Program Report

on

World Academic Council of Emergency Medicine Table-top Exercise and Communication in Disaster Medicine

1st International Conference on Disaster Preparedness & Management (WACEM-TOPCOM NEPAL) 2023



Executive Summary

Nepal is situated in a seismically active region, and its susceptibility to earthquakes, floods, landslides, and other calamities underscores the critical importance of disaster preparedness. It has experienced a substantial number of disasters in the past decade, affecting millions of people and causing significant economic losses. In light of Nepal's vulnerability to various natural disasters, the successful execution of the inaugural World Academic Council of Emergency Medicine-Tabletop Exercise and Communication (WACEM-TOPCOM) in Disaster Medicine carries immense significance.

In a momentous collaboration, the Government of Nepal, alongside Dhulikhel Hospital Kathmandu University Hospital, affiliated university hospitals of Kathmandu University, and major hospitals of Bagmati province, successfully hosted the first WACEM-TOPCOM in disaster medicine. This historic event took place at the Simulation and Interactive Learning Center, Dhulikhel Hospital, Kathmandu University Hospital, from December 1st to 3rd, 2023.

WACEM-TOPCOM marked a pioneering effort, made possible through partnerships with Hospital Selayang, Malaysia, the World Academic Council of Emergency Medicine, INDO-US Emergency and Trauma Collaborative (INDUSEM), All India Institute of Medical Sciences (AIIMS), Nagpur, General Practice and Emergency Medicine Association of Nepal (GPEMAN), and Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPIMS).

The primary objective of the conference was to equip healthcare professionals, including doctors, nurses, paramedics, and administrative staff, as well as supportive services employees in hospitals, with comprehensive knowledge and skills in disaster management. The focus was on enhancing intra and interdepartmental communication, coordination, and response during major disaster events.

The program successfully achieved specific aims, including the development of both technical and non-technical competencies in disaster response, enhancement of disaster response under the Hospital Incident Command System (HICS), improvement of leadership skills during disaster response, ensuring the safety of patients and healthcare workers, honing intra or interdepartmental and interhospital communication and coordination skills, and fortifying hub and satellite hospital networking.

The event spanned a pre-conference phase from December 1st to 2nd, featuring workshops, skills stations, and presentations, followed by the main conference on December 2nd and 3rd. The Simulation and Interactive Learning Center at Dhulikhel Hospital, Kathmandu University Hospital, served as the dynamic venue for this transformative initiative.

Recommendation

- 1. Simulation exercises and drills are very useful for sharing knowledge and skills. Therefore so it will be of maximum benefit when it is frequent and the involvement of an actual person in regular roles
- 2. There is a lack of knowledge and policies so practical educational training like tabletop exercises are useful for managing acute crises and responding promptly during disaster events.
- 3. Stakeholders and leaders need to bring awareness and understanding of those policies and guidelines for managing disaster events to the forefront for all frontline healthcare workers
- 4. The plan, Do, Study and Act is a conceptual framework and stepwise approach to guide the quality improvement process. Therefore, carrying out disaster plans, updating disaster plans regularly, conducting regular simulation exercises and drills, documenting observations and recording data will be more beneficial to decrease mortality and morbidity related to disasters.
- 5. Creating a country level Taskforce-Where Dhulikhel Hospital will play the pivotal role along with other stake holders for advocacy and creating strategies and action plan for Nepal
- 6. Having Similar knowledge and skills building activities annually with World Academic Council of Emergency Medicine and other national and international stake holders

WACEM-TOPCOM emerged as a landmark achievement, and with its focused approach on enhancing disaster management capabilities, played a pivotal role in fortifying Nepal's resilience. By equipping healthcare professionals with the necessary knowledge and skills, this initiative not only contributes to the immediate response to disasters but also strengthens the overall preparedness and coordination mechanisms, ensuring a more robust healthcare system capable of mitigating the impact of future disasters.

Introduction

Tabletop exercises represent a targeted and comprehensive tool utilized by international agencies for emergency management. These exercises bring together key personnel responsible for emergency medical roles to simulate various crises in a controlled environment. The primary objective of such exercises is to clarify the roles of each individual, identify areas for mitigation, and enhance overall emergency preparedness.

The WACEM-TOPCOM conference aspires to unite global experts, fostering the exchange of knowledge and best practices in disaster management, disaster medicine, and emergency response. The conference aims to fortify existing Hospital Disaster Response Plans and improve both intra/interdepartmental and interhospital communication and coordination during disasters.

This inaugural international conference on disaster preparedness and management, held in the picturesque Himalayan town of Dhulikhel, Kavre at Dhulikhel Hospital, Nepal, stands as a monumental event. Organized by the Ministry of Health and Population and bolstered by support from various national and international agencies, the conference marks a significant milestone in advancing disaster resilience in the region.

Program Overview

The program's inauguration occurred on December 1, 2023, officiated by Dr. Dipendra Raman Singh, Ministry of Health and Population and Kavre District Coordinator Dipak Kumar Gautam. The inaugural session garnered the presence of the central government of Nepal, the local government of Nepal, WHO- Nepal, SEARO, the Health Emergency Operation Center (HEOC), Nepal Red Cross, the Disaster Preparedness Network Nepal, RTAG- RTI, School of Medical Sciences-Dhulikhel Hospital, World Academic Council of Emergency Medicine, as well as representatives from other hospitals and educational institutions across Nepal. Dr. Dipendra Raman Singh and Dr. Dipak Kumar Gautam (District Coordination Division) delivered the opening speeches.

The subsequent section of this report provides a comprehensive account of the day-wise events that transpired during the program.

Day 1: Pre-conference Workshop

The pre-conference workshop at the 1st International Conference on Disaster Management 2023 was led by Mr. Damien Santer, Curriculum Director of Austere & Emergency Medicine International, along with Dr. Gurjeet Singh and Dr. Nabil Muhammad.

1. Introduction to the Wilderness & Austere Context :

Mr. Damien Santer provided a comprehensive overview of the Wilderness & Austere context, setting the stage for the workshop. This introductory talk laid the foundation for understanding the unique challenges and considerations in emergency medicine within austere environments.

2. ALS Considerations, Appropriate Tools & Technologies for the Wilderness & Austere Context (Talk & Workshop - Finger Thoracostomy) - Gurjeet:

Dr. Gurjeet Singh delved into Advanced Life Support (ALS) considerations, emphasizing the importance of appropriate tools and technologies in austere settings. The practical aspect of the workshop involved hands-on experience with Finger Thoracostomy, a critical skill in the field. It explored the significance of the double mattress suture and mesenteric dressing to secure a chest tube, reducing dislodgements both in the field and the emergency department.

3. Case Learning: Batang Kali Land Slides :

Dr. Nabil Muhammad presented a compelling case study on the Batang Kali Land Slides, offering valuable insights into real-world challenges faced in disaster management. The talk provided a platform for discussion and shared learning from past incidents.

4. Outdoor Mass Casualty Incident Simulation (Simulation):

The workshop concluded with an outdoor Mass Casualty Incident Simulation led by Mr. Damien Santer. Participants had the opportunity to apply the knowledge gained throughout the session in a realistic scenario, enhancing their preparedness for emergency situations in wilderness and austere environments.

1. Point of Care Ultrasound in Disaster (hands on with lectures)

A training program on ultrasound in disaster was conducted as part of the WACEM TOPCOM program at Dhulikhel Hospital, BLS hall on December 1, 2023. The workshop commenced at 8:30 AM and concluded at 12:30 PM, with a pretest administered to participants prior to its commencement.

The workshop engaged 25 participants who demonstrated exceptional enthusiasm and active participation throughout the course. Six facilitators contributed to the workshop, delivering lectures on various disaster-related topics and conducting training sessions. The facilitators were as follows:

1. Dr. Tej Prakash Sinha, Additional Professor, Department of Emergency Medicine, AIIMS, New Delhi

- 2. Dr. Archana Nair, Senior Resident, Department of Emergency Medicine, AIIMS, New Delhi
- 3. Prof. Dr. Roshana Shrestha, Department of Emergency Medicine, Dhulikhel Hospital
- 4. Dr. Anmol Purna Shrestha, Department of Emergency Medicine, Dhulikhel Hospital
- 5. Dr. Sumarga Shimkhada, Department of Radiology, Dhulikhel Hospital
- 6. Dr. Samjhana Basnet, Department of Emergency Medicine, Dhulikhel Hospital

The primary objective of the workshop was to impart fundamental knowledge of Point Of Care Ultrasound in Disaster, facilitating its application in disaster scenarios. The workshop included concise lectures and hands-on training sessions for each covered section. The topics covered during the workshop were as follows:

1. Introduction to point of care ultrasound in mass.

2. Airway - Airway injury, Neck hematoma, ET tube confirmation, US-guided Needle cricothyroidotomy.

- 3. Breathing Pneumothorax and hemothorax
- 4. Circulation E-FAST and IVC
- 5. Disability Optic nerve sheath diameter (ONSD)
- 6. Extremity Long bone fracture detection
- 7. Skills station Hands-on training session

The workshop concluded successfully, with all topics covered within the allocated time. Participants engaged in training sessions at the conclusion of each section. Post-tests and feedback forms were duly completed by the participants.

2. Incident Command System Simulation

Dr. Jonathan McMahon delivered an insightful overview of the Incident Command System, elucidating the various job roles associated with each of the primary command posts. This presentation served as a crucial foundation for the upcoming conference, during which participants would actively engage in practicing the functions corresponding to these roles through drills. Subsequently, participants were led through a table-top exercise designed to reinforce their comprehension of the Incident Command structure and the specific roles encompassed within it.

3. Approach to the Management of a Radiological MCI

Dr. Jay Pandya delivered a comprehensive presentation on the management of Radiological or Nuclear Mass Casualty Incidents (MCIs). The session covered both prehospital site management and hospital management, with a specific emphasis on the crucial aspects of patient decontamination and triage. Following the informative talk, participants actively applied the acquired concepts during a table-top exercise centered around the approach to a potential radiological MCI.

4. CBRNe

The workshop featured presentations by Dr Bonnie Arquilla, Dr Samara Soghoian, Dr. Jay Pandya, Dr. Jonathan McMahon, and Dr. Ramu Kharel. Comprising two lectures accompanied by tabletop exercises, this workshop served as an introduction to the incident command structure and an approach to managing Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNe) mass casualty incidents. The interactive nature of the workshop enabled participants not only to absorb the information but also to actively apply the learned concepts in mock scenarios through the tabletop exercises.

5. Prehospital Care and Disaster Preparedness

6. End Session/Group Discussion

Day 2: Presentations and Simulations

1. Essential Critical Care Course

The Essential Critical Care Course (ECCC) took place on December 2, 2023, from 7 am to 12:30 am, as part of the WACEM TOPCOM NEPAL 2023 conference at Dhulikhel Hospital, Nepal. The primary objective of the course was to impart the concept of Emergency Critical Care, equipping healthcare professionals with the knowledge and skills to manage unstable patients and provide early stabilization and organ support upon their immediate arrival at the hospital's emergency department following any type of disaster.

The course was directed by Dr. Sandeep Sahu, a Professor in the Department of Anaesthesiology and Intensive Care at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, UP, India. The esteemed faculty included Dr. Divya Srivastava and Dr. Ruchi Verma, both serving as Associate Professors in the same department, along with Dr. Dharmendra from Hind Institute of Medical Sciences and Dr. Abhilesh Chandra from DR RMLIMS, Lucknow, UP, India.

Approximately 60 delegate doctors from various hospitals in Nepal attended the course, which encompassed both knowledge and skill components. The interactive discussions covered critical topics such as the approach to critically ill patients, airway and breathing management in the Emergency Intensive Care Unit (ICU) including oxygen therapy, types of shock in emergencies and their management, and the approach and management of comatose patients in the Emergency Department (ED). Additionally, the hands-on skill stations focused on airway and breathing management, the role of Point of Care Ultrasound (POCUS) in shock assessment, hemodynamic monitoring in the ED, and simulation cases. The course provided a comprehensive learning experience, combining theoretical knowledge with practical skills to enhance the participants' proficiency in emergency critical care.

2. AHA BLS and ACLS

The American Heart Association's (AHA) Advanced Cardiac Life Support (ACLS) course serves as an advanced training program building upon the foundational lifesaving skills of Basic Life Support (BLS), with a specific emphasis on the significance of continuous, high-quality CPR. While BLS skills are fundamental for the general public, who may act as first responders in emergencies, ACLS is tailored for healthcare providers involved in the advanced critical care of victims.

In pursuit of generating skilled professionals capable of delivering effective BLS and ACLS interventions, a comprehensive 3-day program encompassing AHA BLS and ACLS courses was conducted. This initiative was a collaborative effort between Dhulikhel Hospital, Kavre, Nepal,

and Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, UP, India. Dr. Roshana Shrestha, Professor of Emergency Medicine at Dhulikhel Hospital, Dr. Sandeep Sahu, Professor in the Department of Anaesthesiology and Intensive Care at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, UP, India, and Mr. Ramnaresh Yadav, also from Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, UP, India, played pivotal roles as AHA-certified BLS and ACLS trainers, overseeing the organization, facilitation, and evaluation of the courses.

The one-day ACLS course, attended by 26 participants comprising physicians, surgeons, and nurses from various hospitals across Nepal, aimed to instill skills and confidence in adhering to AHA algorithms for managing cardiac arrest, arrhythmias, acute coronary syndrome, and stroke. The course also emphasized the principles of teamwork and closed-loop communication. Participants delved into the sciences involved in recognizing cardiac arrest, arrhythmias, and stroke, mastered techniques for securing airway control in unconscious patients, became proficient in using Automated External Defibrillator Devices (AED), and gained understanding in the administration of various drugs required for ACLS.

On the third day of the AHA BLS ACLS program, participants underwent testing in accordance with AHA protocols, leading to AHA certification for providing BLS and ACLS. The program thus served as a comprehensive and rigorous training platform, equipping healthcare professionals with the knowledge and skills necessary for advanced cardiac life support interventions.

3. Role of Laboratory Medicine in Disaster Management

Prof Dr Sailesh Pradhan and Dr Sandipa Kunwar delivered insights on the importance of laboratory medicine in disaster management.

"Disasters" are severe disruptions to the functioning of a community that surpass its ability to cope using internal resources. Emergencies can take the form of internal and external disasters. Disaster management is the discipline dedicated to preventing and addressing natural risks, encompassing disaster preparedness, mitigation, and post-disaster recovery phases. A crucial aspect of disaster management within hospitals is the capacity of clinical laboratories to remain operational and recover swiftly after a disaster. Each laboratory must have its own internal and external policies for disaster preparedness, known as an "Emergency Management Plan" (EMP).

The three primary functions of clinical laboratories in disaster or emergency conditions are:

- 1. Diagnostic confirmation of infectious diseases with high mortality rates.
- 2. Availability of standard diagnostic tests to treat injured victims.
- 3. Preparation and administration of blood products safely.

Elements of an EMP include policies and procedures, risk assessment and emergency planning, communication plans, and training and testing protocols. Essential equipment, such as instruments for determining hemoglobin and hematocrit levels, electrolytes, glucose, blood group, Rh factor, and crossmatching, must be readily available. Point-of-care testing (POCT), involving medical testing at or near the patient care site using mobile devices, facilitates testing across the disaster-emergency-critical care continuum.

Blood banks are advised to formulate emergency plans and integrate them into the broader disaster plans of the health sector, in coordination with national disaster programs and epidemiology departments. Therefore, a robust laboratory management method that includes integrated medical leadership and administration across all laboratory service lines enables the provision of appropriate and fast responses in case of a disaster.

4. Large Tabletop Exercise

Dr. Arquilla, Dr. Soghoian, Dr. Pandya, Dr. McMahon, Dr. Kharel, and Dr. Alwi orchestrated a half-day tabletop exercise for all conference participants. The primary objective of this exercise was to enhance leadership and communication skills in the context of large-scale disasters. Participants were divided into simulated cities within Nepal, assuming roles in government, hospital incident command, or hospital staff groups. Dr. McMahon commenced the day by reintroducing the incident command structure and associated roles. Subsequently, groups assigned themselves incident command roles, identified top priorities through Job Action Sheets, and created Incident Response Guides outlining their response to a potential earthquake scenario.

This planning phase not only allowed internal planning for each assigned site but also facilitated the learning of making memorandums of agreement with other simulated cities, coordinating response plans with the government, and collaborating with other hospitals.

Dr. Pandya then led the main tabletop exercise, with facilitators assisting participant groups throughout. Simulating a large earthquake mass casualty event, the groups spent the next two hours executing and coordinating their responses internally and externally, adhering to the response guides they had previously developed. The exercise concluded with a press conference where information officers from each group delivered messages to mock press reporters and answered questions. Public information officers received separate training on public communication during disasters.

The exercise covered both planning and response phases of the disaster cycle. Participants initially learned about planning and coordinating responses using an incident command structure, making agreements with different hospitals, and planning for anticipated staff and resource demands

during a disaster. The subsequent role-playing allowed participants to practically coordinate their responses during the drill. Selected participants serving as information officers received additional training on public communication during disasters, which they then applied in a mock press conference. The drill concluded with a debrief session, encouraging participants to share their reactions, reflect on challenges, and discuss lessons learned.

Closing Ceremony

The event concluded with a closing ceremony, marking the successful culmination of the workshop. Dignitaries, faculty members, and representatives from various organizations graced the ceremony, adding to its significance.

The ceremony was honored by the presence of Dr. Prakash Budathoki (Head of HEOC), Dr. Sameer Adhikari (Senior Health Administrator of HEOC), along with Dr. Dipak Shrestha, Dr. Ram Gurung, Dr. Rohit Shrestha, and Dr. Samjhana Basnet (organizing Secretory).

During the ceremony, the chief guest, special guests, and the chairman extended their congratulations to the organizing team for the triumphant completion of the three-day conference. They commended the team for their dedicated efforts.

Certificates of appreciation were given to delegates and faculty members, recognizing their valuable contributions. The organizing secretary expressed gratitude to the volunteers for their unwavering support and dedication throughout the program, bringing the ceremony to a close.

Impact of the Program

To assess the immediate impacts of the program, participant feedback was obtained through Google Forms. The ensuing section provides a detailed overview of the feedback received from the participants.

The participant feedback for the conference indicates a positive overall reception, with 31.6% rating it as excellent, 62.5% as good, and a smaller percentage of 6.3% each expressing fair feedback. This distribution suggests a predominantly favourable assessment of the conference, reflecting a high satisfaction level among the majority of attendees.



The overwhelmingly positive response is evident, as 93.8% of participants expressed a desire to participate in similar training in the future. This high level of interest underscores the perceived value of the training and indicates a strong willingness among participants to engage in similar educational opportunities.



Do you want to be part of similar conference /workshops in future?

Participant Satisfaction

Participants were asked to rate their satisfaction with the event on a scale of one through five. The results indicate that 66.7% of participants reported being highly satisfied, with no participants expressing absolute dissatisfaction.



Impact on Clinical Practice

An impressive 61.9% of participants emphasized the high relevance and helpfulness of the training to their clinical practice. This underscores the importance of involving emergency physicians, residents, medical officers, and healthcare personnel from various departments in similar training and workshops. Such initiatives are crucial for enhancing their clinical knowledge and skills in the field of emergency medicine.



Subgroup analysis of Conducted workshops

Point of care ultrasound (POCUS), basic life support (BLS), and advanced cardiac life support (ACLS) play pivotal roles in emergency medicine, offering crucial benefits in patient assessment, management, and overall outcomes. Here are a few reasons highlighting the importance of these two aspects:

1. Rapid Assessment and Diagnostics:

- POCUS allows immediate visualizations of internal structures, aiding in the rapid assessment of critically ill patients.

- In emergencies, quick and accurate diagnostics provided by POCUS assist healthcare providers in making prompt and informed decisions.

2. Enhanced Decision-Making in Critical Conditions:

- POCUS provides real-time imaging, enabling clinicians to visualize cardiac activity, identify fluid collections, and assess for traumatic injuries swiftly.

- In critical conditions, such as cardiac arrest or trauma, rapid decision-making based on POCUS findings can significantly improve patient outcomes.

3. Immediate Intervention and Monitoring:

- BLS skills are fundamental in providing immediate care to individuals experiencing cardiac arrest or respiratory failure.

- BLS interventions, including chest compressions and rescue breaths, are essential for maintaining oxygenation and circulation until advanced life-support measures can be initiated.

4. Improved Patient Survival Rates:

- BLS interventions, when initiated promptly, contribute to the "chain of survival" in emergencies, significantly improving the chances of patient survival.

- POCUS aids in identifying reversible causes of cardiac arrest or shock, allowing targeted interventions and potentially increasing the likelihood of a positive outcome.

5. Versatility and Accessibility:

- POCUS is a versatile tool that can be readily used at the bedside, enabling healthcare providers to assess patients in various settings, including pre-hospital, emergency departments, and intensive care units.

- BLS and ACLS skills are fundamental for individuals in various settings, including healthcare professionals, first responders, and even laypersons, making it an accessible and essential skill for anyone in a position to provide immediate assistance.

6. Training and Skill Retention:

- Regular training in POCUS, BLS and ACLS ensures that healthcare professionals maintain proficiency in these life-saving techniques.

- Continuous education and practice are crucial for skill retention, as emergencies demand quick and accurate responses.

In conclusion, the overwhelmingly positive feedback on POCUS and BLS courses underscores their vital role in emergency medicine. These skills are not only relevant but can be life-saving, making them essential components of training for healthcare providers across various specialties.





The workshops conducted received predominantly positive evaluations from participants, with a significant proportion rating them as "Good." Specifically:

Wilderness Medicine Workshop:

- 62.5% of participants deemed the choice of topic and its relevance in their clinical practice as good.

CBRN Workshop:

- A substantial 78.1% of participants granted a "Good" rating for the Chemical, Biological, Radiological, and Nuclear (CBRN) workshop.

Prehospital Care and Hospital Disaster Prevention Workshop:

- Regarding the prehospital care and hospital disaster prevention workshop, 59.4% of participants found it good.

Mass Gathering and Fatality Drill Workshop:

- A notable 62.5% of participants rated the Mass Gathering and Fatality Drill Workshop as good.

Essentials of Critical Care Workshop:

- A significant majority of 75% of participants deemed the Essentials of Critical Care Workshop as good.

Workshop on Drill Preparation and Press Conference:

- For the workshop on drill preparation and press conference, 50% of participants rated it as good, and a higher 43.8% mentioned it was excellent.

These positive ratings across various workshops highlight the perceived quality, relevance, and effectiveness of the content presented, demonstrating a successful and well-received training program.

Feedback on event organization

The evaluation results indicate a positive reception of various aspects of the workshop:

Choice of Speakers:

- A significant percentage of participants, with 25%, rated the choice of speakers as excellent, while 59.4% deemed it good, indicating a high level of satisfaction with the selection of presenters.

Quality of Presentations:

- Over half of the participants, specifically 53.1%, found the quality of presentations to be good, and an additional 34.4% considered it excellent, highlighting a positive assessment of the content delivered.

Structure of the Workshop:

- A majority of 65.6% expressed satisfaction with the structure of the workshop, rating it as good.

Quality of Materials Shared:

- A substantial 62.5% of participants liked the quality of materials shared during the workshop.

Discussions and Panel Discussions:

- Participants showed satisfaction with the discussions conducted during the workshop and on the panel discussions, as indicated by the term "fair number of participants."

Plenary Sessions:

- 65.6% of participants rated the plenary sessions as good, suggesting a positive perception of the overall sessions that involved the entire participant group.

These findings collectively suggest a well-organized and engaging workshop with high-quality presentations and effective discussions, contributing to the overall positive participant experience.

Strengths of the program

The feedback from participants underscores that the strength of the workshop lies in the topics covered and the content delivered. Additionally, the effectiveness of group discussions was highlighted as a valuable aspect contributing to participants' learning experience. These insights indicate that the workshop successfully met the expectations of the participants in terms of content relevance and interactive learning methods, contributing positively to their overall educational experience.

