboration Drill
SASOP	:Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations
SOP	:Standard Operating Procedure
SWOT	:Strength/ Weakness/ Opportunity/ Threat
WHO	:World Health Organization

## **ABSTRACT**

**Introduction:** The Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management (ARCH Project) has contributed regional collaboration in disaster health management (DHM). Key achievements include the ASEAN Leaders' Declaration on DHM (ALD DHM), and its Plan of Action (POA) (2019-2025). In 2019, the ASEAN Collective Measures (ACM) were initiated to support ASEAN Member States (AMS) in meeting the World Health Organization (WHO)'s Emergency Medical Teams minimum requirements (EMT-MR) and to strengthen coordination capacity for International EMTs (I-EMTs)

operations. **Objective:** This study analyzes the progress and challenges in implementing the ACM work plan, and explores future strategies for sustainable DHM development in ASEAN. **Methods:** A qualitative review was conducted using reports and deliverables from ACM activities. The work plan included five areas: development of an AMS DHM database, confirmation of I-EMT receiving procedures, clarification of medical coordinator (MC) role, EMT item stockpile development, and joint EMT Operations. **Results:** A draft AMS DHM database was developed. Malaysia confirmed I-EMT receiving procedures and tested a joint EMT operation with Japan. Joint research on EMT items is ongoing. **Conclusions:** ACM serves as a regional problem-solving mechanism, supporting sustainable DHM through regional DHM activities and EMT operations.

**Keywords:** ASEAN Collective Measures; ARCH Project; Emergency Medical Teams; Disaster Health Management

## INTRODUCTION

Southeast Asia is the fourth largest subregion in the world in terms of the total number of natural hazards since 1960. The Association of Southeast Asian Nations (ASEAN) has stressed the importance of jointly responding to disasters and emergencies through concerted efforts and intensified regional cooperation in the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) of 2005. The leaders of the ASEAN Member States (AMS) — consisting of ten countries, including Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam — signed the ASEAN Declaration on One ASEAN, One Response (OAOR) in 2016 to respond to disasters as one, in the region and outside the region, to ensure collective response to disasters (1,4).

The Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management (ARCH Project) has facilitated significant contributions to establishing collaboration mechanisms of disaster health management (DHM) in the ASEAN region. This is articulated in the ASEAN Post 2015 Health Development Agenda (APHDA) 2016-2025, including the development of the ASEAN Leaders' Declaration on DHM (ALD DHM) and the formulation of the Plan of Action to implement the ALD DHM 2019-2025 (POA/ALD DHM), as well as the development of standard operating procedures (SOP) for coordination of Emergency Medical Teams (EMTs) in ASEAN, which has been officially integrated into the

Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations (SASOP) as the 7<sup>th</sup> chapter (5,13).

The ASEAN Collective Measures (ACM) were initiated in 2019 to support the effort of AMS in meeting the EMT minimum requirements (EMT-MR) set by the World Health Organization (WHO). They address five major challenges raised by the AMS, including: 1) Customs clearance of international EMT (I-EMT) medicine and equipment; 2) Laws and regulations concerning medical waste management; 3) Regulations concerning medical accident or malpractice; 4) Logistics issues concerning I-EMT deployment, and; 5) Authorization procedures to practice for I-EMT medical professionals, and to strengthen their capacity to receive and coordinate I-EMT operations. ACM recommendations were developed as one of the deliverables of the ARCH Project Extension Phase, which was completed in December 2021. The implementation of the ACM was agreed to be continued as one of the activities of the ARCH Project Phase 2 (ARCH 2) (5,12,14).

Project Working Group (PWG) 1 on regional coordination of the ARCH 2 met in September 2022, with the representation of AMS, aiming to discuss the ACM follow-up plan and new areas to be addressed. Based on the conclusion of the meeting, the ACM work plan was developed to support the efforts of AMS in meeting the WHO’s EMT-MR and to strengthen their capacity to receive and coordinate I-EMT operations, thereby achieving rapid, effective, and quality EMT operations in the ASEAN region.

The ACM work plan consists of five activities: 1) the development of an AMS DHM database; 2) confirmation of national procedures and guidelines for receiving I-EMTs; 3) confirmation of roles and responsibilities of the medical coordinator (MC); 4) a study on the possibility of developing a stockpile of EMT items, and; 5) a study on the conduct of joint EMT Operations. It was proposed to be implemented through the relevant ARCH Project activities (Table 1) (Figure 1).

This study aims to observe and analyze the progress and challenges in the implementation of the ACM work plan, to confirm the validity of the ACM, and to examine implications and future improvements for sustainable DHM development in ASEAN.

*Table 1. ACM Plan - List of ACM Activities*

ACM activities	ARCH Project activities/ events
(a) Development of AMS DHM database	Peer Review on DHM Knowledge Co-creation Program (KCCP)

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(b) Confirmation of national procedures and guidelines for receiving I-EMTs	In-country Coordination course for I-EMTs (C course) Regional Collaboration Drill Peer Review on DHM
(c) Confirmation of roles and responsibilities of the medical coordinator	In-country C course Regional Collaboration Drill
(d) Study on the possibility of developing a stockpile of EMT items	Joint Research Project under ASEAN Academic Network on DHM
(e) Study on the possibility of joint EMT Operations	Regional Collaboration Drill

Source: Kita et al., 2025

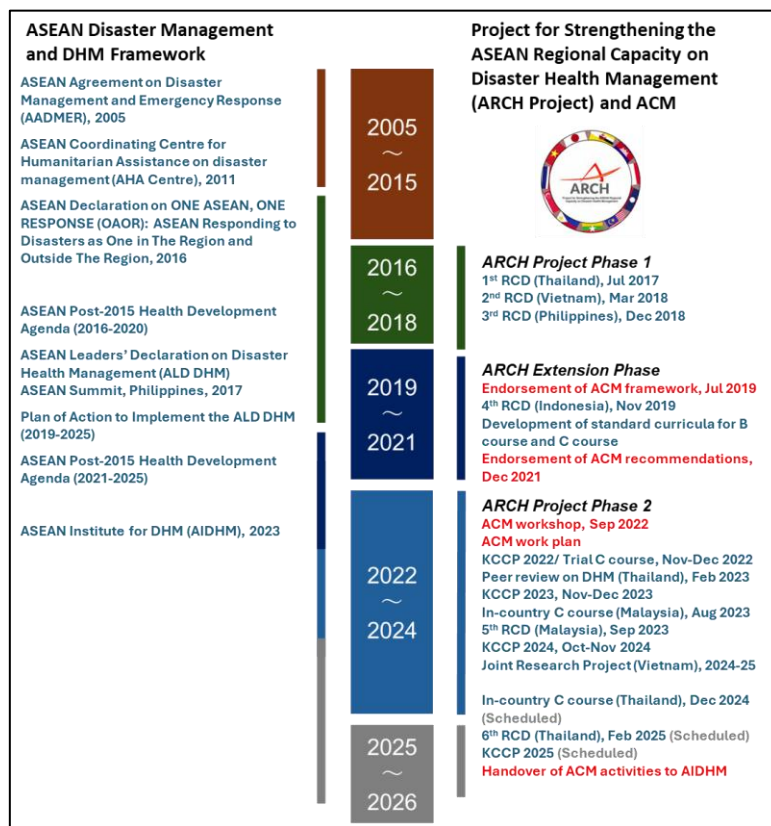


Figure 1. Time Course of Achievements, Progress, and Activities of the ASEAN Disaster Management, DHM, and the ARCH Project.

Source: Kita et al., 2025

**METHODS**

This study qualitatively examines the progress of the ACM work plan using reports and deliverables of the following planned activities (15):

### **Development of AMS DHM Database**

The 7<sup>th</sup> chapter of SASOP stipulates that I-EMT shall obtain essential information for mobilization through ASEAN disaster management mechanisms or national focal units for EMT coordination, which shall be officially designated in the structure of the health authorities of the disaster-affected country (16).

According to ACM analysis conducted during the ARCH Project Extension Phase, a lack of information on disaster-affected countries for receiving international assistance was identified as one of the challenges to be faced in assisting AMS (5).

The AMS DHM database was proposed to be developed for AMS to ensure that the necessary information is identified in peacetime and provided for incoming I-EMTs in a timely manner as the preparedness for I-EMT deployment. The database was designed to contain DHM information on topics in line with the seven national level targets (NT) of POA/ALD DHM: I-EMT development (NT1); EMTCC establishment (NT2); national SOPs for receiving I-EMTs (NT3); standard reporting system for EMTs (NT4); DHM training system (NT5); DHM concept in health education (NT6), and; safe hospital projects (NT7) (11). The database also contains information on the emergency medical and disaster management system.

A self-assessment on DHM, conducted in 2023 as part of the Peer Review on DHM, was used as the base information for the AMS DHM database. The contents of a database of AMS for receiving EMT deployment were developed during the ARCH Project Extension Phase. An Annex document of “ACM and its recommendations” has been incorporated into the AMS DHM database as part of information corresponding to NT 3 of POA/ALD DHM “Development of national SOPs for the Coordination of EMTs” (5,11,12).

### **Confirmation of National Procedures and Guidelines for Receiving I-EMTs**

NT 3 of POA/ALD DHM envisions the development of national SOPs for EMT coordination such as request and offer of assistance, Reception and Departure Centre (RDC) process, Customs, Immigration, and Quarantine (CIQ) process, and the authorization of healthcare professionals. The process for CIQ and authorization to practice for medical professionals are also defined in the 7<sup>th</sup> chapter of SASOP as the essential information for mobilization that I-EMT shall obtain through the national focal unit of the affected country prior to deployment (11,16).

The AMS has identified the following five issues to meet the WHO EMT-MR: 1) *Customs clearance* of I-EMT medicine and equipment; 2) Laws and regulations concerning

*medical waste management*; 3) Regulations concerning *medical accident/malpractice*; 4) *Logistics issues* concerning I-EMT deployment, and; 5) Authorization procedures to practice for *I-EMT medical professionals*, which led to the initiation of the ACM. It was subsequently agreed that ACM would not only support the capacity of AMS as an assisting country, but also support each AMS in strengthening its capacity to receive and coordinate I-EMTs as a host country for international assistance. The five ACM issues were used to guide the selection and prioritization of national procedures and guidelines to be confirmed for receiving I-EMTs (5,12,14,17).

The use of the ARCH Project activities — including Peer Review on DHM (Thailand), 5<sup>th</sup> Regional Collaboration Drill (RCD), and In-country C course (Malaysia) — was proposed to identify such procedures or guidelines required for receiving I-EMTs and coordinating their operations.

#### 1. Malaysia

Based on the action plan drafted by the Malaysian participants of the Knowledge Co-Creation Program (KCCP), which has been implemented annually in Japan since 2022, the Ministry of Health (MOH) Malaysia has identified the achievement of NT 3 of POA/ALD DHM as one of its priorities (18). Through the conduct of the 5<sup>th</sup> RCD and In-country C course in Malaysia, necessary procedures and guidelines were proposed to be confirmed and tested, including the accreditation of foreign medical licenses, importation and use of controlled medicine, medical waste management, and a response mechanism to medical accidents.

#### 2. Thailand

A special Program for Peer Review on DHM for Thailand was conducted in February 2023, inviting representatives of the other nine AMS as reviewers. The status of DHM in Thailand in line with the seven NTs of POA/ALD DHM and emergency medical and disaster management systems was presented by Thai stakeholders, and a ‘Strength/Weakness/Opportunity/Threat (SWOT)’ analysis was conducted by all participants to analyze and make recommendations to strengthen DHM capacity in Thailand further.

### **Confirmation of Roles and Responsibilities of The Medical Coordinator (MC)**

The provision of a local MC is defined as one of the supporting roles of the EMT Coordination Cell (EMTCC) as stipulated in SASOP (16). The clarification of MC's roles and responsibilities was proposed, as no description of MC's function is found in any ASEAN DHM documents, including SASOP.

A group work session on MC was conducted as part of the trial implementation of the C course held in Japan in December 2022. MOH Malaysia reviewed the result and finalized it as applied in the Malaysian context through the conduct of the In-country C course in August 2023. MOH Malaysia then confirmed the roles and responsibilities in the 5<sup>th</sup> RCD by assigning MC to each AMS I-EMT.

### **Study on The Possibility of Developing a Stockpile of EMT Items**

The establishment of a stockpile of EMT items was proposed to address the challenges raised through ACM analysis conducted in the ARCH Project Extension Phase (5). As a result, standardizing stockpiled items, establishing a shared use mechanism including warehousing and replenishment mechanisms, and confirming funding sources were identified as essential components to realizing the regional stockpile scheme. Therefore, the ARCH Project proposed "Standardization of EMT medicine and equipment in the ASEAN region" as one of the designated themes for the Joint Research Project 2024 conducted under the ASEAN Academic Network on DHM (AANDHM), with financial support of 2 million Japanese Yen.

### **Study on The Possibility of Joint EMT Operations**

Based on the conclusion of PWG 1, an exercise scenario of establishing a referral hospital through the joint EMT operation was set for the 5<sup>th</sup> RCD in Malaysia. Feedback from participants will be reviewed and reflected in future improvements to joint EMT Operations, including implementation in actual disaster response.

## **RESULTS**

### **Development of AMS DHM Database**

Through a self-assessment of DHM and the preparation of KCCP 2023 and 2024, all ten AMS reviewed the database and updated its contents as necessary. A framework of the AMS DHM database in table format has been created using Google Docs©. The database contains key information on DHM in line with the seven NTs of POA/ALD DHM and the emergency

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medical/disaster management system. However, the database is designed not to include confidential personal information such as I-EMT members' names, capabilities, experience, and availability.

The AMS DHM database was completed and updated using the database of AMS for receiving EMT deployment (focusing on NT 2 and NT 3 of POA/ALD DHM), which was previously developed for five AMS (Indonesia, Myanmar, Philippines, Thailand, and Viet Nam) during the ARCH Project Extension Phase, and the results of the self-assessment on DHM conducted by PWG and KCCP participants of each AMS in 2023. The updated database will be shared with PWG and subsequent KCCP 2024 participants for review and further updates in 2024. All AMS participated in the development and update of the database. The updated contents of the AMS DHM database will be used as base information for the Country Report for KCCP 2024 (Table 2).

*Table 2. Summary of Content of AMS DHM Database (Ver.3)*

Disaster Management
Legal framework/Policy, Outline of Disaster Management System
Emergency Medicine
Outline of Emergency Medical System (EMS) including ambulance service, Access to hospital/ Referral system, Safety guidelines for ambulance/pre-hospital care staff, Funding/Finance system for the management of EMS including pre-hospital care, Response mechanism to Mass Casualty Incident (MCI)
DHM
Legal Framework/ Policy, Outline of DHM System
Contents related to the seven NTs of POA/ALD DHM

*Source: Kita et al., 2025*

**Confirmation of National Procedures and Guidelines for Receiving I-EMTs**

1. Malaysia

During the 5<sup>th</sup> RCD and In-country C course training, the national procedures and guidelines for receiving I-EMTs related to the five ACM issues were confirmed (Table 3) (19).

Table 3. Summary List of Items Confirmed and Identified in Malaysia Through the 5<sup>th</sup> RCD and In-Country C Course.

ACM Issues	Items Confirmed/ Identified
Customs clearance	General criteria for importing unregistered pharmaceutical products into Malaysia from I-EMT Laws and regulations for approved imported I-EMT medication
Medical waste management	Waste management SOP
Medical accident	New sections “Management of Complaints against Teams,” “Response to Medical Accident,” and identification of Incident Reporting Form in relevant guidelines (20)
Logistics issues	New section “Medical Coordinator” in relevant guidelines (20) New section “EMTCC” in the draft disaster management plan
I-EMT medical professionals	Issuance process of Temporary Practicing Certificate for Medical Doctor, Nurse
Other issues	Required documents for EMT Registration New section “Data Management” in relevant guidelines (20)

Source: Ministry of Health Malaysia., 2024

## 2. Thailand

A report, “Peer Review on DHM for Thailand,” was developed through a consultation process with AMS participants and stakeholders from Thailand before being submitted to the members of PWG Thailand. The report consisted of an outline, methodology of the review process, country information for Thailand, SWOT analysis results, a conclusion on progress on achieving the seven NTs of POA/ALD DHM, and recommendations. The recommendations included considering hosting the RCD in Thailand to simulate the overall coordination procedures and tools for receiving international assistance. The Ministry of Public Health Thailand has submitted the letter of intent to host the 6th RCD in 2025.

### **Confirmation of Roles and Responsibilities of MC**

As part of the In-country C course held in Malaysia, participants from MOH Malaysia scrutinized the results of previous discussions conducted by KCCP participants in 2022. They concluded on the functions of MC — including the ‘facilitation of EMT operations,’ ‘sharing information,’ and ensuring ‘safety and security’ — as well as the necessary competencies and qualifications of MC assigned to support the EMT operations. The assignment of MC to each EMT as a liaison officer was tested in the 5<sup>th</sup> RCD, and it was assessed to have enhanced EMT

activities, especially in the coordination process. It was recommended that a 6<sup>th</sup> RCD be hosted to develop criteria for MC and its role and test them during the drill (19).

### **Study on The Possibility of Developing a Stockpile of EMT Items**

The National Burn Hospital in Viet Nam, submitted a research proposal titled “Evaluating current medical tool kit and practical skill of EMTs in ASEAN countries.” The proposal was endorsed by the Steering Committee of AANDHM and confirmed that the National Institute for Emergency Medicine (NIEM) in Thailand will participate as a co-research institute. The Joint Research Project is currently in preparation, and data collection for EMT stock management is planned for five AMS, including Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam. The research will be conducted from April 2024 to January 2025, and the outcome, including “Level of similarity and diversity of EMT medicine and medical equipment in the ASEAN region,” will be reported in January 2025.

### **Study on The Possibility of Joint EMT Operations**

The national EMT (N-EMT) Malaysia and an I-EMT, Japan Disaster Relief (JDR) Medical Team, operated a referral hospital as part of the scenario-based field exercise in the 5<sup>th</sup> RCD in Malaysia (19). The participants of the joint EMT operation raised several challenges, including coordination, reporting structure, command, and control. They also suggested that the necessary preparations for joint EMT operations include the development of a common SOP or prior sharing of their respective SOPs, conducting joint training, and prior bilateral agreements. The participants of the I-EMT Japan pointed out several benefits of joint operation with N-EMTs, such as familiarity with the local context, including health and medical systems, and communication with the local population, patients, and their families.

## **DISCUSSION**

The discussions with AMS representatives acknowledged that ASEAN possesses numerous strengths regarding regional EMT deployment, such as existing regional policies, strategies, agreements, and frameworks on disaster management and DHM. Moreover, ASEAN would benefit from geographical proximity and cultural, religious, and linguistic

similarities among neighboring countries. It was proposed that these regional strengths be utilized or enhanced through the ACM implementation (5).

### **The Development of The AMS DHM Database and The Confirmation of National Procedures and Guidelines for Receiving I-EMTs**

SASOP provides the procedures for joint disaster relief and emergency response operations, including the coordination of EMT operations. The AMS DHM database was designed to enable AMS to access essential information promptly for the mobilization and on-site operation of EMTs, aligning with SASOP (16).

Given that the database is intended to contain a broad range of information on DHM, it is essential for AMS to engage in discussions and reach a consensus regarding the management of data utilization and the scope for data disclosure, which are crucial for the database to function as a practical knowledge hub for DHM in the region. Currently, the database operates on a free web-based commercial “cloud computing” platform, which raises security concerns, including data privacy, data security, access control, cyber-attacks, and data availability (21). Introducing robust security measures and backup mechanisms is imperative to ensure the integrity and protection of the database contents. ASEAN Institute for DHM (AIDHM) is expected to take over the management of the database and facilitation role for regular updates beyond March 2026 when the ARCH Project is completed (7).

It was proposed that national procedures and guidelines for receiving I-EMTs will be confirmed through the conduct of DHM activities initiated by the ARCH Project, such as RCDs and In-country C courses, which could serve as a source of information for maintaining the AMS DHM database and could subsequently establish a mechanism for regular content updates, ensuring the database remains up-to-date and functional. Moreover, if the necessary procedures are not currently in place in a country, it is expected that the respective AMS will develop the required procedures or guidelines, as per NT 3 of POA/ALD DHM (10,11).

### **Assignment of MC**

The importance of national stewardship is emphasized for successful EMT operations, including the role of national government agencies of a disaster-affected country in coordinating and facilitating relief efforts with EMTs and international organizations (22). For instance, after the 2011 Great East Japan Earthquake, the Government of Japan set a framework of criteria for accepting I-EMTs and required I-EMTs to work closely with Japanese medical

doctors (23–25). The assignment of MC to support EMT is defined as one of the functions of EMTCC, as stipulated in SASOP (16).

Since potential candidates for MC and their qualifications, education, and registration mechanisms vary from country to country, each AMS should individually identify the roles and responsibilities of MC and establish appropriate training mechanisms tailored to their country's specific context.

### **Stockpile of EMT Items**

Establishing a shared use mechanism, including warehousing, replenishment, funding, and expiration management, is essential for realizing a stockpile of EMT items. The utilization of the Disaster Emergency Logistics System for ASEAN (DELSA), which was established to develop a regional relief item stockpile in ASEAN, is one promising option (16,26). However, considering that DELSA warehouses are only located in Malaysia, the Philippines, and Thailand, and that managing EMT medicine and medical equipment entails aspects such as 'cold chain' and 'expiration' management along with the need for EMT members to become familiar with the stockpiled items in peacetime, it may be necessary to involve N-EMTs from disaster-prone countries by maintaining an extra-stock of EMT items specifically for use by incoming I-EMTs.

The Joint Research Project is ongoing, led by the National Burn Hospital (Viet Nam) and NIEM (Thailand). The expected outcome, scheduled for reporting in January 2025, will include recommendations for standardizing EMT items, contributing to realizing a stockpile of EMT items in the region.

### **Joint EMT Operations**

The concept of joint EMT operation was initially proposed to allow multiple countries to jointly achieve the EMT-MR when individual AMS had difficulty in meeting the requirements. Subsequently, it was envisioned as a way of leveraging regional strengths in EMT deployment.

Under the coordination of the International Federation of Red Cross and Red Crescent Societies (IFRC) and following the Red Channel Agreement with WHO, several Red Cross Societies operate Health Emergency Response Units (ERUs), which are mobilized to respond to emergency health needs. Based on the shared Fundamental Principles and SOPs, joint ERU

deployments are frequently conducted to maximize globally available resources (27–29). On the other hand, it is reported that establishing a composite EMT combining multiple agencies or regions requires intense coordination efforts by the host government of the receiving country throughout the process from preparation to deployment (30).

Feedback from participants of the 5<sup>th</sup> RCD, in which N-EMT and I-EMT jointly operated a referral hospital, suggested that the ‘development of common SOP, or prior sharing of the respective SOPs,’ and ‘conducting joint training’ based on ‘prior bilateral agreement’ are necessary to achieve effective joint EMT operations. Possible future modalities for joint EMT operations in ASEAN include ‘I-EMT + I-EMT’, ‘N-EMT + I-EMT,’ and multi-national personnel composition, which should be further discussed and examined through simulations.

## **LIMITATION**

The authors of this study are actors in the ARCH Project and members of the AMS, which may hinder objective analysis during the qualitative research process. The discussion in this paper assumes that the current disaster management and DHM framework, and close collaboration, coordination, and commitment of relevant stakeholders in the ASEAN region, including ministries of health of each AMS, ASEAN Secretariat, ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre), and AIDHM, will be maintained, with continuous socio-economic, political and diplomatic stability in ASEAN.

## **CONCLUSION**

The ACM was initiated to support AMS’ efforts in meeting the WHO EMT-MR and strengthen its capacity to receive and coordinate I-EMT operations. Subsequently, it will contribute to realizing rapid, effective, and high-quality EMT operations in the ASEAN region.

The AMS DHM database has the potential to act as a knowledge management hub on DHM in ASEAN, along with the continuous content update and management mechanism. Establishing a stockpile mechanism for EMT medicine and equipment and coordinating joint EMT operations among AMS represent innovative approaches to realizing the OAOR vision in the field of DHM in the region. These ACM initiatives will contribute to enhancing interoperability and regionalization — two of the five key values outlined in the WHO Emergency Medical Teams 2030 strategy — in the EMT deployment in the ASEAN region (30).

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The ACM is a problem-solving mechanism to address issues facing AMS raised through various regional DHM activities initiated by the ARCH Project and actual EMT operations during emergencies and disasters. After the completion of the ARCH Project in March 2026, the ACM follow-up, including the management of the AMS DHM database, is expected to be taken over by the AIDHM to ensure the sustainable development of the DHM framework in ASEAN.

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### **CONFLICTS OF INTEREST**

The authors do not have any conflict of interest to declare.

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