Training Module

Dignified Management of the Dead

विद्यया अमृतं अश्नुते

GUJARAT INSTITUTE OF DISASTER MANAGEMENT

BUILDING RESILIENCE

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Training Module on Dignified Management of the Dead

Published by

Gujarat Institute of Disaster Management, Gandhinagar—382007

ISBN: **978-81-941697-3-4**

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Message

Dignified Management of the Dead, a major social responsibility, entails positive identification of the deceased for correct and dignified disposal according to religious, cultural, ethnic and psycho-social needs of the affected community. In view of response-centric mass-disposal of the dead in the past, it becomes imperative to build the capacity on the subject at all levels.

The National Disaster Management Authority (NDMA) has prepared the National Guidelines on the Management of the Dead in the Aftermath of Disasters, 2010. Keeping in view these guidelines, GIDM has developed the State Specific Guidelines on the subject "Dignified Management of the Dead" which will compliment and supplement the efforts of Health and Family Welfare Department, Home Department, Forensic Laboratories/Experts and various other concerned stakeholders, in managing the dead bodies in a dignified manner.

This Training Module will help in identifying the first-hand knowledge on the subject and sensitize participants in understanding Basics of Disaster Risk Management along with identifying the relationship between Disasters and Role of concerned stakeholders with respect to Dignified Management of the Dead. The different sessions are designed for a comprehensive understanding of hazards, vulnerabilities, capacities and the associated risks; followed by the working group to discuss various stages, current state of practice and training needs for Dignified Management of Dead.

The Training Module explains to the participants, the ways in which community managed development may be converged with DRM and engages participants in identifying actions to be done by the local administration for managing the dead. The Module dwells deep into the scientific procedure in chronological applied for Dignified Management of the Dead. The Module recognizes multi-disciplinary approach of the subject and seeks cooperation from various Govt. Departments/Organizations and Institution to come together and to work positively towards the flagship project of Gujarat, designed by GIDM, "Dignified Management of the Dead".

(P.K. Taneja)
Director General

October, 2019
Gandhinagar

Abbreviations

ABFO	American Board of Forensic Odontology
AFIS	Automated Fingerprint Identification System
AICD	Automated Implantable Cardioverter Defibrillator
AM	Ante-Mortem
AMCC	Ante-mortem Coordination Centre
ATIs	State Administrative Training Institutes
BDO	Block Development Officer
CBO	Community Based Organizations
CD	Civil Defence
CDFD	Centre for DNA Fingerprinting and Diagnostics
CFSL	Central Forensic Science Laboratory
CRED	Centre for Research on the Epidemiology of Disasters
CRF	Calamity Relief Fund
CrPC	Code of Criminal Procedure
CT	Computed Tomography
DDMA	District Disaster Management Authority
DM	Disaster Management
DNA	Deoxyribonucleic Acid
DVI	Disaster Victim Identification
DVIC	Disaster Victim Identification Cell
EM-DAT	Emergency Events Database
ESF	Emergency Support Functionaries
FSL	Forensic Science Laboratory
GIDM	Gujarat Institute of Disaster Management
IB	Identification Board
IC	Incident Commander
ICP	Incident Command Post
ICRC	International Committee of the Red Cross
IDRN	India Disaster Resource Network
INTERPOL	International Criminal Police Organization
IOFOS	International Organization for Forensic Odonto-Stomatology
IRCS	Indian Red Cross Society
IRS	Incident Response System
IRSS	Institute of Health and Society
IRTs	Incident Response Teams
LCD	Liquid Crystal Display
NCC	National Cadet Corps
NCRB	National Crime Records Bureau
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NGO	Non-Government Organizations
NIDM	National Institute of Disaster Management
NSS	National Service Scheme

NYKS	Nehru Yuva Kendra Sangathan
PM	Post-Mortem
PRO	Public Relations Officer
RO	Responsible Officer
SDMA	State Disaster Management Authority
SDO	Sub-Divisional Officer
SOP	Standard operating procedures
UIDAI	Unique Identification Authority of India
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDRR	UN Office for Disaster Risk Reduction
US	United States

Content

About the Training Module

Training is an intrinsic part of the capacity building process. In disaster risk management, training assumes greater significance because of the nature of work during and after a disaster. Coping rapidity, scale and devastation of a disaster can overwhelm most people, compromising on the quality of response. Focused training and capacity building of the designated responder thus becomes imperative. On the other hand, disaster management transcends the realm of response and affects all the sections of the society. Therefore, disaster management training should also be imparted at all levels and to all sections of the society including the vulnerable community.

The training module on Dignified Management of the Dead focuses on various aspects of management of dead bodies in the aftermath of the disaster. Factors like fear of spread of epidemics in case of mass fatalities and myths about handling dead bodies affects negatively in the process of proper handling the dead. Further, the process to manage dead bodies in a dignified way requires proper knowledge, skill set, well trained human resource and most importantly coordination among various Departments/ Sectors. The training module lays the understanding of significance of management of the dead, the process involved, and areas of improvement on part of infrastructural / human and overall stakeholder's capacity building. In the four day full-time programme, the trainees will be oriented towards the major facets of Dignified Management of the Dead. The training has been designed to be in an interactive mode with 60:40 lecture: activity orientation. This is to ensure that "learning by doing" method would help participants to implement the knowledge imparted in their respective areas of work. The module has been developed by the Gujarat Institute of Disaster Management (GIDM), with inputs from professionals working in this sector. GIDM is the premier institute entrusted with the responsibility of human resource development, capacity building, training, research and documentation in the field of Disaster Management.

1. Who shall use the Training Module?

It shall be used by trainers in the Disaster Management and/or Health/ Home/ Forensic Science and other relevant sectors for imparting training to the state and city level officials on Dignified Management of the Dead. The following would be the expected target groups for the module:

- Officials from Health & Family Welfare Department
- Personnel from Hospitals, Medical Officers, Dental Surgeons, Faculties from Medical Colleges
- Scientific Officers/Asst. Directors from Forensic Science Laboratories, Directorate of Forensic Sciences
- Officials from Home Department
- Officials from Revenue Department

- Officials from Agriculture, Cooperation and Farmers Welfare Department.
- Officials from NDRF, Civil Defence & Home Guards, NCC, NYKS, NSS, Scout & Guide, Indian Red Cross, Autonomous Bodies, NGOs etc…

2. How to use the Training Module?

The module has been prepared in a Self-Study Format to enable the reader to go through a step-by-step process of learning on Dignified Management of the Dead. The first chapter provides insights about Disaster Risk Management and hence makes the participants aware about the types of disasters and possible ways of preparedness and mitigation.

The chapters thereafter, sensitize the participants about the significance of the dead body management in disaster aftermath, the course of action required, and the capacity development needs. The module design gives the reader/trainer an overview of the entire process, including the aim and objectives of training, target participants' profile, session design, methodology, time allocation, training aids etc. The module retains a degree of flexibility in the sense that the trainer can innovate on the methodology or activities according to the profile and need of participants.

3. Trainers' Guide

The training module has been designed keeping a participatory framework in mind. In addition to the knowledge and skill inputs explained in the technical sessions, the trainer may consider the following guidelines to make the programme interactive, comprehensive and interesting so that inputs are retained by trainees after the conclusion of the programme:

- After finalizing the participants' list, write a welcome note to the prospective participants about the location of the institute, how to reach the venue, reporting time for training, prevailing either and type of clothing recommended and welcome to the institute.
- The participants should be asked to fill out a-n online registration form with details of name, address, contact numbers etc
- While they wait for the programme to begin, a film about the institute/ organization can be shown to give them an idea of the institution they are training in
- The participants list with contact details should be circulated after commencement of the training for any corrections before finalizing it
- An ice-breaker session that involves all participants should be organized to initiate interaction
- Energizers, especially in the post-lunch session should be organized (not more than 5 -10 min duration) every day
- As far as possible, change the groups for group work every day to ensure better peer-to-peer interaction and sharing

Training Module Design Brief

1. Context/ Background

India has been a victim of both natural and man-made disasters. Disasters of any aetiology have a common denominator of a large number of deaths in a short span of time, thrusting an uncommon challenge on the Authorities for handling a large number of dead bodies and animal carcasses. The humanitarian community recognizes that proper management of the dead is a key component of disaster response, together with the recovery and care of survivors and the supply of basic services. Positive identification of the deceased is an essential requirement for proper disposal and financial compensation, property rights, inheritance and issues of remarriage. It is very important for the psychological recovery of survivors to have their dead relatives returned to them for culturally appropriate rites and disposal. Management of the dead, a major social responsibility of the government, entails positive identification of the deceased for correct and dignified disposal according to religious, cultural, ethnic and psycho-social needs of the affected community.

The process of identification of dead bodies involves a series of activities including recovery and retrieval, transportation to temporary mortuaries, storage and preservation, identification of dead body using methods ranging from visual identification to DNA Fingerprinting and other scientific methods for positive identification of the deceased, release of dead with due care of the medico-legal aspects associated, disposal of the dead, providing support to the bereaved, documentation and information management.

This Training Module will help in identifying the first-hand knowledge on the subject and sensitized participants in understanding Basics of Disaster Risk Management and that of Dignified Management of the Dead, with an emphasis on its significance and procedures involved. It will identify the relationship between disasters and role of concerned stakeholders with respect to Dignified Management of the Dead.

2. Rationale

The management of dead bodies involves a series of activities beginning with the search, in situ identification of the body, and its transfer to the facility that serves as a mortuary. It also encompasses delivery of the body to family members, and assistance from the State for final disposal of the body, in accordance with the wishes of the family and the religious and cultural norms of the community.

2.1 Recovery and Retrieval

After any disaster, it is very important to recover and retrieve the maximum number of dead bodies at the earliest, to facilitate prompt and correct identification, storage and final disposal. Delay in recovery may lead to decomposition of the bodies. It is also essential to retrieve and store dead body part(s) when the whole body is not available.

2.2 Transportation of the Dead

It is important to retrieve the dead from the site of the disaster and transport them to the place of storage and their preservation, as quickly as possible. This will not only help in proper storage and preservation, identification and proper disposal but also mitigate psychosocial trauma to the surviving community.

2.3 Storage and Preservation

Creation of adequate space and infrastructure, required for storage and preservation, will be planned as a part of various disaster management plans at all levels. Mortuaries in the hospitals are usually not adequate to meet the enhanced requirement during disasters. It is therefore essential to create temporary or semi-permanent structures. Abandoned buildings, store-houses or temporary constructed structures can be used for the storage with proper modifications. Important factors like climatic conditions, temperature, availability of ventilation and cooling facilities will be considered before deciding the site of the temporary mortuary.

2.4 Identification of Dead Bodies

Identification of dead bodies is mainly done by comparing and matching the information of the missing person (physical characteristics, personal belongings, place and circumstances of death, etc.) with corresponding information of the deceased mostly with the help of surviving relatives and the community. In case a body is unidentifiable, different techniques for identification are mandatory to be carried out for which adequate infrastructure is needed at all levels, along with availability of trained human resource.

2.4.1 Primary Methods of Identification

The primary methods for identification of a dead body are applied only in case the secondary methods of identification are found inadequate. These methods are enlisted below;

2.4.1.1 Fingerprinting: Fingerprint analysis is a reliable indicator of the identity of an individual as fingerprints are unique to each individual. UID – **AADHAR** Database usage for comparison and identification: The Unique Identification Authority of India (UIDAI) under the aegis of the Government of India, has been mandated for implementing the envisioned multi-purpose National Identity Card or Unique Identification Card (UID Card) project which is known as AADHAAR. The database associated with UID can be used for identifying biometric data (10 fingerprints and photograph of the face and the iris). Accordingly, for identification, the dead body's biometric data can be compared with the UID database, for which software can be developed for prompt identification.

Add Contextual Case studies

2.4.1.2. Forensic Odontology: Dental data (dental points) explain dental points and dental morphological traits can be recorded from the dead body and compared to ante-mortem data, if available, in the medical history of a person.

2.4.1.3. Forensic Anthropology: Forensic Anthropology deals with techniques that can be used to assess sex, age, stature, ancestry and analyze trauma and disease.

2.4.1.4. DNA Fingerprinting: When used with other investigations, DNA is a significant complementary tool for identification. The Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, is a National Referral Laboratory for difficult and recalcitrant case samples in identification of the deceased in Mass Casualty Incidents.

2.4.2. Secondary Methods of Identification

2.4.2.1. Visual identification: Visual identification by a witness may provide an indication of identity but it is not sufficient for positive identification of victims of a large-scale disaster. Victims are often so traumatized that visual comparison is impossible and relatives are frequently unable to cope with the psychological stress involved when confronted with deceased victims.

2.4.2.2. Photography: Identification, based solely on photographs, is highly unreliable and will be avoided. Photographs can prove very useful, if taken within 12 to 24 hours of the death, before the decomposition of the body sets in.

2.4.2.3. Personal Description/Medical Findings: Personal features of an individual, like age, gender, height, ethnic affiliation, tattoos, moles and burns are useful indicators of identity. Specific identification marks like scars and medical evidence of surgical removal of organs, may provide crucial information about a victim. Unique numbers found on prosthetic devices, breast implants, cardiac pace-makers and Automated Implantable Cardioverter Defibrillator (AICD) can also serve as reliable indicators.

2.4.2.4. Evidence/Clothing: This category includes all effects, found on the bodies of victims, like jewellery, articles of clothing including tailor tags and dhobi marks, and personal identification documents. It is important to consider the items of evidence found on the body with caution, as they may not actually belong to the deceased and may have been borrowed or misplaced during the process of retrieval or transportation. Items of jewellery have a higher identification value, if they are firmly secured or engraved to the victim's body, like nose pins, earrings and wedding rings.

2.5. Disposal of the Dead

Disposal of the dead is the final step in management of the dead. It is a highly sensitive and very important step because of cultural, ethnic and religious sensitivities, varying from community to community, in our country. This process involves issuing of a Death certificate by the competent authority to the relative of the deceased and release of the identified bodies to the relatives for final rituals which includes cremation, burial and other methods. Authorities may be required to organize final rituals in respect of the unidentified or unclaimed bodies or body parts in a disaster scenario.

2.5.1 Disaster Victim Identification Cells (DVICs) - model of developed countries, established for disasters, can be taken up for study and implementation with modification to Indian context.

2.5.2 Missing Persons should be considered to be alive unless there is evidence to suggest otherwise. A reliable and consolidated list of missing persons is a necessary and mandatory step towards identification efforts. Information on missing persons and unidentified human remains may be stored centrally in an electronic database, under the guidance of a data management specialist, to assist in the tracing and identification efforts and shall also be made available to the relatives of the missing. The missing becomes silent,(Cases remain untraced, the family members left behind wonder about the fate of their loved ones. It is important for the healing process of the families left behind to provide them with the information about their kith and kin. Robust efforts should be made to find possibility of life and/or missing persons in and around the scene of incidence. This issue also reflects the need to strengthen human resource capacities and use of advanced technologies to find missing persons in disaster conditions.

2.6. Documentation and Information Management

The proper documentation will include compiling the Dead Body Inventory Record and Dead Body Identification Form which includes photographs of the deceased, giving age, sex, site at which the body was found, identification marks, clothes and other information which may prove useful for identification of a dead body. The collection, storage, analysis and management of information collected in the process of dead body management shall be duly taken care and be available for any future use.

3. Target Group

The training is targeted towards Govt. Officials/ Professionals from multi-disciplinary sectors, involving officials from Health & Family Welfare Department/ Disaster Management/Revenue/ Directorate of Forensic Science/ Forensic Science Laboratories/ Hospitals, and Medical and Dental Colleges/ Municipal Corporations/ Municipalities/ and Officials from NDRF, Civil Defence & Home Guards, NCC, NYKS,

NSS, Scout & Guide, Indian Red Cross, Autonomous Bodies, NGOs/ Community Respondents etc.

Preferable Group Size: 35-40 participants

4. Entry Behaviour

Level of participants: In service officers, in senior and middle level positions.

Age Group: Less than 55 years

Educational Qualification: Graduation, preferably with professional qualifications and/or experience

Disaster Experience: Desirable, but not mandatory

5. Key Constraints

The key constraints are presumed to be:

Knowledge: Lack of awareness about the Basics of Disaster Risk Management. But, having information about the Concept/Science behind or explanation of the terms have been already known to trainers

6. Objective of the Programme

The aim of this training program is to identify existing knowledge and skills gaps with regard to dead bodies recovery, transportation, storage, identification and disposal; developing the procedure for good practices of Dignified Management of the Dead, so as to lay ground for the long term capacity development plan, in the context of Gujarat State. Under this, the following specific objectives will be pursued -

- Identification of stakeholders for Dignified Management of the Dead with their respective roles at policy and planning, supervisory/middle and operational level;
- Identification of the key issues related to Dignified Management of the Dead in the State;
- Analysis of the institutional set up for DM within the State - the roles and functions of stakeholders at various levels and look at the required competencies for each (as per the Disaster Management Act 2005, National/ International Guidelines, and INTERPOL DVI Guideline, as applicable for Indian Context);
- Identification gaps in terms of knowledge, skills and aptitude, and needs of key sectors for Dignified Management of the Dead;
- Provision of recommendations on how to address the capacity gaps (human, financial and others) that will inform the preparation of a Capacity Development Plan for Dignified Management of the Dead in the state.

7. Learning Objectives

At the end of the training, participants will be able to:

- Understand the Disaster Management Cycle with emphasis on Disaster Risk Management.
- Understand significance to manage dead body in a dignified manner in disaster aftermath.
- Understand the steps involved/ course of action in dead body management, from recovery to disposal.
- Understand the multi-disciplinary dimension of the task and coordination required from various Departments.
- Identify roles and responsibilities of various stakeholders to deal with the issue.
- Identify gaps; recommend possible ways to efficiently use available resources and the capacity development requirements, so to equip the participants to manage the dead in a dignified manner in a disaster aftermath.

8. Methodology

The training will be conducted in an interactive mode with a judicious (need to specify at this level) mixture of lectures, discussions, demonstrations, experience sharing, group work and case study analyses for understanding the major issues in Dignified Management of the Dead.

9. Teaching Aids

Training will have to be conducted with the help of the following:

- A Compendium of Background Reading materials
- Handouts of presentations or additional material
- Scenarios for exercises
- Data Sharing: All the material to be given at the closure of the programme containing the presentations, group exercises, photographs, contact numbers of trainers and co-participants for subsequent updation and networking.

10. Training Materials and Equipments Required

The training is designed to be classroom based, with discussions/ group activities/ audio-visuals/ presentations; requiring classroom teaching aids viz. Computers, LCD projectors, flip charts, markers etc.

11. Seating Arrangements

The seating arrangements should preferably be four or five circular tables to facilitate group work and allow the trainer to move around the class for interaction.

12. Language of Instruction

The medium of instruction will be English, Hindi and Gujarati

13. Content Design

#	Session Title	Session Objectives	Time	Methodology
Session 1: Inauguration & Pre-Training Assessment				
	Inauguration & Pre-Training Assessment	• Welcome participants • Introduce trainees and trainers • Overview of the training and GIDM • Lay down ground rules • Formal Inauguration	40 min	Interaction, Video
	Pre-test or Ice-breaker		40 min	
Technical Session 1: Introduction, Overview and Perspectives				
LU 1.1	Hazard, Vulnerability & Risks: A Conceptual Approach to Disaster Risk Management	• Explain the concepts of hazards, vulnerability, coping capacity and risk in the context of Disaster Risk Management. • Describe the DM cycle and its • stages. • Explain the impact of human actions on hazards and risks	45 min	PPT and Discussion
LU 1.2	Managing Disasters to Managing Risk: An Overview	• Describe DM in the process of evolution • Explain Global paradigm shift • Explain Indian response to • paradigm shift • Describe the change in orientation in DM system	30 Min	PPT and Discussion
Technical Session 2: Dignified Management of the Dead: The Need				
LU 2.1	Significance, Planning, and Objective	• Introduction • Social Responsibility • Significance • Planning and coordination • Objectives	80 min 11:00 – 12:20 Hrs	Lecture, Presentation and Discussion
LU 2.2	Types of Disasters and Forms of Dead Bodies	• Overview of Types of Disaster • Analyzing human and economic loss due to disasters • Open Disaster • Closed Disaster • Forms of Dead Bodies	60 min 12:30 – 13:30 Hrs	Lecture, Presentation and Group Activity
LU 2.3	A Case Study of Uttarakhand Flash Floods 2013	• Mass Disaster: A Case Study of Uttarakhand Flash Floods 2013 • An account on unidentified dead bodies' count of Uttarakhand Flash Floods 2013	75 min 14:30 – 15:45 Hrs	Case Study Analysis, Presentation and Discussion
LU 2.4	Management of the Dead in Post-Disaster Situation	• Myths about dead bodies • Infections and Dead Bodies • Dead Body Management: Systematic Procedures	75 min 16:00 – 17:15 Hrs	Lecture, Presentation and Discussion

LU 2.5	Rapporteuring Session	• Rapporteuring Session	15 min 17:15 – 17:30 Hrs	Team Activity and Discussion
Technical Session 3: The Scene and Methods of Identification				
LU 3.1	Phase 1: Scene (processing human remains and property at the disaster site)	• Phase 1: Scene • Recovery and Retrieval • Collection of Data on Dead Bodies • Secondary Methods of Identification • Allocating a unique code to the dead bodies	60 min 11:00 – 12:00 Hrs	Presentation, Lecture and Discussion
LU 3.2		• Transportation of the Dead • Storage and Preservation • Temporary Mortuaries • Temporary storage of dead bodies • Permanent Mortuaries • Traceable long-term storage and disposal of dead bodies	80 min 12:10 – 13:30 Hrs	Presentation and Lecture
LU 3.3	Phase 2: Post-mortem (detailed examination of human remains in mortuary)	• Phase 2: Post-Mortem • Role of Post-mortem Examination • Identification of Dead Bodies • Secondary Methods of Identification • Primary Methods of Identification • Fingerprinting • UID–AADHAR Database usage for comparison and identification • Forensic Radiology	30 min 14:30 – 15:00 Hrs	Presentation, Lecture and Discussion
LU 3.4		• Forensic Odontology	45 min 15:00 – 15:45 Hrs	Presentation and Lecture
LU 3.5		• Forensic Anthropology	45 min 16:00 – 16:45 Hrs	Presentation and Lecture
LU 3.6		• DNA Analysis • DNA Technology (Use and Application) Regulation Bill, 2018 • Protection of Personal and Genetic Data	45 min 16:45 – 17:30 Hrs	Presentation and Lecture
Technical Session 4: Disposal of the Dead and Way Forward				
LU 4.1	Rapporteuring Session	• Rapporteuring Session of Day 3	30 min 11:00 – 11:30 Hrs	Group Activity and Discussion
LU 4.2	Phase 3: Ante-mortem (collection of missing person data from various sources)	• Phase 3: Ante-Mortem • Procedure for Identification • Ante-mortem Personal Data Collection • Collection and management of information on the missing (including those presumed dead)	45 min 11:30 – 12:15 Hrs	Presentation, Lecture and Discussion

LU 4.3	Phase 4: Reconciliation (matching post-mortem and ante-mortem data)	• Phase 4: Reconciliation • Disposal of the Dead • Death Certificate • Release of the Dead • Final Rituals • Support to the Bereaved • Psycho-social Support to the Care Providers	60 min 12:30 - 13:30 Hrs	Presentation, Lecture and Discussion
LU 4.4	Documentation, Information Management and Policy Framework	• Documentation and Audit • Information Management • Legislative and Regulatory Framework • Institutional and Policy Framework • Operational Framework • Role of International Organizations • Role of Various Agencies	30 min 14:30 – 15:00 Hrs	Presentation and Lecture
LU 4.5	Capacity Development and Coordination	• A Cooperative Approach to Disaster Management • Preparedness and Capacity Development • Establishment of Command, Control and Coordination • Critical Infrastructure and Logistics • Capacity Development • Human Resource Development • Education and Training • Community Preparedness	45 min 15:00 – 15:45 Hrs	Presentation, Lecture and Discussion
	Post-Training Evaluation & Conclusion	• To assess the exit behavior of the participants at the end of the course. • To evaluate the knowledge and skills gained during the course. • To carry out formal internal evaluation	75 min 16:00 – 17:15 Hrs	Interaction, and Group Activity

14. Trainers/ Facilitators/ Resource Persons Required

Dignified Management of Dead Body is a multi-disciplinary subject, which requires resource person from the fields of Disaster Management and Forensic Science, to be able to know procedures of positive identification of the dead. The coordinator's role would be to sum up the inputs given into outputs from trainees so that they get the best of the knowledge and skills available within and outside the organization.

15. Expected Outcome

- Be aware about the significance of Dignified Management of the Dead and the multi-disciplinary coordination required to successfully achieve the same.
- To have deep insight on course of action and scientific methods involved to positively identify the dead.

- Enhance knowledge and upgrade skills for planning and implementation of capacity development for Dignified Management of the Dead at state and local levels.
- Skill development of participants for conducting training sessions on Dignified Management of the Dead at the state and local levels.

16. Evaluation & Validation

The course is continually evaluated in terms of summing up of the day's inputs by the coordinator, discussing issues raised by participants and connecting the knowledge inputs with participants' own experiences. At the end of the course, a formal evaluation is carried out by participants based on content, objectives, utility and facilities provided in the programme. According to the feedback and coordinator's impressions, the future programmes are designed and conducted.

Inauguration and Pre-Training Assessment

Need of the session

Participants of this course are expected to come from different walks of life with different levels of understanding of disaster management and disaster risks. Thus, it is utmost necessary to understand and assess their knowledge before starting the program.

It is not at all a great idea to start a one day or two-day long program with a test and therefore even before the test, the trainer will have the responsibility to informally introduce himself and facilitate the participants to introduce themselves. The trainer may indulge in innovative ways to do so; the more interesting he makes it, better participation he can expect throughout his course. The trainer or the course coordinator may also include asking the participants about their expectations from the course.

After the introduction is done away with, the participants are provided with a question paper comprising of a maximum of 25 - 30 questions which needs to completed within 30 minutes.

With a five-minute break immediately after the test, the formal inauguration should start which should be chaired by the head of the institute and other dignitaries.

The course-coordinator may utilise this opportunity to inform the participants about:

- Session timings, i.e., the final schedule
- Lunch & Tea Breaks
- Formation of teams or groups for exercises and simulations
- Norms for interactions and discussions during sessions
- Mobile phone etiquettes
- Availability of facilities (telephone, internet etc)
- Smoking rules / bans etc.
- Evening engagements (if any)

Objective of the session

This simple but elaborate session of around 90 minutes is expected to bring out:

1. The prior knowledge and understanding of the participants
2. To build a rapport between the participants and the trainer or the course-coordinator and also among the participants
3. Changes of content or delivery style that might be required on part of the trainer to meet the level of participants or their expectations from the course

Training aids

Question Paper, Flip-Charts, Markers etc.

Technical Session 1: Introduction, Overview and Perspectives

Need of the session

To understand risk or disaster risk, one must have a very clear idea of its constituent parameters, which are hazard, vulnerability, exposure and coping capacity. While coping capacity and vulnerability are literally intertwined and are complementary to each other, the other three parameters (hazard, vulnerability and exposure) are primarily what defines disaster risk. A hazard is not a disaster and yet we use these terms interchangeably very often and this is where we commit the first mistake. We, in general, have a tendency to link everything with a buzz-word and the current catch-phrase being climate change, there is trend of relating every phenomenon to climate change, global warming and such apocalyptic events. We simply ignore the science behind the genesis of hazards and go on to link it with bigger events. This is where we commit the second mistake. Ignorance is off-course a bliss but in disaster risk reduction and disaster preparedness, ignorance is a bane. This is where this unit comes in to bridge the gap.

Units of the session

Unit 1 Lesson 1: Hazard, Vulnerability & Risks: A Conceptual Approach to Disaster Risk Management

Unit 1 Lesson 2: Managing Disasters to Managing Risks: An Overview

Objectives of the session

The primary objectives of this unit would be to:

- Understand the entry behavior of the participants since this unit is the first session of the training program
- Explain to the participants what Hazard, Vulnerability and Exposure is
- Exemplify how the scope of Managing Risks is broadening due to other global phenomenon

Duration

75 minutes. (45 + 30) minutes for the sessions and 15 minutes spillover time from each session.

Methodology

The methodology of this session is no different from the overall methodology of the training program. Every lesson or every unit must start with a question to intrigue the participants and foster discussion. Building up on such discussions, the trainer must start his presentation or lecture.

Training aids

Power-point presentation, Flip-charts, Markers etc.

Learning Unit 1.1: Hazard, Vulnerability & Risks: A Conceptual Approach to Disaster Risk Management

Note for the trainer

Hazard is to be explained ***without using any standard definitions***. Examples are to be given from real-life so that participants can relate to it.

Flow of the session

The trainer may begin by narrating a small story or incident and asking the participant to identify the hazard in it.

"An expert biker is riding his brand new bike on the Mumbai-Pune Expressway. It is the monsoons and the Western Ghat is looking absolutely stunning. All of a sudden, a small rock rolls down from the steep slopes and lands right in front of the biker. The biker, who was riding almost as fast as the wind, could not control his bike and skidded off the road"

The trainer will now have to instigate the participants to share their views on what the hazard in this particular example is. Interestingly enough, this particular example has two hazards; while one is evident the other one may not be so evident. Landslide, which caused the rock to roll down the slopes is itself a hazard and may be easily identifiable while the fact that the rock just happened to land in front of the biker while he was speeding is also a hazard. In fact, to understand the later proposition the trainer might have to explain that this would have been a hazard even if it was just a rock lying there on the road and not because of a landslide.

Similar examples can be discussed to understand that hazard is anything which may have adverse effect and the effects can be injury, health impact, damage to property, disruptions of any form and even loss of life.

Hazard should also be understood in terms of probability of happening. In light of the above example, the rock on the expressway is life threatening but its probability of actually being a cause of an accident is a hazard. To understand this, one must consider a similar scenario in a deserted road; had the rock tumbled down from a slop or had it been just lying there, it would not have caused any accident or injuries or death. Although, it is still a hazard, but it is not contributing to anything dangerous. This perception of hazard is more meaningful in the context of disaster management and disaster risk reduction.

At the end of this lesson, the participants must have a clear idea of the two ways hazard is perceived; one, causal agent of something nasty and two, probability of being the causal agent of something nasty.

The lesson should be concluded with a debate on whether the biker riding the bike at such high speeds is a hazard or not?

Types of Hazards

The first substantial work in disaster management in India was done through the constitution of the High Powered Committee (HPC) in August, 1999, just a few months before the Orissa super cyclone in November, 1999.

Depending on the causal agent / phenomenon, the HPC classified disaster as given in table 1.

Table ___: HPC's classification of hazards

Water and climate related	Geologically related	Chemical, industrial and nuclear related	Accident related	Biologically related
Floods and drainage management	Landslides and mudflows	Chemical and industrial disasters	Forest fires	Biological disasters and epidemics
Cyclones	Earthquakes	Nuclear disasters	Urban fires	Pest attacks
Tornadoes and hurricanes	Dam failures / dam bursts		Mine flooding	Cattle epidemics
Hailstorm	Mine fires		Oil spill	Food poisoning
Cloud burst			Major building collapse	
Snow avalanches			Serial bomb blasts	
Droughts			Festival relates	
Sea erosion			Electrical disasters and fires	
Thunder and lightning			Air, road and rail accidents	
			Boat capsizing	
			Village fire	

To end this lesson, the trainer may urge the participants / groups to take a piece of paper and write down the hazards, not necessarily the ones mentioned in the national plan but any sort of hazard, that is predominant in their area and correctly classify it.

Case in point: Gujarat

***Earthquake**:* As per Indian Seismic Zone Map, Gujarat region lies in three zones- Zone III, IV and V. Kachchh region (about 300km x 300km) lies in zone V where earthquakes of magnitude 8 can be expected. A belt of about 60-70km width around this zone covering areas of North Saurashtra and areas bordering Eastern part of Kachchh lie in zone IV where intensity VIII can be expected mainly due to earthquakes in Kachchh and some local earthquakes along North Kathiawar Fault in Northern Saurashtra. The rest of Gujarat lies in zone III where intensity VII earthquakes can be expected due to moderate local earthquakes or strong Kachchh earthquakes.

Drought: Gujarat is one the chronic drought prone state of India, with an average annual rainfall about only 700 mm with more than half of the Talukas of Gujarat receiving rainfall within the range of 200 -400 mm. Substantial portions of the State are arid to semiarid. With large parts of North Gujarat and Saurashtra having no source of alternate irrigation, groundwater exploitation is leading increased threats of droughts. Falling water tables have added stress on crops and water supplies.

Cyclone: Gujarat falls in the region of tropical cyclone. With the longest coast line of 1600 km in the country, it is highly vulnerable to cyclone and its associated hazards such as floods, storm surges, etc. Two cyclonic storm seasons are experienced in Gujarat: May to June (advancing southwest monsoon) and September to November (retreating monsoon).

Flood: Majority of the area of Gujarat is flood prone, irrespective of the size of the catchment. The flood risk in Saurashtra is lower than that of the South Gujarat plains. The relatively flat plains in the lower basic areas with hilly catchments in upper parts of South Gujarat accentuate flood risks. Few villages in the North Gujarat are flood prone too.

Tsunami: Gujarat is prone to tsunami risk due to its long coastline and probability of occurrence of near and offshore submarine earthquakes in the Arabian Sea. Makran Subduction Zone (MSZ) -South West of Karachi is an active fault area which may cause a high magnitude earthquake under the sea leading to a tsunami.

Fire, Industrial & Chemical, Accidents, Heatwave, Epidemic, Stampede, etc. are also frequent in Gujarat.

Vulnerability

To understand risk or disaster risk, one must have a very clear idea of its constituent parameters, which are hazard, vulnerability, exposure and coping capacity. While coping capacity and vulnerability are literally intertwined and are complementary to each other, the other three parameters (hazard, vulnerability and exposure) are primarily what defines disaster risk. After the last unit, it is expected that a fair amount of understanding of hazards would have been developed. Hazard is not a disaster in itself but a phenomenon or an event which may cause some damage and it is the vulnerability of the individual or community or the system in consideration which defines the risk a hazard pose. It is to be noted that the word system to be used hereafter can refer to an individual, a community, an administrative unit, production house or even a nation depending on the context.

The trainer may begin by reminiscing the example cited in the first unit.

"An expert biker is riding his brand new bike on the Mumbai-Pune Expressway. It is the monsoons and the Western Ghat is looking absolutely stunning. All of a sudden, a small rock rolls down from the steep slopes and lands right in front of the biker. The biker, who was riding almost as fast as the wind, could not control his bike and skidded off the road."

The hazards in this example has already been discussed and now the trainer should probe the participants as to state the vulnerabilities in the given scenario with a prior understanding that vulnerability is basically the potential of any event or phenomenon to cause damage. Similar examples can also be cited to involve the participants. The following questions can be posed by the trainer to instigate the participants:

a. Was the unstable slope of the Ghats a vulnerability?
b. Was the weather (monsoon) a vulnerability?
c. Depending on the experience of the rider, can one comment on the vulnerability?

The trainer should understand that each of these questions affect the vulnerability of the rider and each of these question reflects parameters from different dimensions of vulnerability. Thus, it is the responsibility of the trainer to steer the participants into asking that how these above mentioned facts are vulnerabilities.

The concept of vulnerability being a degree or extent of impact is also to be illustrated here. To understand this, one must consider different simulations of the same example. If the rider is an expert and he was wearing a proper gear, would his vulnerability be lessened? Even if his bike skidded, if there was a hospital nearby so that he could just walk to the hospital or be carried by some passing by vehicle, would his vulnerability be lessened? These questions, targeted at the participants, would give them a feel that vulnerability has so many aspects and this would lead on to the next lesson.

At the end of this lesson, the participants must have a clear idea of how vulnerability is the extent of damage an event is caused and how broad its scope is.

The lesson should be concluded with a debate on whether the biker riding the bike at such high speeds is a vulnerability or not? This question should spark a debate as in the last unit the same question was posed to the participants asking whether the speed is a hazard or not.

Exposure

Exposure is, perhaps, the most important parameter when it comes to determining disaster risk. One needs to understand that hazard, which is an event or a phenomenon, will always be there and most of the time we can do very little to prevent it, but if we are exposed to it, it will surely impact us and then it is only our vulnerability which decides whether we would be severely, moderately or mildly impacted.

To start with, the scope of exposure is anything tangible that may be susceptible to the impact of a hazard. It can be human life, property, farms, production houses etc. This is what the basic of exposure is, however, one needs to delve into depths to understand the true bearings of exposure.

When considering human life, one needs to consider the demographics of the community or the area. Different age groups, or different sexes would have different levels of vulnerability to the hazard. Imagine a small town that has been setup by the coast just for the old people so that they can relax and enjoy their life after retirement. A cyclone hits this town. The loss would have been much lesser had this town been filled with youngsters because the old-aged population is more vulnerable. This is how demographics change the scenario. Even if it had been a school filled with children, the exposure of the school would be much more devastating than an office being exposed as the small children may not know hot to act and react.

The trainer must be able to explain that exposure must account for the demographic divisions because vulnerability is ultimately decided by the demographics.

The next step would be to explain that it is exposure which actually contributes to the calculation of losses. If a farm is exposed to a hazard like flood, then the per hectare yield of the farm multiplied by the area of the farm exposed would be the resultant loss. Similarly, if an industry is exposed, then the worth of all of its processes, would be realised as the loss. However unethical it is, if a value can be assigned to human life, the numerical value of the population exposed to a hazard multiplied by the value of life would amount to the loss.

The last statement is indeed disturbing and the trainer must take care of whether to go with that or not. The basic idea is to explain that it is exposure which contributes toward calculation of losses.

Objectives of the lesson

The primary objectives of this lesson would be to:

- Explain what Hazard, Vulnerability and Exposure is
- Explain the ways in which all these are perceived and understood

Duration

45 minutes depending upon the potential of the trainer to fan discussion and debate.

Methodology

An animated clip can be used to depict a similar scenario and then the participants may be asked to depict the hazard in the scenario.

If the participants have already been divided into groups, then each group can be handed out a sheet of paper and asked to write down all the hazards they can find out in the given scenario. After completing the session, just for a competitive flavour, the team who identifies the hazards correctly, may be given a score or a recognition.

Training aids

Power-point presentation, flip-charts, A4s, markers, pens etc.

Learning Unit 1.2: Managing Disasters to Managing Risks: An Overview

Flow of the session

The trainer may start this session inviting reference to the example of the biker. The risk of the biker is defined by the hazard of the rock tumbling down, vulnerability of the biker and off course, his exposure to the situation. The trainer can move on to citing similar examples so as to explain the concept of disaster risk better. In case of an avalanche, there is a hazard, but there is no exposure and hence there is no disaster risk. If there is an earthquake, say in the night, there is a hazard and a school building is exposed to that hazard, but it has no vulnerabilities except the structural one. If the school building is also well constructed, then there are no vulnerabilities at all and hence there is no risk and the school can resume the next day without any impediment. The trainer can go on to ask participants if they can come up with similar situations where there is a hazard but the overall risk is negligible.

The trainer should take this opportunity to establish the fact that disaster risk is nothing but a probability; in fact, probability of loss expressed in any desired unit. Disaster risk is dependent on hazard which is actually the probability of occurrence of any event that may cause damage, vulnerability which is the degree of damage the hazard can wreak and exposure which is the quantity of tangible elements exposed. Thus overall, disaster risk is a probability or a chance of loss if the said hazard strikes.

Intensive risk is disaster risk associated with low-probability, high-impact events, whereas extensive risk is associated with high-probability, low-impact events.

The above statement means that the risks are higher for hazards which have lower chance of occurrence and yet have the potential to create maximum damage; earthquake of higher magnitudes for example have a very high return period but when they occur they are catastrophic.

Disaster risk has many characteristics. In order to understand disaster risk, it is essential to understand that it is:

- Forward looking: it talks about the likelihood of loss of life, destruction and damage
- Dynamic: it can increase or decrease according to our ability to reduce vulnerability
- Invisible: it is comprised of not only the threat of high-impact events, but also the frequent, low-impact events that are often hidden
- Unevenly distributed around the earth: hazards affect different areas, but the pattern of disaster risk reflects the social construction of exposure and vulnerability in different countries
- Emergent and complex: many processes, including climate change and globalised economic development, are creating new, interconnected risks

The trainer can end this session with busting a myth; **there is no such thing as natural disasters but disasters often follow natural hazards.** In addition to this, the trainer can also use the following statement: **Disasters threaten development, just as development creates disaster risk.**

The key to understanding disaster risk is by recognising that disasters are an indicator of development failures, meaning that disaster risk is a measure of the sustainability of development. However, the trainer must allow the participants to interpret this on their own through discussions.

In addition to this, there is also acceptable and residual risk. The trainer may want to introduce the participants to these terminologies.

Hence, interpreting risk would be to incorporate the idea of perception of risk.
Disaster Risk = (Hazard) X (Vulnerability) X (Exposure)

Coping Capacity

Coping capacity is ideally the capacity of a system (the connotation of system is the same as used during the illustration of vulnerability) to deal with a given risk. The system can be an individual, can be a community or even an organisation, institute or authority for that matter. It is obvious that when the capacity of the system is not enough to handle the risk, the consequences of the event are grave.

Coping capacity can be understood under similar heads as illustrated for vulnerability; i.e. physical, social and institutional. In fact, the ideology of vulnerability is counter-intuitive. If a particular system is vulnerable with respect to a particular parameter, the coping capacity of the system in regard to that parameter is low. For example, while talking about structural vulnerability within the physical dimension of vulnerability, if a building in zone 5 is not built according to the relevant building code and standards, structural vulnerability is prominent and hence coping capacity of the system is also questionable. However, if an important building in zone 4 is built according to the standards and regulations of zone 5, structural vulnerability is negligible and it can be said that the building has the capacity to cope with an earthquake of a certain intensity of earthquake. Not only for physical dimension, same analogies can be drawn in other dimensions as well.

If a flood prone community with agriculture as its main source of income has invested in crop-insurance or the residents have enrolled in some sort of micro-insurance scheme, the financial burden on the community after an event would be very less. Thus, it can be said that the community has the financial capacity to cope with the economic fallout of the event, i.e., flood in this case.

The trainer can carry forward the session by giving several other examples to the participants to clarify the concept of coping capacity and its inverse relationship with vulnerability. The trainer can even perform a

verbal exercise with the participants; the trainer can point out a very particular aspect in one of the dimensions of vulnerability and ask the participants to illustrate an example of how that aspect can contribute to vulnerability and how taking care of that aspect can increase the capacity. For example, the trainer can ask the participants to mention one aspect of socio-cultural dimension, the lack of which contributes to vulnerability and addressing it leads to improved capacity.

When the impending risk is beyond the coping capacity of the system, the consequences are grave. In fact, when the risk exceeds the coping capacity, the event is regarded as a disaster provided there are human, material, economic and environmental losses and impacts.

Thus, to put it mathematically for understanding, a disaster risk will remain a risk if the coping capacity of the system under consideration is substantially high, but, if the coping capacity is not upto the mark, the disaster risk would eventually become a disaster or a massacre.

Disaster Risk = ((Hazard) X (Vulnerability) X (Exposure)) / (Coping Capacity)

Understanding of disaster is often left to perception. One may even identify a small event as a disaster like fire in an apartment; such an event may be a disaster for the affected family but on a larger perspective, it can not be termed as a disaster. Thus, it would not be incorrect to suggest that the understanding of disaster is dependent on the scope of the system under consideration. Usually, the scope of consideration is not less than a community.

Disaster Management to Risk Management

Now that the participants have a clear understanding of disaster, they are to be explained what disaster management is all about. This is to be done using the disaster management cycle. The trainer must make sure that he / she explains the disaster management cycle in the most intuitive manner possible; the participants are to be told that disaster management, however technical it might sound, is actually very logical and rational. The different phases of the cycle logically follow each other and the science can be found only within this phases and not between them.

The participants must also be given a flavour of how they can manage disasters at their own level, preferably at the family level or community level. This is to be done by introducing the participants to the bow-tie analysis tool.

Once the participants feel empowered, they must be enlightened about the paradigm shift that is occurring; from disaster management to disaster risk management which circumscribes disaster risk reduction.

The trainer may begin by introducing the participants to the disaster management cycle.

One may find different versions of the disaster management cycle from different sources, but it is the responsibility of the trainer to explain to the participants that the core rationale behind all such version is the same and is very rational for one to follow.

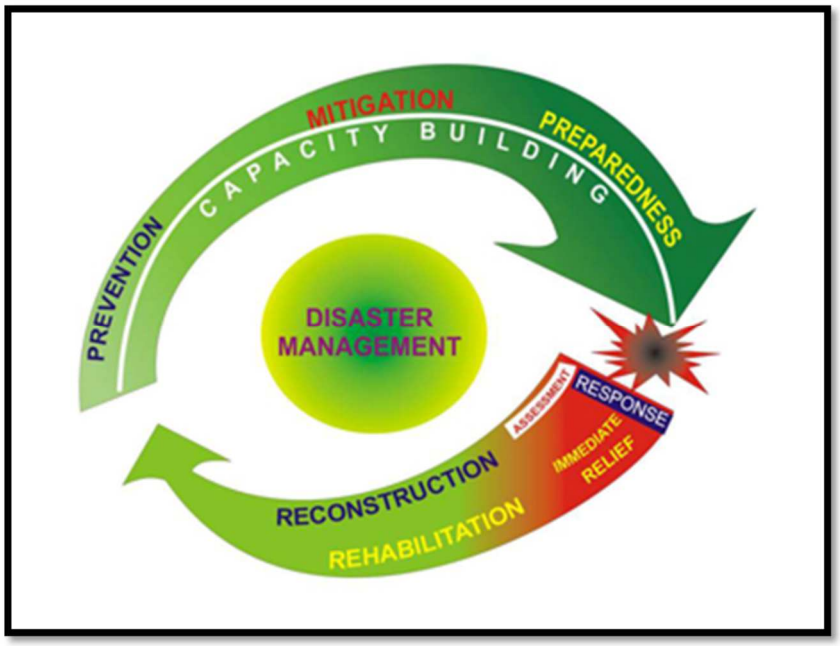


Figure 2: Disaster Management Cycle

Phase I: Prevention and mitigation

If it is known that a system (community, area, village etc.) is prone to or likely to be affected by a hazard or if it is established that there exists a risk, the first and the foremost logical thing to do would be to prevent the occurrence, if possible, or to mitigate the risk. This is what constitutes the first phase. Risks of hazards like earthquake can not be prevented but they can be mitigated by ensuring physical (structural and non-structural), social and institutional vulnerabilities are addressed and the system is endowed with adequate capacity to deal with the risk. Fire risks can generally be prevented by taking care of points of failures (vulnerabilities); for example, in an organisation with a risk of fire hazard, fire alarms are to be installed, fire extinguishers are to be placed at regular intervals, staffs are to be trained on how to use extinguishers and what to do in case the alarm rings etc. If a fire occurs, due to any random reason, even with such steps of prevention, the magnitude of loss will be reduced many folds. Thus, the idea here is to ensure prevention or mitigation of the impact of loss in any terms.

The trainer can then go about giving examples of what steps are generally taken in this phase. Care is to be taken that such examples are primarily from Gujarat so that the participants can easily relate to. Examples can be cited of the Heat-wave Action Plan prepared by the Ahmedabad Municipal Corporation every year. The National Cyclone Risk Mitigation Project can also be explained by the trainer in this regard. In fact, the prevention and mitigation part of all the state and national level plans can serve as a good resource material for this phase as well this entire section.

Phase II: Preparedness

Once all steps have been taken to prevent or mitigate the impact of losses, the second phase is all about readiness; to put it in terms of management and administration, this phase is about the preparedness of the system such that its leanness and agility is not compromised during the event.

The trainer can then go about giving examples of what steps are generally taken in this phase. Care is to be taken that such examples are primarily from Gujarat so that the participants can easily relate to. For example, the Gujarat School Safety Week Initiative is one of the most well known exercises carried out in this regard. Preparation of school disaster management plans, carrying out mock-drills based on that etc. are various steps that are taken to prepare the school community to respond to any unforeseen event. Similarly, training programs that are conducted by state and national institutes to build the capacity of different stakeholders is a crucial aspect of preparedness.

The trainer can use this opportunity to emphasise the role of Gujarat Institute of Disaster Management in preparedness through capacity building initiatives.

Phase III: Response

After the first two phases, it is expected that the community or the system (speaking, generally), is ready to respond to any event. Off course, no one can predict the exact unfolding of events but then the first two phases of the cycle is all about preparing the system to respond to an event with the capacity to adjust to anything that exceeds the preparation.

Everything that the system has been trained for is put to use in this phase and the failure to do so will actually make the effort put in the previous phases futile.

The trainer can give examples of prepared responses and un-prepared responses as seen in Gujarat over the years. For example, the response in the 2001 earthquake can be compared to the response of any subsequent quakes. Response to floods as seen in Sabarkantha can also be exemplified here. The trainer must also emphasise on the fact that this phase constitutes of three prime activities; search, rescue and relief. Even these sub-phases are intuitive in their discourse; one must search for a victim and then rescue him and finally, transfer him to a safe haven / shelter / relief camp, where he will be treated.

Phase IV: Recovery

After the immediate response to the event, what primarily becomes the objective of all and every operation is to reinstate normalcy. To put it in terms of management and administration again, the aim is to ensure business process continuity; the business here may refer to the day-to-day working of a community (district / state) and even the day-to-day life of an individual or a family. The core idea is however not just reinstating normalcy; it is more than that; the idea is to build back from the ruins to a system which would have the capacity to deal in a better way.

.Examples can be cited from the recovery projects undertaken after the Bhuj Earthquake of 2001.

Build Back Better

The trainer must lay emphasis on the fact that restoring normalcy, i.e., recovery is not the end. In fact, it is just the beginning of a new cycle. In the recovery phase, it is essential to find out the causalities of the disaster, the points of failure or simply put, the vulnerabilities and ensure that while recovering or 'building back', efforts are put to 'build back better'. The basis of this lies in the fact that if normalcy is restored or the system is recovered to the state it was before the disaster hit, the vulnerabilities will also be a part of it and that may result in similar consequences.

Note for the trainer

The trainer must attempt to explain the importance of science, technology, engineering and innovation in steering the paradigm from management to mitigation and reduction.

By the end of this lesson, the participants should be able to appreciate and acknowledge the use of technology and the advantages of planning ahead in case of any risks.

The trainer may then categorically go ahead and explain the role of science and technology in steering the shift. The role of IMD, INCOIS as agencies of early-warning and their super-efficient prediction and dissemination system may be elaborated upon. New technologies that are being used for structural safety can also be shared with the participants. In this context, the trainer may introduce the participants to the concept of green and sustainable technologies. The core idea behind this is that disaster and development goes hand in hand; resources, the natural ones, are limited and full-fledged development can only be fostered when they are used along with the use of non-conventional sources. The depletion of natural resources or even their use and exploitation for the sake of development, will negatively impact the environment or the ecosystem and this will trigger the occurrence and recurrence of hazards. For example, building of dams is utmost necessary but their construction is always clouded with protests and negative impact assessment reports. Thus, development, in one way or the other, will trigger hazards, which, may or may not, become disasters. In fact, for a fast and steadily developing country like India, the use of natural resources is equally important as the use of non-conventional sources and thus, at the altar of development we are and we have to sacrifice, to some extent, the idea of not contributing to disaster risks. But, as is the case with so many other things, there is also a silver lining to this. Since development will beget disaster risk, why not look at it from the opposite perspective? In case of a disaster, the general tendency is to build back better, i.e., to develop in a better way. Thus, disaster begets development as well. Amidst this confusion, the best way out is to adopt a principle of development which ensures that the future generations do not suffer the wrath of exploitation and while we are at it, we must ensure that existing risks are mitigated or reduced and no new risks are created in the process.

This lesson in particular will remain the dynamic part of the module. It will be the responsibility of the

trainer to make this lesson interesting through showing examples of the use of science and engineering in reducing disaster risk.

The trainer may also take this opportunity to explain the concept of acceptable risk and residual risk and the different sorts of measures that are taken in terms of risk management, i.e., corrective, prospective and compensatory.

Objectives of the lesson

The primary objectives of this lesson would be to:

Explain what Disaster is

Illustrate the importance of the Coping Capacity using the formulae

Illustrate the Disaster Management Cycle

Explain the overall relationship of Disaster Management to Risk Management

Duration : 30 minutes

Methodology

This session is an informative session which needs illustration through the equations of disaster risk, i.e.,

1. **Disaster Risk = (Hazard) X (Vulnerability)**
2. **Disaster Risk = (Hazard) X (Vulnerability) X (Exposure)**
3. **Disaster Risk = ((Hazard) X (Vulnerability) X (Exposure)) / (Coping Capacity)**

The first equation talks only about the 'impact' of a hazard based on the probability of occurrence and the degree to which the hazard can cause damage.

The second equation helps in assigning a unit to disaster risk; if 'this' be the probability of occurrence and 'this' be the degree of damage it can cause and 'that' be the amount of assets costing 'this much', then the product of all these would give an idea of what damage and loss would be incurred by the hazard.

Training aids

- Power-point presentation
- Flip Chart

Technical Session 2: Dignified Management of the Dead: The Need

1. Dignified Management of the Dead: The Need

The second Technical Session would formulate the base of Dignified Management of the Dead on a whole. The session would emphasis on the significance of management of dead bodies in dignified manner in disaster aftermath. It lays the basic understanding of type of disaster with respect to open and closed and forms of dead bodies which are likely to be found on the incidence scene. Further, the session aims to analyze the Uttarakhand Flash Floods – 2013, so to have an account of total human lives lost (including count of missing persons) to number of dead bodies recovered to positive identification done and final disposal. In its next unit the session would address the myths and challenges associated with handling dead bodies, and give the overview of each stage involved in Dignified Management of the Dead. The last session would be an interactive session where the participant(s) would debrief the learning of the day, which would help them revise the entire session.

The session is divided into five learning units as below:

Learning Unit 2.1: Significance, Planning, and Objective
Learning Unit 2.2: Types of Disasters and Forms of Dead Bodies
Learning Unit 2.3: Understanding human loss through a mass disaster case study
Learning Unit 2.4: Management of the Dead in Post-Disaster Situation
Learning Unit 2.5: Rapporteuring Session

The primary objectives of the module would be to:

- Understand the significance and objective of Dignified Management of Dead

- Understand the possible events to encounter the need to manage the dead, and the possible forms inwhich one can expect dead bodies be recovered.
- Analyze a mass disaster case study to relate importance of the study/ training.
- Understand the core procedures, starting from recovery of the dead body till its final disposal.

Duration: 305 minutes

Methodology:

The module presents the elemental understanding about the management of the dead, the possible scenarios and the procedure for handling the dead body in a dignified manner. Thus, the technical session would have to be trainer driven, aimed towards facilitating discussions and participation from the trainees. The session would include audio-visuals to provide better understanding about the subject, presentations and group activity to have participants' involvement.

Trainers' Note

This module explains the elemental concepts and procedures involved in Dignified Management of the Dead. It also analyzes a mass disaster case study to support the findings. The trainer should bear in mind that this module is preliminary and crucial to develop a strong ground and understanding about the topic. The trainer should also keep in mind that trainees from specialized backgrounds would have more expertise/experience on a particular subject, the trainer should be cautious so that other participants gain from the peer experience but not be neglected in favour of the person having more expertise.

Learning Unit 2.1: Significance, Planning, and Objective

1. Context & Description

India's unique geo-climatic conditions make it vulnerable to natural disasters like floods, drought, cyclones, earthquakes, and epidemics leading to a sizable number of human casualties. Consequently, disasters result in a large number of deaths in a short span of time, placing overwhelming stress on individuals, society and the administration with the uncommon challenge of handling large numbers of dead bodies and animal carcasses. Examples of Gujarat Earthquake 2001 may be added.

In any disaster situation, appropriate recovery and management of the dead bodies is an important and essential component of humanitarian response, along with rescue and relief measures for the survivors, and the provision and restoration of essential services. For the dead bodies in disaster aftermath there should be proper and dignified management of dead bodies and, their identification be facilitated.

- **Social Responsibility**

  Beyond injury, the primary health concern for survivors of a disaster is the psychological trauma of the loss of loved ones and of witnessing death on a large scale. For this reason it is important to proceed with the collection of dead bodies as soon as possible, but it is not necessary or advisable to hurry their disposal. Management of the dead is an important concern after a disaster and it is a major social responsibility of the community and the government. It is very important for the psychological recovery of survivors to have their dead relatives returned to them for culturally appropriate rites and disposal.

- **Significance**

  The essential tiers of this strategy are:

  ◊ Appropriate recovery, retrieval and storage of the dead bodies.
  ◊ Positive identification of the deceased is an essential requirement for proper disposal and financial compensation, property rights, inheritance and issues of remarriage.
  ◊ Dignified disposal of the dead bodies, according to religious, cultural, ethnic and psycho-social needs of the affected community.
  ◊ Proper information management which involves analysis of the data for identification of the dead, along with its proper dissemination through the media.

Care of the deceased has been given its due importance in the disaster planning in our country, impacting the well-being of surviving community and bereaved family members. Management of dead bodies involves a series of activities beginning with strategic planning for the process and the logistics which include inventory and availability of critical infrastructure, human resource and finance. This implies an early search for dead bodies, their proper identification at the earliest, transportation to the facility that serves as a mortuary, handing over of the body to family members and assistance from the State for final disposal of the body in accordance with the wishes of the family with the religious and cultural norms of the community. It requires the involvement of a diverse team of responders that encompasses rescue and recovery personnel, police, administrative authorities, forensic teams and the legal fraternity. The representatives from the International Organizations, NGOs (National and International), media and community volunteers, also play an important role in the management of dead bodies. Coordinating all these activities and information management of the dead are the core components of early disaster response for efficient management at local, regional and national levels. Coordinating the above-mentioned activities is a core component of early disaster response for efficient management at local, regional and national levels.

- **Planning and Coordination**

  Proper planning should be done to promote effective leadership and coordination among agencies to plan and deliver the response, and to ensure that available resources are used effectively and efficiently to manage the dead bodies.

  ◊ Planning should be initiated by the senior emergency management (Collector/ SDM), health or police official responsible for disaster planning, or by the professional responsible for forensic medicine.
  ◊ Special arrangements should be developed jointly with police, faith representatives, government (including the Ministry of Health), local authorities, the voluntary sector (including Red Cross/Red Crescent) and experts.
  ◊ Assess the scale and scope of the response needed and identify required resources (e.g. forensic teams, mortuaries/body storage facilities, body bags, etc.);
  ◊ Liaise with the regional/national agency responsible for the management of the dead, and implement the plan of action for managing the dead and dealing with the families.

- **Objectives**

  ◊ To develop capacity for proper, dignified and rapid management for disposal of the dead in accordance with cultural, religious, ethnic and social commitments of the affected community;
  ◊ To provide basis for preparedness and capacity development for all stakeholders who are involved in the management of dead bodies;

- ◊ To focus on education and training of the teams involved in retrieval and recovery of the dead bodies, their transportation, storage and preservation, identification and proper disposal;
- ◊ To enhance better co-ordination between various agencies, information management including the media related issues while respecting the relevant statutes and principles on the protection of personal, medical and genetic data.

2. Session objectives

- Understand the significance and objective of Dignified Management of Dead, like;
  - ◊ To protect the rights and dignity of the dead;
  - ◊ Dignified management and positive identification of the dead;
  - ◊ Financial compensation/ property rights/ inheritance and issue of remarriage;
  - ◊ Psychological recovery of the survivors/ relatives of the dead.
- Management of the Dead to be made an integral part of Disaster Risk Management Plans.
- Disposal of the Dead be carried out in view of religious/cultural practices of the community.
- To understand requirement of education/training, and capacity development for all stakeholders involved in the management of dead bodies.

3. Duration: 80 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Audio-Visuals
- Discussion

5. Trainers' Note

The session focuses on the Significance, Planning and Objective of Dignified Management of the Dead. The session should be taken up in a discussion mode so that trainees come out with their own ideas and experiences in understanding the bigger picture of Dignified Management of the Dead. The trainer should understand and make trainees understand that this is the fundamental component of the training, as it answers 'Why' one should care about the dead, the planning required and the overall objective of the training. This section is ground for entire training on Dignified Management of the Dead.

6. Session Plan

Contents	Trainers' Note	Duration
Significance	While keeping the session interactive the trainer should provide all the important elements establishing the significance of the study.	40 min.
Planning and Coordination	This session should focus on multi-disciplinary facets of the subject; Coordination among various Departments/ Organization/NGOs. Also, that proper management would call for proper planning and its inclusion in Disaster Management Plan.	20 min
Objectives	This session states the objectives of the programme. This should be kept interactive so as to obtain inputs from the trainees.	20 min

7. Training/ Performance Aids

- E-Copy of presentation
- Flipchart/ markers

Learning Unit 2.2: Types of Disasters and Forms of Dead Bodies

1. Context & Description

A disaster can be understood simply as a "natural or man-made event that negatively affects life, property, livelihood or industry often resulting in permanent changes to human societies, ecosystems and environment". Disasters are extreme events, in which it becomes difficult to cope with the situation due to it being beyond the normal capacity of the affected community (or district or state or country) needs immediate and prolonged assistance and support to deal with the situation and it's after effects.

The term 'disaster', in fact, has a consequential connotation which is expressed through its legal definitions. At this point of time, the trainer should introduce the participants to the definitions of Hazard and Disaster. In this context, the trainer may also deliberate more on the classification of hazards, and to ensure that the context of India and Gujarat is maintained, the following classification of the High Powered Committee may be illustrated:

Table 1: Classification as per the High Powered Committee of India

Water and Climate related	Geologically related	Chemical, industrial and nuclear related	Accident related	Biologically related
Floods and drainage management	Landslides and mudflows	Chemical and industrial disasters	Forest fires	Biological disasters and epidemics
Cyclones	Earthquakes	Nuclear disasters	Urban fires	Pest attacks
Tornadoes and hurricanes	Dam failures / dam bursts		Mine flooding	Cattle epidemics
Hailstorm	Mine fires		Oil spill	Food poisoning
Cloud burst			Major building collapse	
Snow avalanches			Serial bomb blasts	
Droughts			Festival relates	
Sea erosion			Electrical disasters and fires	
Thunder and lightning			Air, road and rail accidents	
			Boat capsizing	
			Village fire	

The trainer, depending on the interest of the participants may go on to introduce other classifications like that of the Classification of Perils by IRDR, or, the classification as per the National Disaster Management Plan of India (2016).

After having an elaborate discussion on hazards, the trainer should move on to the definition of disaster as per the National Disaster Management Act (2005) and also the Gujarat State Disaster Management Act (2003). As per the Gujarat State Disaster Management Act, disaster is,

"An actual or imminent event, whether natural or otherwise occurring in any part of the State which causes, or threatens to cause all or any of the following:

1. Widespread loss or damage to property, both immovable and movable; or
2. Widespread loss of human life or injury or illness to human beings; or
3. Damage or degradation of environment

And any of the effects specified in sub-clauses (1) to (3) is such as to be **beyond the capacity of the affected community to cope up** with using its own resources and which disrupts the normal functioning of the community."

As per the National Disaster Management Act, disaster, "means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area."

The impact of disasters on human beings depends on multiple, inter-locking factors, including the type of hazard, its location and duration, and the size and vulnerability of the population in harm's way. And that its severity can be assessed on the basis of the disruption to normal pattern of life; impacts like loss of life and property, injury, hardship and adverse effects on health; community needs, specially shelter, food, clothing, medical assistance and social care; damage to infrastructure, buildings, communications; and the requirements of the rehabilitation.

- **Analyzing human and economic loss due to disasters**

  All nations, developed, developing and under-developed, are exposed to disasters though in varying degrees. The frequency of geophysical disasters (earthquakes, tsunamis, volcanic eruptions and mass movements) remained broadly constant over time, but a sustained rise in climate-related events (mainly floods and storms) pushed total occurrences significantly higher in last two decades.

Between 1998 and 2017, EM-DAT recorded 7,255 disasters worldwide, which claimed 1.3 million lives or almost 67,000 lives on average each year and left a further 4.4 billion injured, homeless, displaced or in need of emergency assistance.

While the majority of fatalities were due to geophysical events, mostly earthquakes and tsunamis, 91% of all disasters were caused by floods, storms, droughts, heat waves and other extreme weather events. Also during this period, disaster-hit countries reported direct economic losses valued at US$ 2,908 billion, of which climate-related disasters caused US$ 2,245 billion or 77% of the total – A report by CRED and UNDRR on "Economic Losses, Poverty and Disasters 1998-2017".

India is highly vulnerable to various types of natural disasters – earthquakes, landslides, avalanches, floods, cyclones, droughts, heat and cold waves – with the possible exception of volcanic eruption. The nation is also exposed to any of the technological or man-made disasters. The natural disasters take place with various intensities and in different regions due to unique and widely varying climatic, geographical and geological conditions.

A United Nations global assessment report on disaster risk, released in 2019, says India's average annual economic loss due to disasters is estimated to be $9.8 billion, which includes more than $7 billion loss on account of floods. And, India has lost 101,124 lives to disasters during 1996-2017, as per the data combined from reports of The UN Office for Disaster Risk Reduction (UNDRR), Centre for Research on the Epidemiology of Disasters (CRED), Institute of Health and Society (IRSS), Université catholique de Louvain – Brussels, Belgium.

- **Disaster Classification**

  In the context of Disaster Victim Identification (DVI) a disaster is an unexpected event causing the death of many people. Many different kinds of events can lead to disasters which may require the use of the DVI process. For example, DVI processes may be required following traffic accidents, natural disasters, technical accidents (fires, explosions), terrorist attacks or events occurring within the context of wars. It is important to distinguish between open and closed forms of disasters as the classification of such events can significantly influence the DVI response approach.

  ◊ **Open Disaster**

  An open disaster is a major catastrophic event resulting in the death of a number of unknown individuals for whom no prior records or descriptive data are available. It is difficult to obtain information about the actual number of victims following such events, as there is usually no early reference point to commence a missing persons list. Therefore, thorough investigation is required to obtain an accurate potential victim list in order to commence DVI procedures. A practical example of an open disaster is found in public gatherings where there is no formal list available that would highlight potential victims.

- **Closed Disaster**

  A closed disaster is a major catastrophic event resulting in the death of a number of individuals belonging to a fixed, identifiable group (e.g. aircraft crash with passenger list). As a rule, comparative ante-mortem data can be obtained more quickly in the case of closed disasters because there is a reference point such as a passenger manifest or a log of attendees at an event.

Combinations of closed and open disasters are also conceivable (e.g. aircraft crash in a public area). Although an initial assessment of a scene may result in a classification being made, it is important that an open mind is applied in case early reports and information is flawed or incomplete.

- **Forms of Dead Bodies**

The dead bodies recovered from the site of incidence can be broadly classified into three categories as below:

- **Non-Decomposed:** The bodies recovered at an early stage – the bodies are not decomposed and identification can be made by using Secondary and/ or Primary Identification Methods as necessary.
- **Decomposed/ Fragmented:** The bodies recovered in advanced stage of decomposition where identification can be made only by using Primary Identification Methods.
- **Skeletonized:** The bodies recovered are in skeletonized stage and does not contain any soft tissues. Identification can only be made through Primary Identification Methods.

2. Session objectives

- Understand the types of disasters which affect mankind
- Understand the human and economic loss due to disasters
- Understand the disasters with reference to DVI as open or closed disaster
- Understand possible forms of dead bodies to be recovered at the incident site

3. Duration: 60 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

The session focuses on the Types of Disasters, Human and Economic Loss, and Forms of Dead Bodies. The session should be largely informative provide details of various topics. The trainer should engage the

trainees into discussion and make the session interactive to collect their inputs and better understand the level of understanding. The trainer should make trainees aware about types of disasters as classified in general and draw their attention to disaster classification in terms of Disaster Victim Identification. Trainer should also make trainees understand about the overall human and economic loss mankind faces due to disasters, which in also signifies importance of Disaster Preparedness, Prevention and Mitigation.

6. Session Plan

Contents	Trainers' Note	Duration
Overview of Types of Disaster	The trainer should briefly describe types of disasters for their impact on human and environment/ habitat and have inputs from trainees to keep session interactive.	15 min.
Analyzing human and economic loss due to disasters	This part of the session provides critical statistical information as to the total loss mankind faces due to disasters. Trainer should give the dimension of loss globally and in Indian context.	15 min
Disaster Classification	This session classifies disasters in reference to Disaster Victim Identification and co-relates both of them.	15 min
Forms of Dead Bodies	The trainer should educate trainees on possible forms of dead bodies, one can expect to encounter while working in Disaster Management/ Disaster Victim Identification.	15 min

7. Training/ Performance Aids

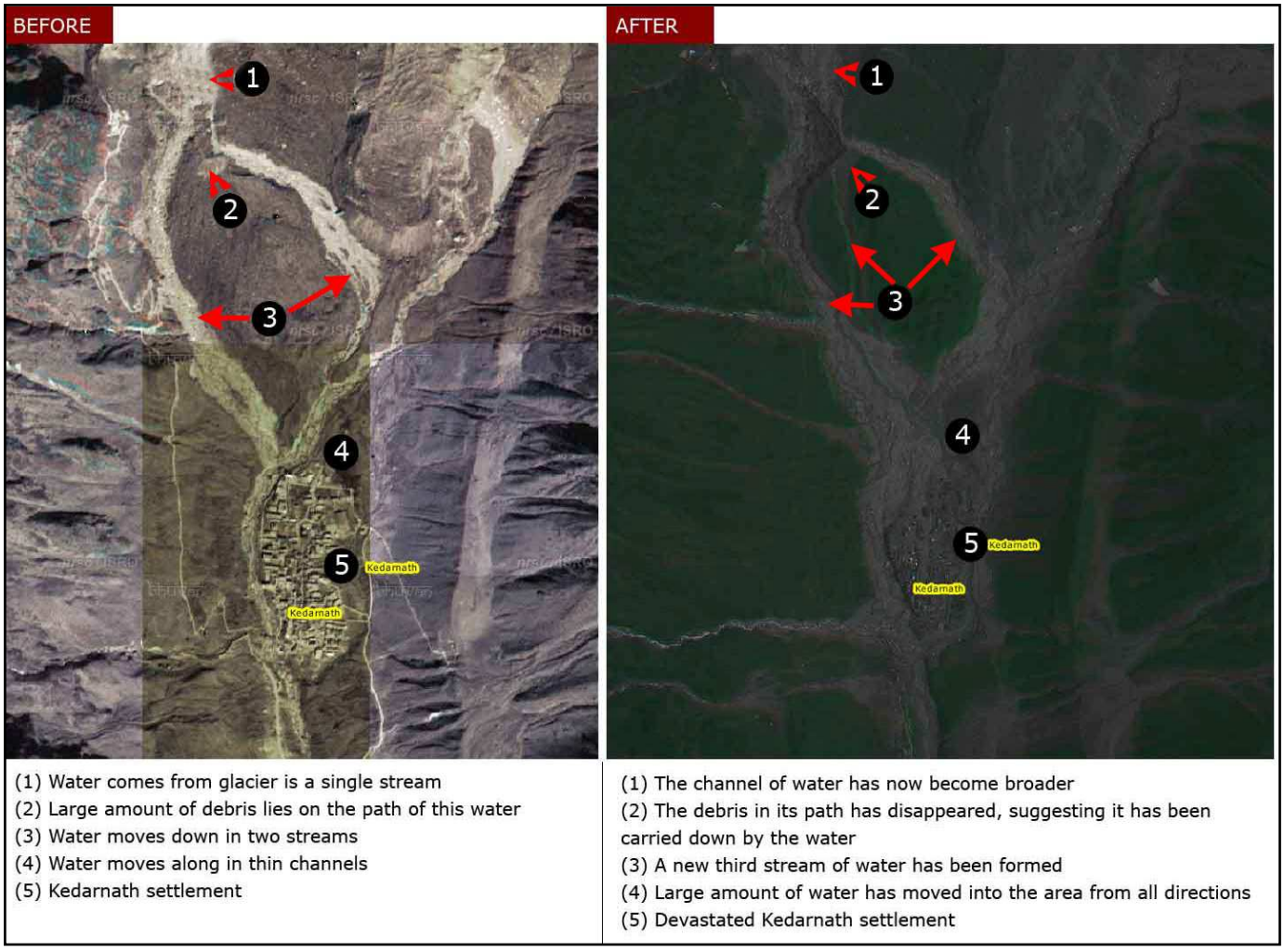
- E-Copy of presentation
- Flipchart/ markers

Learning Unit 2.3: A Case Study of Uttarakhand Flash Floods - 2013

1. Context & Description

- **Mass Disaster: A Case Study of Uttarakhand Flash Floods 2013**

The State of Uttarakhand has been severely affected by floods and landslides following the torrential rainfall in the region. The entire region of the state was hit by 'heavy' to 'very heavy' rainfall, possibly due to the fusion of Westerlies with the Indian Monsoonal cloud system, resulting into flash floods and landslides over a wide area. The flash floods triggered by very heavy rainfall and cloudburst in Uttarakhand on 16-17 June 2013, affected 12 out of the 13 districts in Uttarakhand. The 4 districts that were worst affected were Rudraprayag, Chamoli, Uttarkashi and Pithoragarh.



(Source: Floods in Uttarakhand explained: Tuesday 25 June 2013 http://www.downtoearth.org.in)

As we know, a disaster of any type disrupts the normal pattern of life, effects adversely on people, structures and socio-economic system. After the Disaster has passed by it leaves behind its Victims - survivors, deceased and missing persons/ potential victims. The dead and the missing become silent, but

the family members left behind wonder about the fate of their loved ones. It is important for the healing process of the families left behind to provide them with the information about their kith and kin. And to be able to do so, it is critical to develop a system where the disaster hit, deceased victims can be positively identified and the bodies can be returned to the victim's families.

In any disaster situation, appropriate recovery and management of the dead bodies in dignified manner is an important and essential component of humanitarian response, along with rescue and relief measures for the survivors, and the provision and restoration of essential services.

Source: Uttarakhand disaster was result of extreme rains and haphazard development: report Monday 15

July 2013. http://www.downtoearth.org.in)

- **An account on unidentified dead bodies' count of Uttarakhand Flash Floods 2013**

The flash floods triggered by very heavy rainfall and cloudburst in Uttarakhand on 16-17 June 2013, affected 12 out of the 13 districts in Uttarakhand. More than 70,000 tourists and 1,00,000 local inhabitants were stranded in the difficult mountain terrain of the upper reaches of the Himalayas. About 4200 villages were affected; 11091 livestock were lost and 2513 houses were completely damage. As per the report made available by the Government on May 09, 2013, a total of 169 people died and 4021 people were reported missing (presumed to be dead). Out of About 4,021 individuals from across the country who have been reported missing and are believed to have died after the tragic flash floods and landslides, Centre for DNA Fingerprinting and Diagnostics (CDFD) has completed DNA profiling of the mortal remains of around 550 victims sent to it by the Government of Uttrakhand. As per official count 545 bodies/ skeletons/skeletal remains were recovered in 2013, 63 in 2014, three in 2015, 60 in 2016 and 7 in 2017.

According to data submitted by the state government to the high court, 678 bodies/ skeletons/ skeletal remains were recovered until 2017. After last week's addition, the count has gone up to 699. However, even after five years of the incidence, just 29 of 699 people who perished in the disaster have been identified, either through recovery of their remains (11) or through DNA samples (18). The remaining 670 victims are yet to be unidentified.

2. Session objectives

- To understand the magnitude of Uttarakhand Flash Floods – 2013
- To understand the gross human and economic loss
- To understand with help of case study the human casualties in terms of – dead and missing/ presumed to be dead to positively identified
- The case study will help trainees establish the significance of Disaster Victim Identification System in India

3. Duration: 75 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

The session focuses on Case Study of Uttarakhand Flash Floods 2013. The session would provide the insights of the disaster with a focus on human loss/ mass casualties in terms of dead and missing/ presumed to be dead to positively identified, and hence establishes the significance of Disaster Victim Identification System/ Guidelines. The trainer should engage the trainees into discussion and make the session interactive to collect their inputs and better understand the level of understanding.

6. Session Plan

Contents	Trainers' Note	Duration
Mass Disaster: A Case Study of Uttarakhand Flash Floods 2013	The trainer should explain the magnitude of disaster and should link the disaster with previously learned disaster classification and should discuss with the trainees about the possible form of bodies to be encountered at the incident site.	45 min

An account on unidentified dead bodies' count of Uttarakhand Flash Floods 2013	The session would provide the insights of the disaster with a focus on human loss/ mass casualties in terms of dead and missing/ presumed to be dead to positively identified, and hence establishes the significance of Disaster Victim Identification System/ Guidelines.	30 min

7. Training/ Performance Aids

- E-Copy of presentation
- Flipchart/ markers

Learning Unit 2.4: Management of the Dead in Post-Disaster Situation

1. Context & Description

- **Myths about dead bodies**

Dealing with the dead is one of the most difficult aspects of a disaster response. This is not so much due to health-related risks, which tend to be negligible, but to the psychological, social and political impact of the trauma.

Contrary to common belief, there is no medical evidence to suggest that large numbers of dead bodies, in themselves, cause disease or epidemics. Human remains originating from traumatic events (natural disasters, accidents or warfare) do not represent a health hazard. The only situation where there is a health risk is when communicable disease has been the cause of the fatalities.

- **Infections and Dead Bodies**

There has never been a documented case of an epidemic occurring after a natural disaster that could be traced to exposure to dead bodies. This is attributable to the fact that those killed by natural disasters are generally healthy at the time of their death. Therefore, these victims are very unlikely to be a source of infection to others, unless they are in direct contact with drinking water which may get contaminated by faecal material released from dead bodies. The micro-organisms responsible for the decomposition of dead bodies are not capable of causing disease in living people. Most infectious agents of public health concern, present in the body, die within 48 hours of the death with the exception of Human Immuno-deficiency Virus (HIV) which survives in cadavers up to 16 days, if stored at 2°C. However, in the absence of proper safety measures, body handlers may get exposed to viruses (Human Immuno-deficiency Virus, Hepatitis 'A' Virus, Hepatitis 'B' Virus, Hepatitis 'C' Virus, Hepatitis 'E' Virus, Ebola, Rotavirus), bacteria (Diarrhoeal diseases, Tuberculosis, Plague, Meningitis, Tetanus) and prion diseases (Creutzfeldt-Jakob disease).

- **Challenges associated with handling dead bodies**
  - ◊ As bodies decompose quickly, especially in warm climates, they should be identified as soon after recovery as possible.
  - ◊ It is important to keep the body under refrigeration between 2oC and 4oC, at least until it has been formally identified.
  - ◊ Recovery teams also face risks from working in dangerous environments. They should be properly immunized against any possible diseases or infection and shall be trained to follow universal precautions.

- ◊ It is important to protect communities from transmission of medical epidemics.
- ◊ To provide psycho-social support to the recovery team and care providers.

- **Dead Body Management – Systematic Procedures**

The management of dead bodies involves a series of activities beginning with the search, in situ identification of the body, and its transfer to the facility that serves as a mortuary. It also encompasses delivery of the body to family members, and assistance from the State for final disposal of the body, in accordance with the wishes of the family and the religious and cultural norms of the community.

- **Recovery and Retrieval**

After any disaster, it is very important to recover and retrieve the maximum number of dead bodies at the earliest, to facilitate prompt and correct identification, storage and final disposal. Delay in recovery may lead to decomposition of the bodies. It is also essential to retrieve and store dead body part(s) when the whole body is not available.

Body recovery often takes place spontaneously by groups from the surviving community, volunteers, and search and rescue teams. Recovery teams should wear protective equipment such as gloves and boots. They should also be encouraged to wash their hands with soap after handling dead bodies. Recovery teams also face risks from working in dangerous environments and should be vaccinated against tetanus and should have first aid and medical treatment available in case of injury.

Bodies should be recovered as quickly as possible, but without interrupting other activities aimed at helping survivors. Rapid recovery aids identification and reduces the psychological effects on survivors. Bodies should be placed in body bags. If these are not available, use plastic sheets, shrouds or other locally-available materials. Separate body parts such as arms or legs should be treated as individual bodies. Do not try to match severed parts at the disaster site.

- **Transportation of the Dead**

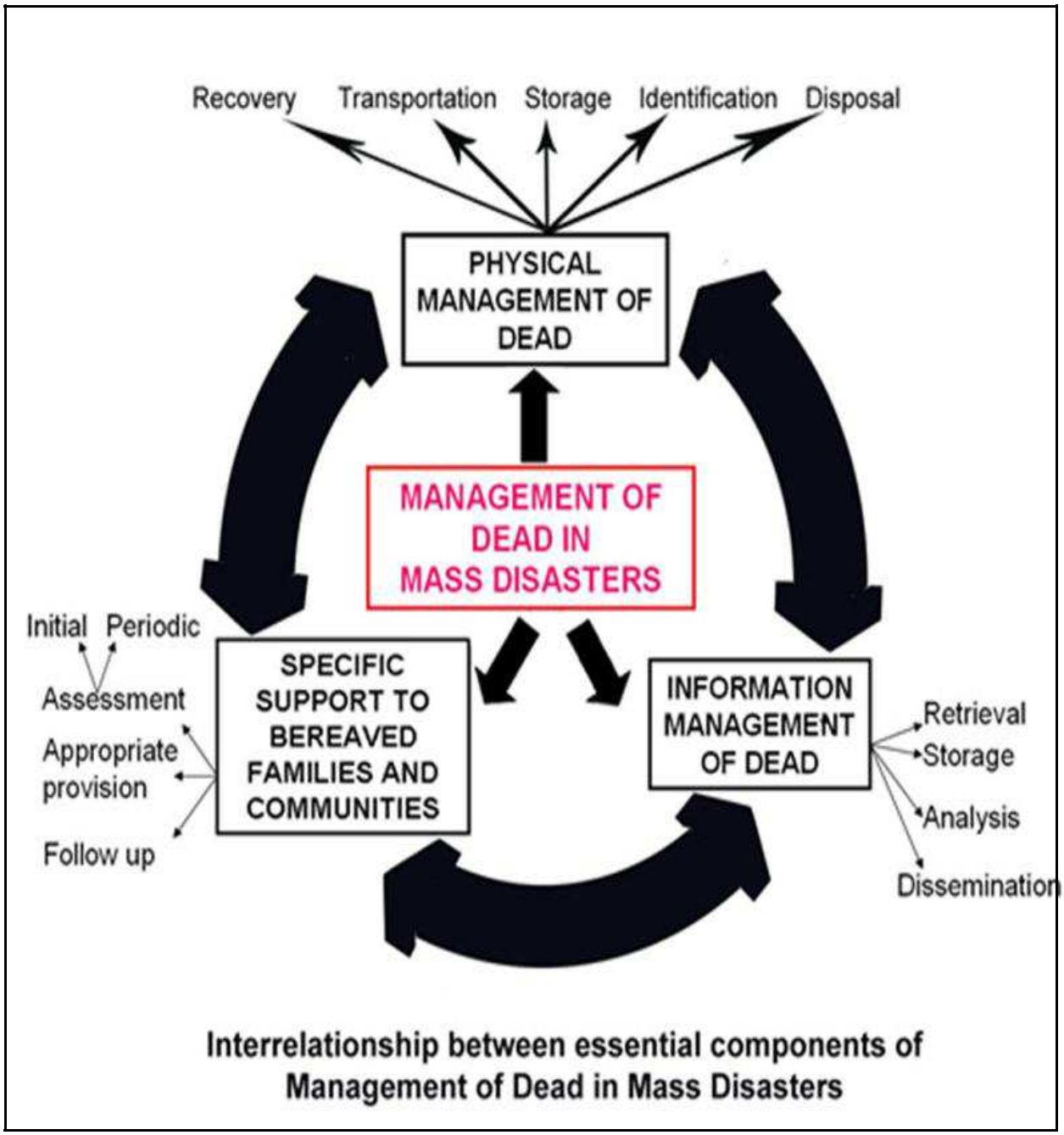
It is important to retrieve the dead from the site of the disaster and transport them to the place of storage and their preservation, as quickly as possible. This will not only help in proper storage and preservation, identification and proper disposal but also mitigate psychosocial trauma to the surviving community.

- **Storage and Preservation**

In warm climates, a body will begin to decompose within 12 to 48 hours. If possible, keep the body under refrigeration between 2oC and 4oC, at least until it has been formally identified. A refrigerated transport container used by shipping companies can store up to 50 bodies. Where this is not possible, temporary burial is the next-best option. Dig a trench 1.5m deep, at least 200m from any water source and at least 2m above the water table. Lay the bodies in a single layer leaving 0.4m between each. Clearly mark the

position of each body at ground level with its unique identification number.

Creation of adequate space and infrastructure, required for storage and preservation, will be planned as a part of various disaster management plans at all levels. Mortuaries in the hospitals are usually not adequate to meet the enhanced requirement during disasters. It is therefore essential to create temporary or semi-permanent structures. Abandoned buildings, store-houses or temporary constructed structures can be used for the storage with proper modifications. Important factors like climatic conditions, temperature, availability of ventilation and cooling facilities will be considered before deciding the site of the temporary mortuary.



Interrelationship between essential components of Management of Dead in Mass Disasters

(Source: Management of Dead in Mass Disasters – A Review of South Asian Perspectives. Clifford Perera and Christopher Briggs)

- **Identification of Dead Bodies**

As bodies decompose quickly, especially in warm climates, they should be identified as soon after recovery as possible. Make a photographic record of the body. Clean the body sufficiently to allow key features to be visible and make sure the identifying label is visible in each photograph. Leave clothing on the body and store it with all belongings. Personal belongings should be kept with the body. They will aid identification and may have legal and psychological implications for survivors.

Identifying a loved one from amongst a mass of dead bodies is extremely distressing. Try to minimize emotional stress. First, use good quality photographs as the preliminary phase of the identification process. Visual identification is the simplest method, but not always the most reliable, particularly if the body is disfigured or has begun to decompose. Identification done by using personal belongings or special identifying marks should always be cross-checked. Bodies that are severely disfigured or have decomposed may have to be identified by scientific methods such as DNA testing or referral to dental records.

Identification of dead bodies is mainly done by comparing and matching the information of the missing person (physical characteristics, personal belongings, place and circumstances of death, etc.) with corresponding information of the deceased mostly with the help of surviving relatives and the community. In case a body is unidentifiable, different techniques for identification are mandatory to be carried out for which adequate infrastructure is needed at all levels, along with availability of trained human resource.

- **Primary Methods of Identification**

  The primary methods for identification of a dead body are applied only in case the secondary methods of identification are found inadequate. These methods are enlisted below;

  - **Fingerprinting:** Fingerprint analysis is a reliable indicator of the identity of an individual as fingerprints are unique to each individual. UID – AADHAR Database usage for comparison and identification: The Unique Identification Authority of India (UIDAI) under the aegis of the Government of India has been mandated for implementing the envisioned multi-purpose National Identity Card or Unique Identification Card (UID Card) project which is known as AADHAAR. The database associated with UID can be used for identifying biometric data (10 fingerprints and photograph of the face and the iris). Accordingly for identification, the dead body's biometric data can be compared with the UID database, for which software can be developed for prompt identification.
  - **Forensic Odontology:** Dental data (dental points) and dental morphological traits can be recorded from the dead body and compared to ante-mortem data, if available, in the medical history of a person.

- **Forensic Anthropology:** Forensic Anthropology deals with techniques that can be used to assess sex, age, stature, ancestry and analyze trauma and disease.
- **DNA Fingerprinting:** When used with other investigations, DNA is a significant complementary tool for identification. The Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, is a National Referral Laboratory for difficult and recalcitrant case samples in identification of the deceased in Mass Casualty Incidents.

- **Secondary Methods of Identification**
  - Visual identification
  - Photography
  - Personal Description/Medical Findings
  - Evidence/Clothing

- **Disposal of the Dead**

Bodies should only be released to relatives once a formal identification has been made. A formal handover document (such as a death certificate) should be provided. Record of the people collecting the bodies of their relatives should be kept well documented.

Disposal of the dead is the final step in management of the dead. It is a highly sensitive and very important step because of cultural, ethnic and religious sensitivities, varying from community to community, in our country. This process involves issuing of a Death certificate by the competent authority to the relative of the deceased and release of the identified bodies to the relatives for final rituals which includes cremation, burial and other methods. Authorities may be required to organize final rituals in respect of the unidentified or unclaimed bodies or body parts in a disaster scenario.

Missing Persons should be considered to be alive unless there is evidence to suggest otherwise. A reliable and consolidated list of missing persons is a necessary and mandatory step towards identification efforts. Information on missing persons and unidentified human remains may be stored centrally in an electronic database, under the guidance of a data management specialist, to assist in the tracing and identification efforts and shall also be made available to the relatives of the missing. The missing becomes silent, but the family members left behind wonder about the fate of their loved ones. It is important for the healing process of the families left behind to provide them with the information about their kith and kin. Robust efforts should be made to find possibility of life and/or missing persons in and around the scene of incidence. This issue also reflects the need to strengthen human resource capacities and use of advanced technologies to find missing persons in disaster conditions.

- **Documentation and Information Management**

The proper documentation will include compiling the Dead Body Inventory Record and Dead Body Identification Form which includes photographs of the deceased, giving age, sex, site at which the body was found, identification marks, clothes and other information which may prove useful for identification of a dead body. The collection, storage, analysis and management of information collected in the process of dead body management shall be duly taken care and be available for any future use.

2. Session objectives

- To understand the myths about dead bodies and possible cases of infections.
- To learn challenges associated with handling dead bodies.
- To understand systematic procedure for handling dead bodies in dignified manner, including steps as below,
    - Recovery and Retrieval
    - Transportation of the Dead
    - Storage and Preservation
    - Identification of Dead Bodies
        - Primary Methods of Identification
        - Secondary Methods of Identification
    - Disposal of the Dead
    - Missing Persons' Database
    - Documentation and Information Management

3. Duration: 75 minutes

4. Methodology

- PowerPoint Presentation
- Lecture
- Audio-Visuals
- Discussion

5. Trainers' Note

This session plots the ground for training of next two days. It gives an overall idea about the Dignified Management of the Dead in Disaster Aftermath in a nutshell. The trainer should brief the trainees about all the steps involved in the process so that they can connect well in next part of training and should take home the crisp of Dead Body Management.

6. Session Plan

Contents	Trainers' Note	Duration
Myths about dead bodies and possible cases of infections.	There is a widespread but erroneous belief, even among some health professionals, that dead bodies are a source of disease, and therefore, a threat to public health. Trainer should address the issue and clarify the myths related to the dead.	10 min
Challenges associated with handling dead bodies	Trainer should describe the challenges associated with handling dead bodies, including specification for Rescue Teams and First Responders.	10 min
Dead Body Management – Systematic Procedures	Trainer should present to trainees the systematic procedures/ approach for the dignified management of the dead in disaster aftermath. It should give clear idea to trainees about the step-by-step process in a nutshell so that they already have background and can understand better in the upcoming days of training.	55 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 2.5: Rapporteuring Session

1. Context & Description

The rapporteuring session is incorporated with intent to interact and discuss with the trainees their understanding about the topic and clarify their doubts, if any. Further it also aims for every trainee to be alert and to participate in the discussion, and to:

- Note all conclusions and remarks related to the theme;
- Recognize all recommendations and outcomes;
- Comments from participants and highlight the key elements.

2. Session objectives

The objective of the session is to revise the learning of the day to all the trainees. This shall help trainees get better understanding of the key elements the session and bring everyone on same page.

3. Duration: 15 minutes

4. Methodology

- Discussion
- Prepare list to points discussed

5. Trainers' Note

Trainer should probe questions to know the understanding of the trainees and also encourage them to ask counter question/ interact more and clear doubts, if any. During conclusion of the session trainees should be clear with the take home message.

6. Session Plan

Contents	Trainers' Note	Duration
Rapporteuring Session	Trainer should probe questions to know the understanding of the trainees and also encourage them to ask counter question/ interact more and clear doubts, if any. During conclusion of the session trainees should be clear with the take home message.	15 min

7. Training/ Performance Aids

- Flipchart/ markers

Technical Session 3: The Scene and Methods of Identification

1. The Scene and Methods of Identification

The third Technical Session would explain in detail the Phase 1 and Phase 2 in the Disaster Victim Identification Procedure. It would explain the scenario on ground when incidence has occurred and from there-on how to proceed further in a systematic manner so to facilitate dignified management of dead and their positive identification. Divide into various units, initially it would provide information on Scene Coordination, Recovery and Retrieval, Collection of Data on Dead Bodies, Secondary Methods of Identification. Followed by Transportation of the Dead, Storage and Preservation in next unit. The session would conclude with the unit explaining Post-Mortem Coordination and Primary Methods of Identification.

The session is divided into six learning units, under two sub-heads as below:

Phase 1: Scene (processing human remains and property at the disaster site)

Learning Unit 3.1: Scene Coordination, Recovery and Retrieval, and Secondary Methods of Identification

Learning Unit 3.2: Transportation of the Dead, and Storage and Preservation

Phase 2: Post-mortem (detailed examination of human remains in mortuary)

Learning Unit 3.3: Post-Mortem Coordination and Primary Methods of Identification – Fingerprinting

Learning Unit 3.4: Forensic Odontology

Learning Unit 3.5: Forensic Anthropology

Learning Unit 3.6: DNA Analysis, and DNA Technology (Use and Application) Regulation Bill, 2018

The primary objectives of the module would be to:

- Understand steps to proceed once on-site during disaster aftermath, i.e. Phase 1 – Scene;
- Understand processes involved in recovery and retrieval and learning the secondary method of identification;
- Understand process of Phase 2 - Post-mortem, analyzing primary method of identification;
- Understand methods like, Fingerprinting, Forensic Odontology, Forensic Anthropology, and DNA Analysis.

2. Duration: 305 minutes

3. Methodology:

The module provides in details procedures and methods used step-by-step contributing towards dignified management and positive identification of the dead. The technical session would have to be trainer driven, aimed towards facilitating discussions and participation from the trainees. The session would include audio-visuals to provide better understanding about the subject, presentations and group activity to have participants' involvement.

4. Trainers' Note

After the completion of Technical Session 2 the trainees at this stage would have become familiar with the overall procedure of the Dead Body Management, this session focuses on providing in depth knowledge of procedures involved in chronological order, starting from scene coordination, recover and retrieval to transportation, storage, secondary and primary methods of identification of the dead. The trainer should also keep in mind that trainees from specialized backgrounds would have more expertise/experience on a particular subject, the trainer should be cautious so that other participants gain from the peer experience but not be neglected in favour of the person having more expertise.

Learning Unit 3.1: Scene Coordination, Recovery and Retrieval, and Secondary Methods of Identification

1. Context & Description

- **Introduction**

As a general principle, the scene should be treated as a crime scene and all human remains, exhibits and property left in situ until the arrival of Crime Scene Examiners and DVI Specialist Teams, in accordance with jurisdictional policies and procedures.

Because the nature of a disaster may vary, the way in which scenes are processed and the order in which this is undertaken may vary. For example, in cases where a terrorist bombing occurs, it is imperative that the scene is rendered safe before scene examiners can perform their tasks. Furthermore, depending on the priorities that the lead authority sets, the acquisition of evidential material may need to be considered before any DVI activities commence. In this example, post-blast activities would be performed in consultation with crime scene examiners, and DVI practitioners may need to modify their approach to satisfy each competing priority.

Once a scene management plan is developed and agreed upon and DVI activities are able to be commenced, the processes of photographing, recording and labelling can occur with post mortem information recorded the INTERPOL DVI Recovery forms. This processing activity needs to be coordinated with other functions carried out at the scene, such as those associated with the recovery, storage and transportation of human remains and property, as well as tasks involving evidence preservation and storage.

- **Scene Coordination**

  The DVI Scene Coordinator (what designation/ as per Incident Response system of District / Unit) is responsible for the management of activities during the scene phase of the DVI operation. Some of the main considerations and responsibilities include:

  - Implement the scene phase of the DVI response in accordance with agreed operational plans and/or jurisdictional arrangements.
  - Clearly establish the grid and numbering system to be applied.
  - Implement clear communication channels to facilitate the coordination of activities at the disaster site.
  - Appoint a Human Remains Holding Area Controller and confirm the location of the Human Remains Holding Area.
  - Appoint property teams to manage property.

- Ensure adherence to occupational health, safety and welfare requirements

- **Recovery and Retrieval**

After any disaster, it is very important to recover and retrieve the maximum number of dead bodies at the earliest, to facilitate prompt and correct identification, storage and final disposal. Delay in recovery may lead to decomposition of the bodies. It is also essential to retrieve and store dead body part(s) when the whole body is not available.

- The First Responders from Police, Civil Defence & Home Guards, Fire Services, NDRF/ SDRF, Youth Volunteers, NCC, NYKS, NSS and the community will be utilized for recovery of the dead bodies, after the safety clearance is issued by the Incident Commander (on site). The first step to be undertaken by the First Responders is to look for signs of life. All efforts will be made to recover the body as a whole and prevent mutilation during the recovery. The recovery team will use basic Personal Protective Kit and follow Universal Precautions (e.g. avoid wiping face or mouth with hands while handling the dead bodies).needs to be added as reading material.
- Thermal sensors and trained dog squads will be used for quick recovery of the survivors/ injured and notification of the location from where the dead bodies have to be collected, on priority basis, as soon as feasible.
- After retrieval and recovery of dead bodies from the disaster site, an Individual Identification Number will be allotted serially to every dead body. All body parts will also be treated as individual bodies, allocated Individual Identification Numbers and then put in separate plastic bags or cloth, to prevent contamination from leakage of fluid or blood. Personal belongings and other accompaniments on the body, including jewelry, shall not be separated from the body as they serve as important clues in identification of the deceased with the chain of custody duly ensured, till handed over to their rightful inheritors. All dead bodies will then be wrapped ideally in body bags, otherwise in plastic sheets, bed sheets or locally available material, before transportation. The labels will be waterproof to prevent any erasure during transportation and storage.
- All bodies will be digitally photographed with their Individual Identification Number labelled on the body. The minimum number of photographic shots of a dead body will include the frontal view of full body, whole face and distinguishing features like tattoo or deformity, if any. Photographs of badly mutilated or decomposed bodies may not prove useful in the identification. In such cases, combinations of criteria, followed by laboratory tests, are to be adopted.
- Dead Body Identification Form as per ???? should be filled, in duplicate, for every dead body or body part. The matching Individual Identification Number will be recorded on both copies of this form. One copy of the Dead Body Identification Form will accompany the dead body if

being transported for storage and preservation. The other copy will be kept safely as a record with the authorities.

- Recovered dead bodies will not be left uncovered or in the open to prevent environmental risks in the form of growth of flies, fleas and maggots or destruction of bodies by animals and vultures.
- An Information Centre will be established at the site of the disaster where the bodies are being kept and the data on dead bodies is being compiled, in the Dead Body Inventory Record register.
- At times, the body recovery procedures may last for more than a few days. In such situations, the first responders and the body handlers will be briefed and counseled to prevent emotional trauma to them.

- **Collection of Data on Dead Bodies**
  - After retrieval and recovery of dead bodies from the disaster site, an Individual Identification Number will be allotted serially to each dead body or body part, and then recorded. Clothing, Jewellery and Documents, present on the body, will not be removed or damaged, as they may subsequently prove helpful in the positive identification.
  - The dead body, body bags and personal belongings will be labelled with allotted Individual Identification Number and stored together in a safe manner. The labels should be ideally waterproof to prevent their erasure during transportation and storage.
  - All bodies will be digitally photographed with their Individual Identification Number labelled on the body. The minimum number of photographic shots of a dead body will include a frontal view of the full body, whole face and distinguishing features like tattoo or deformity, if any. Photographs of badly mutilated or decomposed bodies may not prove useful in identification. In such cases, a combination of criteria followed by laboratory tests, are to be adopted.
  - Dead Body Identification Form, should be filled, in duplicate, for every dead body or body part. The matching Individual Identification Number will be recorded on both copies of this form. One copy of the Dead Body Identification Form will accompany the dead body, if being transported for storage and preservation. The other copy will be kept safely for future reference.

- **Secondary Methods of Identification**

The secondary methods of identification include visual identification, personal description, photographic findings, medical findings and any other evidence, including the clothing found on the dead bodies which are ordinarily adequate to identify most of the bodies with the help of relatives and the community. The secondary methods of identification are discussed below:

- **Visual Identification:**

  Visual identification by a witness may provide an indication of identity but it is not sufficient for positive identification of victims of a large-scale disaster. Victims are often so traumatized that visual comparison is impossible and relatives are frequently unable to cope with the psychological stress involved when confronted with deceased victims.

- **Photography:**

  Identification, based solely on photographs, is highly unreliable and will be avoided. Photographs can prove very useful, if taken within 12 to 24 hours of the death, before the decomposition of the body sets in.

- **Personal Description/Medical Findings:**

  Personal features of an individual, like age, gender, height, ethnic affiliation, tattoos, moles and burns are useful indicators of identity. Specific identification marks like scars and medical evidence of surgical removal of organs, may provide crucial information about a victim. Unique numbers found on prosthetic devices, breast implants, cardiac pace-makers and Automated Implantable Cardioverter Defibrillator (AICD) can also serve as reliable indicators.

- **Evidence/Clothing:**

  This category includes all effects, found on the bodies of victims, like jewellery, articles of clothing including tailor tags and dhobi marks, and personal identification documents. It is important to consider the items of evidence found on the body with caution, as they may not actually belong to the deceased and may have been borrowed or misplaced during the process of retrieval or transportation. Items of jewellery have a higher identification value, if they are firmly secured or engraved to the victim's body, like nose pins, earrings and wedding rings.

2. Session objectives

- To gain knowledge about the functioning at scene, i.e. Scene Coordination
- To understand with complete details the recovery and retrieval procedure
- To learn collection of data on dead bodies
- To understand Secondary Methods of Identification

3. Duration: 60 minutes

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

This session provides in depth knowledge about few elements of Phase 1: Scene (processing human remains and property at the disaster site). Trainer should keep the session as simple as possible so that the trainees from varied backgrounds can get maximum benefit out of the session.

6. Session Plan

Contents	Trainers' Note	Duration
Scene Coordination.	Provides a brief about the scene and introduces to scene coordination in reference to Disaster Victim Identification.	10 min
Recovery and Retrieval	Provide detailed procedure on how the recovery and retrieval should be carried out, the processes involved and the points to remember while in the process of recovery and retrieval.	20 min
Collection of data on dead bodies	Provide details to be taken care in step following the recovery of dead body, i.e. collection of dead form the dead which will be later used for comparison and establish positive identification.	15 min
Secondary methods of identification	Explains the secondary methods of identification, which can effectively narrow down the identification process, by filtering out bodies based on the data collected from them.	15 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 3.2: Transportation of the Dead, and Storage and Preservation

1. Context & Description

- **Transportation of the Dead**

It is important to retrieve the dead from the site of the disaster and transport them to the place of storage and their preservation, as quickly as possible. This will not only help in proper storage and preservation, identification and proper disposal but also mitigate psychosocial trauma to the surviving community.

Following steps will be taken for proper transportation:

- The Dead Body Management Group in-charge will predetermine or select the site for storage of the bodies before transportation.
- Large trucks, with sufficient space and canopy to maintain privacy and dignity of the dead, will be used for transportation wherever an adequate number of hearse vans are not available.
- It is essential to cover the dead either with a body bag, plastic sheets, bed sheets or locally available material, before loading the body onto the vehicle. The personal belongings, or any other evidence pertaining to the deceased, that may prove useful in its identification, will accompany the body.
- Stretchers, or make-shift stretchers, will be used, instead of manual lifting, for loading the bodies onto the transportation vehicles.
- Different means of transport like bullock carts, tractor-trolleys and other animal-transport may be used, if necessary. Ideally, the bodies will not be put in layers, one above the other, but will be placed appropriately in an individual manner.
- Ambulances will not be used for transportation of dead bodies.
- Transportation of the injured will get priority over transportation of the dead.
- Chemical Agent contaminated dead bodies will be decontaminated, prior to being transported to the storage site. The vehicle, used for the transportation of dead bodies, will be thoroughly decontaminated and disinfected before it is put back into routine use.

- **Storage and Preservation**

Creation of adequate space and infrastructure, required for storage and preservation, will be planned as a part of various disaster management plans at all levels. Mortuaries in the hospitals are usually not adequate to meet the enhanced requirement during disasters. It is therefore essential to create temporary or semi-permanent structures. Abandoned buildings, store-houses or temporary constructed structures can be used for the storage with proper modifications.

Important factors like climatic conditions, temperature, availability of ventilation and cooling facilities will be considered before deciding the site of the temporary mortuary. Two types of mortuaries (morgues) will be used at the time of enhanced requirement, besides various other methods which are enumerated below:

- **Permanent Mortuaries (Morgues)**
  - These mortuaries exist in various districts and tertiary care hospitals; however, their capacities are very limited and highly insufficient to cater for a disaster situation.
  - The hospital authorities may define an earmarked built-up area, away from the wards, where such buildings may be converted into ad hoc mortuaries.
  - The large hospitals in disaster prone areas will enhance their capacities by building bigger mortuaries on permanent basis. All the hospitals will have modern facilities of refrigerating the dead bodies by having the casket system. Wherever refrigeration is not possible, the provision of having dry ice or ice will be in place for preservation of the dead.
  - The mortuary or temporary mortuary will be well secured, wherein all the bodies are appropriately covered, and unnecessary traffic to this area is prevented. Dead Body Identification Form will be initiated and requisite photographs taken here, if not taken at the disaster site, to aid identification. In addition, all the information brought along with the bodies, personal belongings and tailor labels/dhobi marks etc. are cross-checked at the mortuary.

  - Temporary Mortuaries (Morgues)

    During a Mass Casualty Incident, the permanent mortuaries are grossly inadequate.

    ⇒ District Authorities will identify the sites and buildings for making temporary shelters as mortuaries where the dead bodies can be stored for a limited period of time. The temporary mortuaries will have adequate infrastructure for providing individual space for each body and shall have sufficient provision for ventilation. Improvised cooling devices like make-shift coolers or ice slabs, may be used in extremely hot climatic conditions, to prevent decomposition.

    ⇒ The temporary mortuary should, ideally, have at least three working areas - Holding area, Viewing area and Examination area, to cater for the following facilities:

      ◊ Holding area to facilitate identification of dead bodies, a provisional holding area, which is typically an open space, should be set up to receive the dead bodies, consequent to their removal from the disaster site.

      ◊ Viewing area should be designated where family members and others will view photographs of the bodies, objects pertaining to the deceased, and finally, the bodies themselves.

- ◊ Examination area will be needed if it is necessary to conduct a more detailed exterior assessment of the body, to provide a detailed description of the dead body or body parts.
- ∗ The aim of temporary storage of dead bodies is to be respectful, to preserve and protect the bodies as best as possible, and to improve the chance of identification.
- ∗ Within 12–48 hours in hot climates, decomposition may be too advanced to allow facial recognition.
- ∗ A collection centre should be established for temporary storage and, if not already gathered, the collection and recording of data from dead bodies (including photography).
- ∗ Following collection of the data, the unidentified bodies can be temporarily buried unless better temporary storage is available

- **Refrigeration**

Refrigeration between 2°C and 4°C is the best method for prolonged storage and preservation of bodies in the mortuaries. However, the capacities of various mortuaries that are available in the hospitals are usually inadequate for a Mass Casualty Incident. Refrigerated transport containers, used by the commercial shipping companies, if available, can also be used to accommodate up to 50 bodies.

- **Dry Ice**

Dry ice is carbon dioxide frozen at the temperature -78.5°C, which can be utilized for short term preservation. A low wall of dry ice which is 0.5 metres high is formed around groups of 20 bodies and covered with a plastic sheet, tarpaulin or tent. It has been computed that ten kilograms of dry ice, per body, per day is needed depending on outside environmental temperature.

- **Ice**
  - Use of ice is an easy method of preservation, even in remote areas as ice is freely available. Adequate quantity will be used to preserve the body.
  - Buildings, where ice is used for storage and preservation, will have adequate drainage facilities for the water melted out of ice.

- **Temporary Burial**

The principle of temporary burial is based on the fact that underground temperature is much lower than the atmospheric temperature, thus providing natural cooling, aiding in temporary preservation of dead bodies before final disposal. Depending upon the local conditions, modality of temporary burial for a short duration may only be adopted when there is complete absence of facilities for storage and proper preservation. However, temporary burial will not be used as a method of choice. These guidelines will be followed for temporary burial:

- ◊ The site of temporary burial shall be carefully selected, secured for possible future exhumation and will be at least 250 metres away from the drinking water source.
- ◊ Bodies will be placed in parallel trenches and shall not be laid, one upon the other.
- ◊ Depth of burial will be at least 1.5 metres above the groundwater table, with at least 1 metre covering of soil and the distance between two bodies will be 0.5 metre.
- ◊ Each body must be buried in body bags or locally available material with its Individual Identification Number in a waterproof label. This number must be marked at the ground level and mapped for future reference in a register.

- Mass burial in a single ditch will not be used for storage and preservation.
- Burial is the preferred option in the case of mass casualties and the most effective method as it preserves evidence for possible future identification.

- **Chemical Methods**

Chemical methods are used where bodies are to be preserved for longer periods. There is no need for refrigeration for dead bodies, preserved by chemical methods. Different chemical methods are given below:

- **Formalin**

A mixture of 20% to 30% formalin, methylated spirit, phenol and water can be injected with a wide bore needle into a major artery (carotid or femoral). Major internal organs like liver, spleen and kidneys are also injected with the above solution by penetrating through chest and abdomen. This method is more suitable in a hospital mortuary where medical skills are available for locating major blood vessels, along with availability of the said chemicals.

- **Sanitizing**

This process is also known as topical or surface embalming. The method can be used where the blood vessels cannot be secured because of mutilation of body parts. Bleaching powder mixed with Potassium permanganate (KMnO4), is applied over the surface of the body, along with the infiltration and injection of 20% formalin saline in the skin and underneath.

- **Embalming**

This is a process by which the bodies can be preserved for a longer period and can be transported to distant places. A mixture of formalin, methylated spirit, phenol and glycerol is generally used for embalming. It is a specialized process which can only be carried out in well-equipped mortuaries by trained staff. Embalming facilities will be created in medical colleges and other major hospitals

2. Session objectives

- To gain knowledge about transportation of the dead, as to what precaution need to be taken and the analogy of the process involved.
- To understand various methods storage and preservation as below:
  - Permanent/ Temporary Mortuaries.
  - Storage using refrigeration, dry ice, ice, temporary burial, chemical methods etc.

3. Duration: 80 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

This session provides in depth knowledge about remaining elements of Phase 1: Scene (processing human remains and property at the disaster site). Trainer should keep the session as simple as possible so that the trainees from varied backgrounds can get maximum benefit out of the session.

6. Session Plan

Contents	Trainers' Note	Duration
Transportation of the Dead	Explains the process involved in transportation of the dead and the precautions one should follow.	20 min
Storage and Preservation	Provides details about method of storage of dead body, so as to facilitate their identification in a better condition of the body.	20 min
Permanent Mortuaries/ Temporary Mortuaries	Focuses on requirements of Permanent and temporary mortuaries and the infrastructure and human resource needed to carry out storage and positive identification of the dead bodies.	20 min
Temporary storage of dead bodies	Explains various method of temporary storage in absence of permanent mortuaries or mass calamity cases.	20 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 3.3: Post-Mortem Coordination and Primary Methods of Identification – Fingerprinting

1. Context & Description

All human remains recovered from the scene are to be processed, examined and stored at a mortuary which has been selected for the operation, pending formal identification and release by the Coroner or legal authority. This mortuary may be an established mortuary or one which has been constructed temporarily for the operation.

The examination processes and methods applied during this phase include photography, ridgeology (fingerprinting), radiology, odontology, DNA sampling and autopsy procedures. In addition to the examination of the human remains, property is to be meticulously examined, cleaned and stored. These property items may include jewellery, personal effects and clothing. Again, all relevant post mortem information obtained during this phase is recorded on the pink INTERPOL DVI Post-mortem forms.

On completion of the examination process, the human remains are returned to storage, pending the final formal identification to the satisfaction of the legal authority and the subsequent release of the remains for burial or cremation.

- **Post-Mortem Coordination**

The DVI Post-Mortem Coordinator is responsible, in consultation with specialists, for the management and outcomes of activities during the post-mortem phase of the DVI operation. Some of the main considerations and responsibilities include:

- Implement the post-mortem phase of the DVI response in accordance with agreed operational plans and/or jurisdictional arrangements.
- Appoint the DVI Post-mortem Human Remains Team Leader.
- Appoint property teams to manage property.
- Ensure any direction from the Coroner or equivalent authority in relation to the examination of the human remains is implemented.
- Implement clear communication channels to facilitate the coordination of activities at the mortuary.
- Ensure adherence to occupational health, safety and welfare requirements.

- **Role of Post-mortem Examination**
  - Under CrPC Section 174 and CrPC Section 176, all unnatural or suspicious deaths have to be investigated by an Inquest. Postmortem examination is essential in cases of unnatural deaths to

establish the exact cause of death. of death.

- Most of the major disasters may result in Mass Casualty Incidents leading to a large number of deaths and injuries to the survivors. Though deaths are unnatural, still the post-mortem examination is neither feasible nor mandatory, as the cause of death is attributed to the effects of the disaster. The authority of waiving the post-mortem examination in such circumstances lies with the District Magistrate or the Police Commissioner, having the executive powers of a First Class Magistrate. However, sample post-mortems may be necessary in certain circumstances, especially, in the man-made disasters where the agent used may not be clearly identified and the exact cause of death may have to be defined for prospective reference. Decisions on such issues will be made by district authorities on the advice of technical and forensic experts.

- **Identification of Dead Bodies**

Identification of the dead bodies is a compulsory exercise after their recovery and retrieval from the disaster site, before final disposal. Identification of dead bodies is mainly done by comparing and matching the information of the missing person (physical characteristics, personal belongings, place and circumstances of death, etc.) with corresponding information of the deceased mostly with the help of surviving relatives and the community. In case a body is unidentifiable, different techniques for identification are mandatory to be carried out for which adequate infrastructure is needed at all levels, along with availability of trained human resource. The guiding principles for identification and its processes, infrastructural requirements, along with specialized techniques, used singly or in combination, can be classified into primary and secondary methods. The primary methods are laboratory-based specialized techniques used for identification of the dead body, whereas **the secondary methods include visual identification, personal description, photography, medical findings and any other evidences** found on the dead body.

- **Primary Methods of Identification**

The primary methods for identification of a dead body are applied only in case the secondary methods of identification are found inadequate. The primary methods used for identification are:

- **Fingerprinting**

  Fingerprint analysis is a reliable indicator of the identity of an individual as fingerprints are unique to each individual. Fingerprints are formed in the fourth month of gestation and remain unchanged even after death and minor injuries to the palms. This method may prove most useful when the records of fingerprints are stored in a library, as practised in many countries and for criminals in our country. These records may be used for comparison, as and when required.

The Unique Identification Authority of India (UIDAI) under the aegis of the Government of India, has been mandated for implementing the envisioned multi-purpose National Identity Card or Unique Identification Card (UID Card) project which is known as AADHAAR, meaning 'support', with its logo being a yellow sun with a fingerprint embedded in its centre. It was established in February 2009 with the aim of providing, by the year 2014, a unique identification number to all Indians, but not smart cards, with database of associated identifying biometric data (10 fingerprints and photograph of the face and the iris). Accordingly for identification, the dead body's biometric data can be compared with the UID database, for which software can be developed for prompt identification, except when these biometric parameters are compromised due to severe burns.

- **Forensic Radiology**

  Skiagram (X-ray) of various bones helps in bringing out important facts regarding the age and sex of a person and evidence of old injuries. This information may prove useful in combination with other techniques. Imaging methods such as radiographs and postmortem computed tomography (PMCT) scans are increasingly used during DVI operations, notably due to the emergence of portable X-ray machinery and mobile CT scanners.

2. Session objectives

- Introduces trainees to post-mortem coordination and data collection for identification.
- Explains the identification method – Fingerprint analysis.
- Provides knowledge about the use of latest portable radiological instruments at site of incidence, so to fasten the identification process.

3. Duration: 30 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

This session provides the basics of Phase 2, i.e. Post-mortem (detailed examination of human remains in mortuary). It explains the Post-mortem coordination and role of post-mortem analysis and data collection for positive identification of deceased. The session throws light upon usage of fingerprint and forensic radiology to support identification process.

6. Session Plan

Contents	Trainers' Note	Duration
Post-Mortem Coordination and Role of Post-mortem Examination	This session introduces trainees to Phase 2 - Post-mortem (detailed examination of human remains in mortuary).	10 min
Identification of Dead Bodies: Primary Methods of Identification – Fingerprinting and Forensic Radiology	This session provides details of the Primary Identification methods used – Fingerprinting and latest advancement in fingerprint database, and Forensic Radiology used to provide efficient identification of the dead.	20 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 3.4: Forensic Odontology

1. Context & Description

Dental data (dental points) and dental morphological traits can be recorded from the dead body and compared to ante-mortem data, if available, in the medical history of a person. The forensic odontology serves as a useful identification method, even when the body is badly mutilated or decomposed, as the teeth remain preserved for a longer period.

Dental identification is a scientific and legally accepted form of human identification. The creation of the forensic dental team before a mass fatality incident is critical to a successful operation at the incident scene. The dental identification team is led by a dental team leader, mostly by a forensic odontologist. The dental team leader establishes a forensic dental identification team consisting of general and specialized Dentists. The dentists assist the qualified forensic odontologists in carrying out the AM and PM dental profiling of the victims. The dental team is expected to identify, collect and preserve the dental evidences after the postmortem dental profiling. The team can request for the possible ante-mortem dental data of the presumptively identified bodies.

The Forensic Odontologists have significant roles in disaster victim human identification (DVI). As per the INTERPOL DVI guidelines (2014), the forensic Odontologists are recognized as one of the main disciplines engaged in the technical aspects of the DVI process. DVI teams work in an interdisciplinary manner, engaging the services of experts in various disciplines, as required, to work collaboratively towards the identification of victims. They are qualified dental surgeons with additional forensic expertise knowledge on dental autopsy and legal implications unlike the general Dentists, who are clinically oriented. However, the forensic odontologists require the support and expertise of the clinical dentists when handling the dental identification cases.

The principal duties of forensic Odontologists are to conduct dental investigations on victims, dental radiography and dental charting or entering findings onto the Post-Mortem sheets. However, in a disaster zone, Forensic Odontologists may be apportioned several tasks that aid in the establishment of positive identity using dental evidence.

The key role of forensic odontologists in case of mass disasters:

Evidence collection: Examination and Recording

- Interpretation
- Reporting
- Presentation
- Protocols

Forensic Odontologists can usually determine the sex, race and age (at the time of death) from careful study of the teeth, their anatomical arrangement and the skull's osteological features. They can also extract more information from the teeth of the deceased depending on the habits, professional occupation and other criteria that bring about certain anatomical and constitutional changes in the teeth. The comparison of ante-mortem and postmortem dental records to determine human identity has long been established. Indeed, it is still a major identification method in criminal investigations, mass disasters, grossly decomposed or traumatized bodies, and in other situations where visual identification is neither possible nor desirable. Postmortem dental profiles are employed when the tentative identity of an individual is not available and therefore ante-mortem records cannot be sourced. Such situations are not uncommon when remains are skeletal, grossly decomposed or are found naked in locations unrelated to their place of residence. The purpose of the postmortem profile is to provide information to investigators that will restrict the search to a smaller population of individuals.

Forensic odontology, as one of the primary identification methods (DNA, forensic odontology, finger printing), has proved to be an effective identification method especially in large scale disasters with the overall ID rate of 83.3% in South-East Asia Tsunami. Forensic odontology as one of the primary identification methods is a dynamic field and has developed tremendously since the Tsunami in 2004. Recent developments in computer-aided 3D imaging have been applied for forensic odontology.

- Teeth are the most durable part of the skeleton and can withstand high temperature with physical damage.
- Teeth have distinctive morphological and histological features that can often provide useful information about the deceased, based on the comparison of the post-mortem findings with the available ante-mortem dental records and other data.
- Teeth are the reliable tool for estimating the biologic age at embryonic, neonatal, childhood, adolescence and adulthood stages.
- Dental development is under strict genetic control; less influenced by environmental factors and hence are less variable.

- **Dental Autopsy**

Dental autopsy unit is a part of forensic postmortem unit in the temporary mortuary with a PN Dental team leader.

- **PM Unit**
  - ⇒ Establishing temporary mortuary with proper facilities.
  - ⇒ Formation of a multidisciplinary team consisting of Forensic Pathologists, Forensic Odontologists, Finger print analysts, DNA experts, PM record officer and Forensic Photographer.
  - ⇒ Registering the findings in the PM record forms.

- **PM Recording**
  - **First Phase**
    - Recording of the finger prints from the body by the Finger prints experts from the FSL.
    - Entering the finger print record into the software (AFIS) for comparison with the existing AM record.

  - **Second Phase**
    - Photography of the body by trained forensic photographer.
    - The photographs should clearly show the body with the labeled ID number.
    - The photographs should also show the personal belongings (clots, jewelry, documents, watches etc.) of the victim.
    - The photographs should be preferably in color.

  - **Third Phase**
    - External and internal examination of the body by Forensic Pathologist
    - Dental examination by trained Forensic Odontologist.
    - Form a team consisting of 'Dirty dentist' and 'Clean dentist'.
      * The dirty dentist performs the examination and the clean dentist records the findings in the PM dental record sheet.
      * If oral cavity is inaccessible for examinations, then the Forensic odontologist can ask the Forensic Pathologist with prior permission from the DVI commander to perform the non- invasive mandibular dissection technique, which will enable the dirty dentist to clearly examine, photograph and radiograph both the maxillary and mandibular dentition. This technique will enable the repositioning of the facial tissues after dissection.
    - PM dental profiling.
    - The forensic odontologist should perform the PM dental age estimation as it is an important component of identification process. This allows the PM team to search for AM record from a specific age group and thus saving time and improving the accuracy. Again the choice of age estimation method depends on the mineralization status of the dentition. In the context of identification, the most appropriate fitting age estimation method in relation to the presented evidence should be chosen out of all existing methods. The forensic odontologist needs to follow the ABFO/ IOFOS guidelines for estimating the age.
      * If DNA analysis is required, then vital canine or premolar teeth can be used.

  - **Fourth Phase**
    - Establishing the Identification center.
    - Comparison of the AM and PM data.

- Creation of identification files system.
- Verification of the matches by members of the reconciliation board.
- Creation of the final list of the matched identification.

2. Session objectives

- Teeth are the most durable part of the skeleton and can withstand high temperature with physical damage.
- To understand teeth have the identifiable characteristics which can be used to positively establish the identity of an individual.
- Upon conducting Post-mortem Dental Autopsy and comparing it with the Ante-mortem data identity of an individual can be established positively, and/or the search could be narrowed down.
- Using PM and AM data from findings of dental autopsy, age race, and occupation may be inferred positively.

3. Duration: 45 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

Trainer should give special attention as this technical session specifically deals with teeth and highly specialized scientific methods and procedure followed to compare and analyze the dental evidences found at the scene of incidence, and thereby establishes the identity of the individual.

6. Session Plan

Contents	Trainers' Note	Duration
Forensic Odontology	The session is a technical one and specifically deals with teeth and their identification features, used through findings of dental autopsy and comparing the PM to AM data to infer the identification of an individual.	45 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 3.5: Forensic Anthropology

1. Context & Description

This is the science which deals with techniques that can be used to assess sex, age, stature, ancestry and analyze trauma and disease. The experts in this field frequently work in conjunction with forensic pathologists, odontologists and crime investigators (police) to identify a deceased, discover evidence of trauma and determine the post-mortem interval. Such evidence lacks the legal authority but the findings are taken into consideration by the medical examiner.

Forensic Anthropology is the application of anthropological methods and theory - particularly those relating to the recovery and analysis of human remains - to resolve legal matters. Forensic anthropologists often perform a number of roles in the DVI process. These roles include the initial sorting of human from non-biological and non-human remains; inventories of skeletal and anatomical structures present; estimation of chronological age at death, sex, ancestry, and stature; the recognition of skeletal features that may facilitate identification; and preliminary interpretations of skeletal trauma patterns and timing. This information can often be obtained regardless of state of preservation (e.g., complete, fragmented, commingled, or taphonomically-modified). Further, most of these determinations can be made effectively and efficiently by simple gross examination and/or using high-quality radiographs.

Regardless of the body's condition, the forensic and anthropological methods used during the different stages of the identification process must be rigorous and systematic. The identification of skeletal, badly decomposed, or otherwise unidentified human remains is important for both legal and humanitarian reasons.

Following the discovery of skeletal remains, the physical anthropologist's aim is to prove their origin by studying rituals of burial, ancestry, and osseous characteristics which can provide interesting information on lifestyle, occupational activities, or hierarchical status. The forensic anthropologist can use the same methods for the purposes of identifying victims and uncovering medico-legal clues as to the criminal nature of a death.

- **Fragmentary Human Remains**

Unidentified pieces or parts of a human body, with greater or lesser chance of being identified are referred to as "fragmentary remains". The fragments or pieces are not physically attributable to any particular individual, often because of separation from the remainder of the body.

Mass disasters can be natural, accidental or man-made and result in loss of human lives and damage to property. Catastrophes are disasters on a huge scale. The human remains recovered can be:

- Intact bodies (commonly referred to as bodies); or
- Clearly identifiable parts of a body which, if the rest of the body is available, could be re-associated with that body (commonly referred to as "body parts"); or
- Unidentified pieces or parts of a body, with greater or lesser chance of being identified (referred to as "fragmentary remains".

Anthropological methods, techniques and principles are typically employed in five primary capacities: 1) during the Preplanning phase of a DVI operation, 2) the Search and Recovery and preservation of remains from a mass fatality incident, 3) at the Triage Station during the initial sorting of material gathered from the field and determination of what human tissue enters the morgue, 4) at the Anthropology Station collecting quality post-mortem data from each morgue sample, and 5) as a member of the ID Reconciliation Team, focused on ensuring valid and reliable positive identifications from human tissues.

- **Preplanning**

Planning for mass fatality responses is typically the responsibility of mass fatality management systems specific to a geographic or jurisdictional area. Anthropologists should be cognizant of, and contribute to, the planning, implementation and management of the entire response process in order to effectively integrate an appropriate forensic anthropology response with other DVI professionals and facilitate timely and accurate identifications.

- **Search and Recovery**

Most forensic anthropologists have a broad skill set and training in archaeological methodologies. It is highly recommended to include an anthropologist during the entire recovery process to not only maximize recovery/preservation of human remains but to also maintain the integrity of the provenience/context, which may speed the identification process and reduce cost.

- **Triage**

Initial sorting of tissues and other evidence gathered in the field occurs at the Triage Station. It is here that material collected during the search and recovery operation is examined and sorted prior to entering the disaster morgue. Recovered material potentially includes: commingled human tissue; personal effects; vehicle components; animal and plant material; and other unsorted material. The goal of the Triage Station is to segregate all tissue and eliminate commingling of individuals in order not to miss a potential identification. This is achieved by separating out all human tissue not attached via a tissue bridge and segregating all human tissue from non-human tissue, un-associated personal effects, and any other non-biological evidence. Immediately following triage activities, all human tissue that will enter the morgue must be assigned a unique morgue reference (or specimen) number.

The Triage Station should be staffed by a multidisciplinary team composed of forensic anthropologists, forensic pathologists, and in some cases, law enforcement officials. It is critical that the team includes individuals who:

- can distinguish human from non-biological materials (including those that may mimic the appearance of human remains);
- can distinguish human from non-human tissues, particularly skeletal (osseous and dental) tissues;
- are experienced with fragmented bone and soft tissue; and
- have experience with heat-altered (i.e., burned) or otherwise compromised remains.

Trained and experienced forensic anthropologists are considered ideal candidates. Triage station personnel should be familiar with the DNA analytical protocols that will be used in the DVI process.

- **Triage Station Activities**

Photography of all specimens may occur as they enter the triage process for accountability and evidentiary purposes. All material from each field specimen container is taken out of the containers and sorted at the Triage tables. In most circumstances, commingled human tissue will be separated into discrete units.

Personal effects directly associated with the human tissue, including jewellery, clothing, and objects in clothing pockets will not be disassociated from the human tissue at the Triage Station. Typically, this material is taken into custody by law enforcement.

Any biological tissue of non-human animals that may be associated with the mass fatality incident and potentially considered as a pet may be separated and sent to the Anthropology Station for analysis and confirmation of non-human animal remains.

After sorting at the Triage Station, the materials to be processed through the disaster morgue should be placed into clean individual containers/bags, still associated with the field specimen number. A unique morgue number will next be assigned. This can occur in some models at the next (adjacent) morgue station, the Admitting Station, or can occur within the Triage Station in other models.

- **Anthropology Station**

The primary role of the Anthropology Station is to provide a rapid and succinct inventory of the human tissue, an assessment of the biological profile, and the notation of features that may be useful for identification. Disaster morgue specimens should enter the Anthropology Station only after documentation in Photography and Radiology has been completed. It is particularly important that quality radiographs of the tissues be available at the Anthropology Station, as many of the anthropological analyses and interpretations can be based on radiographic analysis.

- **Anthropology Station Activities**

The primary goal of the Anthropology Station is to collect post-mortem data from the bone tissue present in each morgue specimen. This data will include an inventory of bone present, assessment of biological profile, and notation of skeletal features that may provide positive identification.

Inventories and assessments must be accomplished in an efficient and timely manner. In most cases, analysis of a high-quality, anatomically-oriented, post-mortem radiographic image associated with the specimen will provide significant and informative data required for these assessments. In most cases, removal of soft tissue is not necessary. However, there may be circumstances, for example when a prosthetic device is imbedded in bone, in which some removal of soft tissue is warranted.

- **Descriptions of the Human Tissue**

Description of the human tissue will include the bone(s) present, portion of bone represented, side, and other features that may be useful for identification. Cleaning of tissues is generally not necessary, and should be minimal, for example, when using a toothbrush to clean an area. Only a brief description of the bone portion (e.g., distal 1⁄4 of right humerus) is typically necessary. Notation is made on standardized data collection forms of skeletal features identified on the post-mortem radiographs that may be useful for identification. An initial tentative categorization of the feature (e.g., healed trauma, pathology, or specific skeletal feature) can also be provided.

- **Estimation of Age-at-Death**

Assignment to general age categories provides the most effective and efficient means to provide estimates of chronological age at death in material that is highly fragmented: e.g., juveniles (less than 10 years, 10-20 years) and adults (young, middle and older adult). If the remains are more complete, a more refined estimate may be inferred, especially in juveniles. In more complete remains, multiple areas of the skeleton can be assessed.

- **Assessment of Sex**

In more complete remains, multiple areas of the skeleton can be assessed. Focus will be on general size and robusticity of the specimen. Some secondary sexual characteristics (e.g., greater sciatic notch) can be used to assess sex. A few standard measurements (e.g., femoral head diameter) may be obtained after limited soft tissue removal or even taken from radiographic images.

- **Assessment of Ancestry**

Assessment of ancestry can be attempted on more complete crania that include the facial skeleton. Well-accepted or validated methods for analyzing non-metric features may be used to assess ancestry. Measurements relevant to assessing ancestry may also be taken and utilized for examination.

- **Estimation of Stature**

Stature estimates are often limited or not possible in DVI contexts, especially in cases where remains are fragmented and sex and ancestry of the individual is not known. For more complete skeletal remains, or those not altered by decomposition or heat-alteration, estimates of stature may be provided.

In some cases, osteometric measurements may be derived from digital imaging. Measurements should be adjusted to dry bone values when warranted.

- **Features that May Facilitate Identification**

In some cases, skeletal features, such as healing or healed antemortem fractures, or rare characteristics of the bones, noted on postmortem radiographs, may be used to suggest identifications, if the proper antemortem record is available. In those cases in which an artificial appliance or prosthetic device is associated with the human tissue specimen, identifications can sometimes be made via comparison of antemortem and postmortem radiographs or investigation of manufacturer markings (including insignia, lot numbers, and serial numbers).

2. Session objectives

- Explains dead bodies be found in varying forms at the scene of incidence.
- Forensic anthropological methods and techniques can be applied to determine various identification features, such as:
- age, sex, race, stature, ancestry…
- And by applying scientific method and using radiograms narrows down the field of search and establishes the identity of the individual.

3. Duration: 45 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

Trainer should give special attention as this technical session specifically deals with human remains, including dead body with soft tissues intact and body condition identifiable, fragmented body parts, decomposed body, and skeletonized body and applies highly specialized scientific methods and procedure to compare and analyze the human remains found at the scene of incidence, and thereby establishes the identity of the individual.

6. Session Plan

Contents	Trainers' Note	Duration
Forensic Anthropology	This technical session specifically deals with various forms of human remains. And their identification features, used through findings through scientific methods infer the identification of an individual.	45 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 3.6: DNA Analysis, and DNA Technology (Use and Application) Regulation Bill, 2018

1. Context & Description

- **DNA Analysis**
  - When used with other investigations, DNA is a significant complementary tool for identification. A considerable portion of the genetic information contained in a cell is unique to a specific individual and thus differs, from one person to another, except in identical twins. DNA testing may also produce reliable results even in cases involving partial, severely decomposed remains or in matching body parts.

  - The ready availability of DNA technology is capable of meeting many complexities presented by Mass Casualty Incidents, including the problems because of severe mutilation or fragmentation. DNA analysis in such scenarios requires special resources related to specimen tracking, data management, and interpretation of results. The testing laboratories will be expected to use specialized software to facilitate the interpretation of the large number of DNA profiles and the tracking, searching and identification process, involved in this methodology. DNA analysis will require valid reference samples to identify the dead bodies accurately.

  - Network of Laboratories – It is essential to create and upgrade the number of forensic and DNA identification laboratories in a phased manner across the country, so that the identification process can be carried out in the shortest possible time with complete accuracy. There are few DNA fingerprinting laboratories in India, and among which, the Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, is a National Referral Laboratory for difficult and recalcitrant case samples in identification of the deceased in Mass Casualty Incidents. There are many laboratories, which have the capability of carrying out DNA analysis in scientific and academic institutions. Nevertheless, their capabilities will have to surge, in case they are required to help in identification of the dead in Mass Casualty Incidents.

  - DNA Identification Laboratories
    - Existing laboratories for DNA fingerprinting will be upgraded to handle large numbers of DNA samples and report on them in the shortest period.
    - DNA laboratories will also develop methodologies for collection of a large number of samples from the site of the disaster or from the site of storage and preservation of dead bodies, through the mobile laboratories, and thereafter, transporting them to the nearest DNA laboratory.

- CDFD, Hyderabad, CFSLs and All India Institute of Medical Sciences, New Delhi, with the capabilities of carrying out DNA fingerprinting, will also impart training to the professionals of State Forensic Laboratories. These trained professionals will further impart skills and knowledge to all district laboratories, thus enhancing their capabilities to collect appropriate samples.

- The Ministry of Defence, too, will create facilities at the Department of Forensic Medicine, Armed Forces Medical College, Pune for DNA fingerprinting. Similarly, Railways and Director General Employees State Insurance Scheme will also earmark and create at least one such laboratory in their domain.

- Facilities will also be created in Central Medical institutions (Post Graduate Institute Chandigarh, Sanjay Gandhi Post Graduate Institute Lucknow, Jawahar Lal Nehru Institute of Post Graduate Medical Sciences Puducherry, etc.) and State Medical Institutions.

- **DNA Technology (Use and Application) Regulation Bill, 2018**

The approval of "DNA Technology (Use and Application) Regulation Bill, 2018", lays ground for development of a strong DNA Database of citizens of India, which is of great importance for positive identification of disaster victim and many benefits to reap in years ahead.

The bill provides details in respect with mass disasters and DNA data protection:

- Bill's provisions will enable the cross-matching between persons who have been reported missing on the one hand and unidentified dead bodies found in various parts of the country on the other, and also for establishing the identity of victims in mass disasters.
- By providing for the mandatory accreditation and regulation of DNA laboratories, the Bill seeks to ensure that with the proposed expanded use of this technology in the country, there is also the assurance that the DNA test results are reliable and the data remain protected from misuse or abuse in terms of the privacy rights of our citizens.

- **Background of the Bill**

"Forensic DNA profiling is of proven value in solving cases involving offences that are categorized as affecting the human body (such as murder, rape, human trafficking, or grievous hurt), and those against property (including theft, burglary, and dacoity). The aggregate incidence of such crimes in the country, as per the statistics of the National Crime Records Bureau (NCRB) for 2016, is in excess of 3 lakhs per year. Of these, only a very small proportion is being subjected to DNA testing at present. It is expected that the expanded use of this technology in these categories of cases would result not only in speedier justice delivery but also in increased conviction rates, which at present is only around 30% (NCRB Statistics for 2016)."

- **Protection of Personal and Genetic Data**

A fair amount of personal data is gathered while dealing with management of the dead, especially during the process of identification where personal data is collected and biological samples including Deoxyribonucleic Acid (DNA) profile may be required for analysis, before final disposal. DNA profiling is a unique identification typing that provides the sensitive information about a person's family and intimate associations. Genetic data obtained through DNA analysis can also be used in various other fields in medicine, other than the person's identification. Therefore, genetic data obtained through DNA profiling is to be handled carefully and confidentially, thus ensuring the right to privacy as per the International principles.

However, International law does not have any specific provisions on the protection of genetic data but it relates to general principles on confidentiality, privacy, non-discrimination and human dignity. Notwithstanding the same, at the National level, the proposed Human DNA Profiling Bill would address the various aspects relating to confidentiality of, and access to, DNA profiles, biological samples and records.

2. Session objectives

- To understand DNA Analysis is highly sensitive examination technique.
- Through DNA profiling the data of the deceased can generated which upon examination with other samples of possible suspects/ relatives/ family member can provide assured identity of the individual.
- To know it is a time consuming and expense method.
- To understand that facilities/ laboratories are yet to develop capacity to address to large volume of DNA analysis in short span of time as in any disaster.
- To understand, DNA Technology (Use and Application) Regulation Bill, 2018 and steps laid to safeguard Personal and Genetic Data of an individual.

3. Duration: 45 minutes.

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

This session deals with a sensitive examination, i.e. DNA Analysis. Trainer should explain in most simple way so to understand trainees well. Trainers should encourage questions from trainees so to give them a clear picture of the process.

6. Session Plan

Contents	Trainers' Note	Duration
DNA Analysis	This session requires scientific approach to make trainees understand DNA Profiling. DNA technology is capable of meeting many complexities presented by Mass Casualty Incidents, including the problems because of severe mutilation or fragmentation. It may produce reliable results even in cases involving partial, severely decomposed remains or in matching body parts. Trainer should encourage questions from the trainees.	30 min
DNA Technology (Use and Application) Regulation Bill, 2018	The part of the session explains the legal and social complication associated with developing DNA Database and defines road toward safeguarding the Personal and Genetic Data of Indian Citizen.	15 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Technical Session 4: Disposal of the Dead and Way Forward

1. Disposal of the Dead and Way Forward

The fourth Technical Session would explain in detail the Phase 3 and Phase 4 in the Disaster Victim Identification Procedure, and would throw light on important topics such as Missing Persons, Documentation, Information Management and Policy Framework, and Capacity Development and Coordination. Session on Phase 3 shall provide knowledge ante-mortem data collection, while Phase 4 would deal with reconciliation of data thus collected and final disposal of the body. It would explain the medico-legal and cultural aspects related to disposal of dead body. The next session would educate on the Missing persons followed by Documentation, Information Management and Policy Framework, and Capacity Development and Coordination. The session would conclude with a Post-Training Evaluation.

The session is divided into six learning units as below:
Learning Unit 4.1: Rapporteuring Session
Learning Unit 4.2: Phase 3 - Ante-mortem (collection of missing person data from various sources)
Learning Unit 4.3: Phase 4 - Reconciliation (matching post-mortem and ante-mortem data)
Learning Unit 4.4: Documentation, Information Management and Policy Framework
Learning Unit 4.5: Capacity Development and Coordination

The primary objectives of the module would be to:

- To learn to collect data from various sources, i.e. ante-mortem data and to compare it with the post-mortem data to establish positive identification of the individual.
- To learn about the Missing persons and approach to minimize the missing persons' count following any disaster.

- Understand the processes of documentation, Information Management and Policy Framework regarding Dignified Management of the Dead.
- Understand the capacity building needs and that Dignified Management of the Dead is a multi-disciplinary subject, requiring coordination with various Government Department, Institutions, Medical Services, Organizations, Laboratories, NGOs/ CBOs and Logistics Management.

2. Duration: 300 minutes.

3. Methodology:

The concluding module covers the topics towards such as AM Data Collection and Reconciliation and Disposal of the body. It would also throw light and on important topics like, Missing persons, Documentation and information Management and Capacity Development. The technical sessions should be taken up in a discussion mode to bring out the ideas through knowledge gained over the past sessions. It is also important to leave the sessions a little open-ended so that continuous addition of the knowledge base can take place even after the training is officially over. The idea would be to create the requisite interest on the subject so much so that it becomes a process of learning, from a one-time training activity.

4. Trainers' Note

Being the concluding module, it has to be delivered to retain the interest of the participant until the end. Through this module, the trainer will have to collate the inputs from the earlier modules, reiterate the underlying messages and take the course on to the next level. The challenge therefore would be to provide a conclusion to the entire course, while leaving the options open for a more advanced level training in future. The closing session should be devoted to the evaluation of training, either through formal or informal methods. The trainer can use either a structured proforma or use an unstructured discussion session to evaluate the programme. Evaluation is important for further improvement and future sustainability of the training.

Learning Unit 4.1: Rapporteuring Session

1. Context & Description

The rapporteuring session is incorporated with intent to interact and discuss with the trainees their understanding about the topic and clarify their doubts, if any. Further it also aims for every trainee to be alert and to participate in the discussion, and to:

- Note all conclusions and remarks related to the theme,
- Recognize all recommendations and outcomes,
- Comments from participants and highlight the key elements.

2. Session objectives

The objective of the session is to revise the learning of the day to all the trainees. This shall help trainees get better understanding of the key elements the session and bring everyone on same page.

3. Duration: 30 minutes

4. Methodology

Discussion

Prepare list to points discussed

5. Trainers' Note

Trainer should probe questions to know the understanding of the trainees and also encourage them to ask counter question/ interact more and clear doubts, if any. During conclusion of the session trainees should be clear with the take home message.

6. Session Plan

Contents	Trainers' Note	Duration
Rapporteuring Session	Trainer should probe questions to know the understanding of the trainees and also encourage them to ask counter question/ interact more and clear doubts, if any. During conclusion of the session trainees should be clear with the take home message.	15 min

7. Training/ Performance Aids

- Flipchart/ markers.

Learning Unit 4.2: Phase 3 - Ante-mortem (collection of missing person data from various sources)

1. Context & Description

In order to collect missing person data to match against victim data, an ante-mortem collection process needs to be established. This process can involve many complex dimensions as the task involves interviewing families, relatives or friends to obtain sufficient facts on a potentially deceased loved one. In addition to this difficult and confronting task, representatives from this phase may need to closely coordinate their activities with other agencies, jurisdictions or nations, to secure ante-mortem data from remote locations.

Initially, the ante-mortem phase will focus its activities on developing a missing person list that will be created from reports of concerns communicated by families and relatives or through other mechanisms such as a passenger manifest. Following the receipt and categorization of those missing person reports, interview and/or investigation teams will be formed. Their function will involve collecting the detailed descriptions of each missing person/potential victim, including specific details such as jewellery, clothing, or other property items as well as dental and medical records, radiographs, photographs, DNA, fingerprint and other identifying particulars. This information is recorded on the yellow INTERPOL DVI ante-mortem forms.

Once there is sufficient and reliable ante-mortem data on a particular missing person, the relevant file will be closely assessed and if the threshold required for matching against post-mortem data is met, the file is transferred to the Reconciliation Centre to progress the identification process.

- **Ante-Mortem Coordination**

The DVI Ante-Mortem Coordinator is responsible for the management of activities during the ante-mortem phase of the DVI operation. Some of the main considerations and responsibilities include:

- Implement the ante-mortem phase of the DVI response in accordance with agreed operational plans and/or jurisdictional arrangements.
- Establish an Ante-mortem Coordination Centre (AMCC).
- Establish interview teams and coordinate their activities to complete missing person enquiries.
- Obtain passenger manifests and other information to compile missing person lists.
- Liaise with local and international police services, INTERPOL, consulates, embassies, other law enforcement agencies as well as Government and non-government agencies in relation to the collection of dental/ odontological/ fingerprint and medical records, and the completion of yellow INTERPOL DVI Ante-mortem Forms.

- Ensure adherence to occupational health, safety and welfare requirements.

A Mass Casualty Incident results in a large number of deaths. The dead body of such a victim may get mutilated because of disaster effects and/or it may be displaced to sites, away from its habitation, thus posing problems in positive identification. A systematic approach is required to be adopted to confirm identification of a dead body, before its final disposal. In many cases, the help of forensic and laboratory techniques, may be required to reach the final conclusion.

- **Ante-mortem Personal Data Collection**
  - An Information Centre will be established at the site of the disaster where the bodies are being kept and the data on dead bodies is being compiled, in the format of the Dead Body Inventory Record register. The Information Centre will serve as a resource centre for receiving information on ante-mortem personal data from the relatives, friends and the community at large. Data so furnished, will be recorded in the suitably designed format of Missing Person Form. Any documents or proofs, like Panchayat Register or photographs provided, will be retained at the Information Centre with this pro forma. Such personal ante-mortem data will be very useful in identification of the dead. In some cases, data on medical history, illnesses, blood groups, any genetic or ethnic information available about the individual, may further substantiate the process of identification.

  - The data from the dead body and the Ante-mortem personal data will be matched and crosschecked at the time of visual identification of the dead. However, identification, based on visual recognition or photographs, may be faulty and it will have to be complemented with other methods of forensic identification, wherever necessary.

  - When visual identification with the help of data, derived from the dead body and Ante-mortem personal data do not establish complete positive identification, laboratory-based methods like fingerprinting, forensic radiology, forensic odontology, forensic anthropology and DNA profiling will be conducted.

  - The Information Centre will contact forensic experts for collection of samples from family members of the deceased, for DNA fingerprinting, where earlier methods have not proved adequate for identification.

  - The family members or relatives, who come forward and help in visual identification, are undergoing severe psychological trauma and emotional stress, during the identification process. The sense of grief and loss, among the bereaved, will be respected by the authorities and they will be treated with utmost sensitivity and patience.

- **Missing Persons' Database**

Without a list of those missing, including those presumed to be dead, and information about them which can be compared with the information available about the dead bodies, it will not be possible to identify the dead bodies. The later identification of dead bodies requires:

  - the development of a list of missing persons, and
  - information about missing persons.

- **Information on missing persons**
  - At the same time as a consolidated missing persons list is being created, it is important to begin collecting individual information on each missing person. Such information is obtained from family members, friends or other sources and is recorded on the Missing Person Information Form. A simple Missing Persons Form, sections of which can be edited to better suit the particular context. Ideally the process of information collection should be carried out by trained personnel but first responders may be needed if trained people are not available. It is important to treat the relatives of persons who are missing with sympathy and respect, acknowledging the stress they are under.

  - Interviewed family members should be asked if they consent to the information being used for identification purposes only, and this consent documented. Any information on missing persons should be regarded as highly confidential and should not be shared with unauthorized parties.

- **Centralization of information**
  - Information on missing persons and unidentified human remains may be stored centrally in an electronic database, under the guidance of a data management specialist, to assist in the tracing and identification efforts.
  - The consolidation of data in one central database makes it easier for forensic experts to compare the information on unidentified human remains with information on missing persons to seek a possible match.
  - Subsequently, by managing both the dead and corresponding information in a coordinated and standardized manner, the chances of successful identification are maximized while the chances of misidentification are minimized

2. Session objectives

- Understand that Ante-mortem (collection of missing person data from various sources) is a huge task requiring interview team to be able to collect the data from various sources.

- Any documents or proofs, like Panchayat Register or photographs provided, will be retained at the Information Centre.
- Understand the requirement of when cross-examination with visual identification is reliable and when it should be sent further for laboratory analysis. DNA Profiling could be a solution.
- Care must be taken for o survivor be interviewed repeatedly for same set of questions and proper psychological and otherwise aid be provided to them.
- Missing Persons' Database be created and to function as centralized information source.

3. Duration: 45 minutes

4. Methodology

- PowerPoint Presentation
- Lecture/Discussion

5. Trainers' Note

This session explains Phase 3 of Disaster Victim Identification. It describes the sources from which information about the missing person can be collected and compiled into a central database. It describes if the visual identification and cross-examination establishes the positive identity of the deceased or if the body need to be sent further for identification process. This session also emphasize on creation of centralized database of missing person so to identify victims faster.

6. Session Plan

Contents	Trainers' Note	Duration
Ante-Mortem Coordination and Personal Data Collection	Trainers should explain the procedures of ante-mortem coordination and the possible source to collect personal data of the deceased.	25 min
Missing Person's Centralized Database	The data thus collected should be incorporated in a centralized database, for ease of access and efficient working.	20 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 4.3: Phase 4 - Reconciliation (matching post-mortem and ante-mortem data)

1. Context & Description

The function of the Reconciliation Centre is to match post mortem data with ante-mortem data with the view to identifying the deceased. In cases where there are reliable primary identifiers available, such as dental, ridgeology (fingerprints) or DNA and those identifiers meet the requisite standards, these cases can be prepared for presentation to an identification board for determination. However, there may also be cases where a combination of identifiers may be used to support one another to produce a positive identification. For example, this type of circumstantial identification case may include a combination of a description, medical evidence, clothing, jewellery, tattoos and documentation. It must be highlighted that such identifications will need to be assessed on a case by case basis. It is also important to stress that visual identification can be very unreliable and therefore this form if identification should not be considered alone.

Once the reconciliation files are assessed and the content is considered reliable and safe to conclude positive identity, an Identification Board (IB) is convened. The results of the comparisons between the post -mortem and ante-mortem information are presented to the IB, which is convened by the local authority and presided over by a Coroner or an equivalent authority. The Coroner or equivalent, who has overall responsibility for the identification of the deceased, is informed of the results supporting the identification conclusions and provided with a comparison report and certificate of Identification for each identified human remain, including each fragmented human remain.

In the event that the local authority accepts the identification conclusions relating to a specific case, a death certificate confirming the cause of death and the identity of the deceased is issued. Once that process has concluded and an authority for the release of the deceased has been granted, arrangements are then made for the repatriation of the deceased to the respective family.

- **Reconciliation Coordination**

The DVI Reconciliation Coordinator is responsible for the management and outcomes of activities undertaken during the reconciliation phase of the DVI operation. Some of the main considerations and responsibilities include:

- Implement the Reconciliation phase of the DVI response in accordance with agreed operational plans and/or jurisdictional arrangements.
- Establish and manage the operations of the DVI Reconciliation Centre.
- Appoint key Team Leaders within the various units of the Reconciliation Centre.

- Establish a section to receive, log, record and file ante-mortem and post-mortem information.
- Prepare formal identification reports for approval by the DVI Commander.
- DVI Guide: INTERPOL 2014 (Proposed Amendments: March 2014) 18 of 127
- Convene the DVI Identification Board.
- Ensure adherence to occupational health, safety and welfare requirements.

- **Disposal of the Dead**

Disposal of the dead is the final step in management of the dead. It is a highly sensitive and very important step because of cultural, ethnic and religious sensitivities, varying from community to community, in our country. Therefore, it is essential to associate prominent citizens of the community during this process, especially, for disposal of a large number of bodies. Disposal of the dead is a sequential process and involves important actions required to be taken before the final disposal. These include - process of identification, issue of death certificate, release of the dead body, transportation of the dead to their home and methods of final disposal. Some of the important issues related to these actions and steps are discussed below:

- **Death Certificate**
  - Death Certificate in a standardized format, already in vogue, will be issued by the authorized medical officer. This certification is essential for the purposes of final rituals, compensation, claims, special legal provisions wherever applicable, and for repatriation of the dead bodies of foreign nationals. Requisite documentation such as "Brought in Dead" and Death Reports, as stipulated by the State, will be initiated.
  - The Death Certificate will clearly indicate the immediate cause of death in a disaster situation. The antecedent causes, which usually state the underlying conditions or diseases, may not be essential as it requires a postmortem examination.
  - Unidentified bodies will be subjected to necessary forensic tests for a final identification. Positive identification may not be possible in certain cases where representative biological samples from such bodies will have to be kept in forensic laboratories for a stipulated period, as defined by the law, for declaring a missing person as dead. However, disposal of such bodies will not be delayed beyond a certain point of time, lest the body putrefies.

- **Release of the Dead**

  Following steps will be undertaken for the release of the dead bodies:
  - All identified dead bodies will be handed over to the relatives. In the absence of relatives, the body can be handed over to the community representative, duly authorized by the Panchayat/ Urban Local Body. A Death Certificate will be provided with the dead body.

- The authorities, responsible for handing over the dead body to relatives or to the authorized person, will maintain a complete record about the dead, along with the allocated reference number and details of the relative(s) or authorized person collecting the dead body.
- Unidentified bodies or body parts will not be released unless identified and certified by forensic experts and district authorities.
- Dead body or body part, whose identity cannot be established, will be disposed of by the District Authorities, in the presence of the community representative(s) after collecting biological samples for the possibility of future identification.
- Transportation of individual bodies to their home may not be possible; however, the relatives or the authorized person may collect the body, after identification, and transport it under their own arrangements.
- The bodies may require embalming or other preservation methods, in case the body has to be transported over long distances or abroad.
- Bodies, requiring transportation, will be either kept in coffins or are fully covered by sheets or body bags. These bodies are then transported in a covered vehicle or hearse vans, so as to prevent any psycho-social trauma to the relatives and the community.
- In case of the dead body of a foreigner, the Ministry of External Affairs, Government of India, in consultation with the Consular offices of the concerned countries and other actors such as the International Committee of the Red Cross, if necessary and possible, for appropriate identification, documentation and then the embalmed dead body will be handed over to the authorized person(s).

- **Final Rituals**

Authorities may be required to organize final rituals in respect of the unidentified or unclaimed bodies or body parts in a disaster scenario. Authorities will associate the community representative(s) during the process of final rituals. As far as possible, the authorities will also observe local sensitivities while performing the final rituals. One of the following methods may be used for the purpose of the final rituals:

- **Cremation**
  - Many communities in our country adopt cremation for the final ritual. This method dispenses with the problem of space and is more eco-friendly
  - Usually the cremation sites are already defined in our rural or urban settings. However, in the absence of such a practice, the cremation site will be chosen at least 500 metres away from the inhabited area.

- Electronic devices like Cardiac pacemaker and Automated Implantable Cardioverter-Defibrillator (AICD) must be removed before the cremation, as they may pose a hazard to the people in vicinity, by exploding on exposure to heat.
- Mass funeral pyres will be avoided, as they may release harmful dioxins and excessive smoke pollution.
- Use of electric crematoriums will be encouraged, wherever available.

- **Burial**

  -Mode of burial for final disposal is the method of choice in certain communities in our country. However, this method has been used for final disposal for a large number of unidentified bodies in a major disaster situation. In such circumstances, it is the urgency that matters and not the method of choice. Some of the important guidelines for burial of dead bodies are as under:

  - Single burial is the ideal method as it gives the advantage to the community to practice prevailing preferences for the burial site, preferential orientation of body in the grave as regards to its direction and permanent labelling of the grave for emotional reasons.
  - Selection of the site for mass burial will be carried out in consultation with local community and it also depends on the type of soil, level of water table, availability of space and distance from water sources.
  - The burial site will be located, away from the habitation and it will have adequate space around the site to plant deep-rooted trees for the purpose of
  - demarcation and to prevent excavations. Temporary burial may be adhered to, before mass burial.
  - Single row and single layered burial, along with adequate space between the rows and between the bodies will be ensured. This may also help the authorities for future exhumations, if required.
  - The authorities will maintain adequate records of the mass burial.

- **Other Methods**

  Certain communities like Parsis and Jews have their own methods of disposal of the dead. For final disposal of identified bodies of such communities, help from the community representative(s) will be sought for handing over the bodies for final disposal, as per their rites.

- **Support to the Bereaved**

A major disaster which results in a Mass Casualty Incident also causes many adverse effects onto the bereaved and the community at large. Loss of habitation, personal belongings and financial losses cause immediate to long term sufferings to the community. In addition, every

person, who is bereaved or affected by the disasters, undergoes psycho-social trauma which, at times, overwhelms normal coping mechanisms and precipitates into mental disorders. Careful and ethical management of dead bodies, along with respect for religious and cultural sensitivities, are very important in dealing with the psychological impact of disasters. In this context, reference can be made to National Guidelines on Psycho-social Support and Mental Health Services in Disasters.

The important relief measures must focus on providing minimum requirements of food, water, sanitation, hygiene and medical cover, in addition to the clothing, shelter, financial relief and compensation with empathy and care.

It is also necessary to provide comprehensive relief to the affected community including psycho-social support as many of the people are likely to stay in the camps for at least a few days to a few weeks.

To contribute to a successful victim recovery and identification process by good public communication which includes regular release of accurate and updated information.

- An information centre for relatives of the missing and the dead should be set up as soon as possible so that relatives can be informed regularly about the search and recovery operations.
- Only final results of identifications should be provided, along with more general information at all stages of the recovery and identification process.
- Families of identified victims should be informed individually prior to the release of information to the media.
- When dealing with large-scale disasters, during which it is impossible to invite all the relatives of possible victims, a wide range of media can be used, such as:
    - Internet, social media
    - Noticeboards
    - Newspapers, television, radio, etc.

- **Psycho-social Support to the Care Providers**

The First Responders or Care Providers in the aftermath of disasters may be exposed to a miscellany of potentially disturbing experiences such as viewing and handling of dead bodies, complete or mutilated, coping with dying victims, and individuals with grotesque and serious injuries, as well as to deeply distressed individuals, families, and even communities.

These personnel also may have to face risks (genuine and/or perceived) to their own safety, including exposure to toxic materials and diseases. Their health and welfare may be compromised through lack of sleep, fatigue, and work overload. Thus, they may not only become "secondary victims", but may also be "primary victims" due to personal loss of loved ones, friends, property, and possessions, particularly in the wake of extensive disasters, such as cyclones, floods or earthquakes.

Continuous exposure to stressful conditions due to scenes of destructive effects of disasters culminate into psycho-social problems among the Care Providers which need to be addressed, professionally, failing which the tempo of the relief operations will soon wither. Team leaders of first responders and crisis groups shall monitor and keep a vigil on the emotional and physical stress of Care Providers, noting the physical and clinical signs of psycho-social trauma. Treatment entails debriefing, adequate rest and proper food and nourishment to prevent the Care Providers' collapse.

2. Session objectives

- Understand that Phase 4 – Reconciliation, matches post mortem data with ante-mortem data with the view to identifying the deceased.
- Disposal of the dead is highly sensitive and very important step because of cultural, ethnic and religious sensitivities, varying from community to community.
- Death Certificate will be issued by the authorized medical officer and is essential for the purposes of final rituals, compensation, claims, special legal provisions wherever applicable, and for repatriation of the dead bodies of foreign nationals.
- All identified dead bodies will be handed over to the relatives for final rituals.
- A major disaster which results in a Mass Casualty Incident also causes many adverse effects onto the bereaved and the community at large, support to be provided to bereaved.
- Psycho-social Support and medical aid should be provided to the Care Providers/ First Responders.

3. Duration: 60 minutes

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

This session encompasses a variety of aspects in disaster aftermath. The Trainer should swiftly move from reconciliation to disposal of the dead by handing over the identified bodies for final rituals. Also the session focuses on Support to the Bereaved and Psycho-social Support to the Care Providers.

6. Session Plan

Contents	Trainers' Note	Duration
Reconciliation Coordination	Trainer should describe how the matching and cross-examination of AM and PM Data is being done to establish individual's identity.	10 min
Disposal of the Dead	This should be dealt carefully as it encompasses religious and cultural sentiments for final rites of the deceased. Also this section is the essence of entire work of Dignified Management of the Dead.	20 min
Support to the Bereaved	Psychological and support in other areas becomes very critical for the survivors who loses their loved ones in disaster.	15 min
Psycho-social Support to the Care Providers	The First Responder should be well vaccinated and equipped with medical aids to help themselves on ground. Also psycho-social support should be provided to the care providers/ first responders on humanitarian as well as human resource/ team spirit grounds.	15 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 4.4: Documentation, Information Management and Policy Framework

1. Context & Description

- **Documentation and Audit**

Proper knowledge, documentation of management of the dead and information, related to this facet of the disaster event, will be properly documented as follows:

SOPs for Management of the Dead will be prepared by the District level authorities, based on these National Guidelines, their past experience and best practices available.

The proper documentation will include compiling the Dead Body Inventory Record and Dead Body Identification Form which includes photographs of the deceased, giving age, sex, site at which the body was found, identification marks, clothes and other information which may prove useful for identification of a dead body.

Information Desks will be set up as a component of Incident Response Post, to provide information and to assist in identification of the bodies and completion of formalities, regarding release of identified bodies. The information, thus documented, will act as a robust tool to disseminate specific figures, be it the number of dead bodies or the specific number which have been identified further. The documentation will also help in providing information about the location of dead bodies which are stored and preserved, across various mortuaries and storage sites.

It will also include the role played by various agencies for the management of dead bodies. The documented data will serve as a useful source for auditing the relief work and services, rendered by various teams in the management of dead bodies. This will help in future planning audits after realizing the level of standards delivered and thus the gaps which need to be bridged to achieve the ultimate level of perfection.

Proper and authentic documentation will help in disseminating correct information to the concerned authorities, print and or electronic media, and the community at large, so as to prevent panic and spread of rumours.

- **Information Management**

Information management is the most sensitive and a highly important step, involving a multi-disciplinary, multi-stage and time consuming approach for effective coordination of all steps related to management of

the dead. Each sub-stage of physical management of the dead is intimately connected with the retrieval of various categories of information from relevant parties which can be utilized for involving the bereaved public for managing the dead. The collection, storage, analysis and dissemination of information will be undertaken under the supervision of a nodal officer or nominated agencies at district, state or central level through an effective communication network, while maintaining the chain of custody to avoid misplacement of information and the availability of evidence. This will help in proper and timely transfer of information to all the stake-holders along with reducing the stress experienced by affected communities, defusing rumours, and clarifying incorrect information. The standard practice of information management can be further subdivided into following essential steps:

- **Collection of Information**
  - Information is collected from the bereaved families and relatives, from first responders, and evidence or information retrieved from the dead body.
  - A database will be built regarding number of identified or unidentified dead bodies and missing persons.

- **Storage of Information**
  - All the gathered information, including valuable personal items and photographs, will be documented and computerized, so that the information is available in the public domain.

- **Analysis of Information**
  - This is the most crucial step of information management, partaken at the level of Incident Command Post (ICP). This entails comparison of information, collected from relatives and data availed from the dead bodies by various identification methods, including forensic techniques.
  - Computer software will be developed for management of information and final identification based on ante-mortem information, obtained through various forensic methods and DNA profiling to be matched with Post-mortem data.

- **Dissemination of Information**
  - The information will be necessity-based and provided by the nodal person to ensure prevention of panic or rumours in the community.
  - This highly sensitive step involves breaking of bad news to the bereaved families with utmost courtesies by a responsible official, along with releasing data of the missing and the dead to media, relief agencies and higher government authorities for statistics and future planning.
  - The responsibility of preparing an authentic report and releasing it will lie on the nodal person or authority. The information given to various agencies will be given on need-to-know basis and the right information to the right person.

- It also involves information about various support services, arranged by government and humanitarian organisations, for concerned families and communities, along with arrangements for the death certification.
- The District Authorities will have a Media Plan in which the Public Relations Officer (PRO) will liaise with the media and, collectively, shall issue information through print and electronic media, based on facts and figures.
- Information will be provided through the local or regional centres utilizing a wide range of media like internet, notice boards, newspapers, television, radio, etc. Efforts will be made to utilize the communication system which is being created for Disaster Management communication for the last mile connectivity, for retrieving information on management of the dead.
- Media will not be allowed direct access to photographs and individual records, till such time the authorities have consolidated all the information for proper identification.

- **Legislative and Regulatory Framework**
  - **Code of Criminal Procedure (CrPC)**

    A Legal Inquiry or an Inquest is required to ascertain the cause of all sudden, suspicious or unnatural deaths as per Code of Criminal Procedure Sections 174 and 176. However, in disaster situations, legal obligations of carrying out of a post-mortem in each and every case can be waived off after Inquest by the competent legal/judicial authorities having jurisdiction over the area, which is usually a Class I Magistrate, appointed by the State government. In addition, the Commissioner, Deputy Commissioner or Commissioner of Police in metropolitan cities, having jurisdiction over the area is also invested with these powers

  - **Legal provisions in the Disaster Management (DM) Act, 2005**

    Legal provisions in the DM Act, 2005, which concern the subject of Disposal of the Dead, are as follows:
    - Section 34 (g) of the DM Act, 2005, states that, for the purpose of assisting, protecting or providing relief to the community, in response to any threatening disaster situation or disaster, the Disaster Authority may make arrangements for disposal of the unclaimed dead bodies.
    - Section 53 of the DM Act, 2005, which makes theft of the belongings of, or misappropriation of the relief material for, disaster victims, punishable with imprisonment and fine.
    - Section 54 of the DM Act, 2005, states that, to curtail distress and anxiety caused by rumours in the community, penal provisions can be imposed to deal with such situations.

- **International Legal Principles**

  United Nations Educational, Scientific and Cultural Organization (UNESCO), in October 2003, finalized the text of the International Declaration on Human Genetic Data. As of year 2009, this Declaration and UNESCO's earlier Universal Declaration on the Human Genome and Human Rights (1997) were the only international declarations that addressed the issue of protecting genetic data. The 2003 Declaration emphasizes that any practice involving the collection, processing, use and storage of human genetic data should be consistent with both domestic legislation and international human rights law. The International Committee of the Red Cross (ICRC) has compiled a list of Legal Principles, relating to the protection of personal and genetic data, to be respected in all circumstances which have been developed, keeping international agreements and recommendations together with national legislations.

- **Institutional and Policy Framework**
  - **National Policy on Disaster Management**

    National Policy on Disaster Management (2009) at Para 5.2.9 stresses the need for creating adequate mortuary facilities in disaster prone areas. The Policy also accords due weightage to proper and speedy disposal of dead bodies and animal carcasses. Therefore, it is essential to lay down Guidelines for management of the dead, including animal carcasses in disaster situations.

  - **Disaster Management Act, 2005**

    It has been enshrined in Section 34 (g) of the Disaster Management (DM) Act, 2005, i.e. Chapter IV, pertaining to District Disaster Management Authority (DDMA), which states that "For the purpose of assisting, protecting or providing relief to the community, in response to any threatening disaster situation or disaster, the Disaster Authority may make arrangements for the disposal of the unclaimed dead bodies". The NDMA has decided to issue guidelines which will culminate into proper planning for management of the dead at all levels.

  - **Operational Framework**

    The responsibility of disposal of the unclaimed bodies during disaster lies with the District Magistrate or Collector or Deputy Commissioner. For proper disposal of the dead, participation of various stake-holders, such as Government agencies, forensic and legal experts, NGOs, in addition to the community, is imperative. Past experience during various disasters shows that some of the NGOs play an important role in assisting the district authorities. However, it is essential that adequate infrastructure, proper coordination, and trained manpower are available for proper disposal of the dead.

- **Role of International Organizations**

- **International Committee of the Red Cross (ICRC)**

  The ICRC, an impartial, neutral and independent humanitarian organisation is playing an important role in the training of first responders involved in management of the dead bodies after disasters. A number of training courses have been conducted by them internationally and in our country for National Disaster Response Force (NDRF). Due to its expertise, exhibited around the world, the ICRC has been approached to render advice on procedures and guidelines related to disaster management issues.

- **Interpol**

  The International Criminal Police Organization (INTERPOL) first published in the year 1984, the Disaster Victim Identification (DVI) Guide, which was revised in the year 1997, 2004 and now in the year 2014. Taking into account the experience that has been acquired since then and the development in the identification techniques, the third revised draft is under evaluation by all Interpol member countries. The Guide, designed to encourage the compatibility of procedures across international boundaries, gives sound practical advice on the major issue of victim identification, underlining the importance of planning and training.

- **Role of Various Agencies**
  - The Indian Red Cross Society (IRCS) and the International Committee of the Red Cross (ICRC) are some of the important agencies which play an important role in the management of dead bodies after disasters. Each district has the IRCS branch which plays a very crucial role in the response and rehabilitation activities, especially, in the health-related subjects. The ICRC is actively engaged in training of the first responders for management of the dead bodies. The IRCS, with the support of the ICRC, plays a significant role in helping to restore and maintain contact between family members, separated due to disasters, as well as in tracing persons who have disappeared.
  - There are a number of NGOs (National and International) and humanitarian organisations who play an important role in providing support to the Government authorities in management of the dead and psycho-social support to the bereaved families.
  - Local Authorities will identify such agencies in their planning process while preparing the District Disaster Management Plan.

2. Session objectives

- To understand importance of proper documentation and guideline for the same.
- Information Collection through various modes and Management of information.

- To understand Legislative and Regulatory Framework including Disaster Management Act, and Institutional and Policy Framework.
- Role of International organizations and other agencies in Dignified Management of the Dead.

3. Duration: 30 minutes

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

The session would be majorly theoretical providing details of Policy framework governing smooth functioning and operations of the Departments/ Institutions/ Organization working in the field of Disaster Management. Trainer should encourage trainees to interact and discuss about their understanding on the same.

6. Session Plan

Contents	Trainers' Note	Duration
Documentation and Audit	Trainer should brief about the importance of guidelines for proper documentation.	10 min
Information Management	To collect information from various sources and manage it in a systematic manner.	10 min
Legislative, Regulatory and Policy Framework	Provide information about Policy framework governing smooth functioning and operations of the Departments/ Institutions/ Organization working in the field of Disaster Management.	10 min
Role of International Organizations and Other Agencies	Describe the role of international organization and other agencies in respect with Dignified Management of the Dead.	10 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Learning Unit 4.5: Capacity Development and Coordination

1. Context & Description

- **A Cooperative Approach to Disaster Management**

There are many specialist agencies involved in a disaster response and it is therefore important to acknowledge and appreciate that each has a very important function and area of responsibility. DVI forms part of that emergency response and to ensure that DVI management effectively maximises the expertise, advice and available resources from such contributing agencies, effective structures, plans and liaison arrangements need to be created and implemented.

Due to uncertainty with regard to the extent of damage, disruption and lack of reliable information, there is often difficulty establishing an immediate emergency response following a disaster. However, coordination at all levels (local, regional, national and/or international) is imperative. Although disaster response plans often provide for corresponding coordination mechanisms, these may not exist immediately following a disaster. In any case, these plans are usually generic and are not ordinarily designed for the intricacies of a specific incident.

Effective coordination of a disaster response operation can only be assured if a properly functioning command and organisational structure is implemented. This is especially the case in DVI, where multiple agencies and organizations, with diverse and competing functions and responsibilities are required to work together.

- **Coordinating a DVI Response with Other Disciplines**

Once an initial overview and appraisal of the situation has been obtained from the site of the disaster, distinct operational units should be formed to carry out disaster response activities. These units should be clearly identifiable and assigned to specific duties and responsibilities.

During multi-national responses, early decisions on the procedures, language and structure of the response mission are critically important to enhance co-ordination. In terms of the specialist response agencies that are likely to attend the disaster site, they are initially confined to police, fire and ambulance. However, as additional resources are engaged, the following specialist services are likely to attend and operate in conjunction with DVI teams:

- Emergency response specialists (eg: Police, Fire, Ambulance).
- Rescue Units (eg: Search and Rescue).
- Investigation units (eg: Crime and Fire investigators).

- DVI Guide: INTERPOL 2014 (Proposed Amendments: March 2014) 10 of 127
- Forensic Services (eg: Scene and Post Blast examiners).
- Disaster Investigation Unit (eg: Air Safety).
- Intelligence Unit.
- Public Information Unit (eg: Media).

- **Preparedness and Capacity Development**

In times of disaster, a team of First Responders, skilled and non-skilled personnel from various backgrounds works together for management of the dead. It is essential to assess human resources, both for trained manpower and infrastructure, for optimisation of preparedness and capacity development. It will entail upgrading of education and training measures to increase the knowledge and capabilities of various functionaries. It is also essential to keep pace with the times and imbibe the evolving technologies which may help in positive identification of the bodies and their proper disposal. Hence, a multi-sectoral approach is required to be adopted, while involving various stake-holders including government bodies, NGOs, and private sector at all levels. There is a need to standardize and institutionalize various training modules for important components, related to management of the dead, along with developing and strengthening the community based teams which will help further in times of disaster. Various measures for Preparedness and Capacity Development are discussed below:

- **Establishment of Command, Control and Coordination Functions**

  The District Magistrate or Collector or Deputy Commissioner, the command and control authority at the operational level, has been designated as the Responsible Officer (RO) in the Incident Response System (IRS). The Responsible Officer may, however, delegate responsibilities to the Incident Commander (IC), who in turn, shall manage the disaster through Incident Response Teams (IRTs), duly supported by Planning and Logistics Sections of the IRS and Emergency Support Functionaries (ESF). The Incident Commander will appoint a trained officer of his team as the nodal person, designated as Dead Body Management Group-in-charge in the Response Branch of Operations Section. This Group-in-charge will be responsible for recovery, retrieval, identification, storage, preservation and final disposal of unidentified and unclaimed bodies. Technical and specialist teams will be requisitioned as on required basis. Likewise, the Sub-Divisional Officer (SDO), Tehsildar Mamlatdar , and Block Development Officer (BDO) will function as the IC at the Sub Division, Tehsil/ Taluka and Block level respectively.

- **Critical Infrastructure and Logistics**

  The existing infrastructure, required for management of the dead, is not only inadequate, but it also requires upgrading. Such specific areas relate to recovery and retrieval, storage and preservation facilities, application for various methodologies of identification and proper

disposal of the dead. Requirements will vary, depending on the type of incident (air crash, chemical release, earthquake or floods), the location (desert, jungle, mountainous, village or urban), the weather (monsoon, snowing, summer, or winter), on the type of personnel likely to be used (Armed Forces, Civil Defence, Police, NDRF or volunteers) and on the equipment already available to such personnel in the normal course of their duties. However, SDMAs and DDMAs, based on their Disaster Management Plans, should acquire equipment which suits the perceived needs of their particular areas of operation.

- **Capacity Development**

  Capacity development encompasses all round development of human resources and infrastructure for setting up various functional teams, focused on different components in management of the dead. It requires a diverse team of professionals (medical, forensic, legal and psychologists for psycho-social support of the survivors) and unskilled (workers and volunteers from the community). Capacity development also entails establishment of a network of laboratories for identification, training of manpower and equipment logistics. Provisions exist to incur expenditure from Calamity Relief Fund (CRF), not exceeding more than 10% of the State's Annual allocation for the Training to Specialist multi-disciplinary groups/teams of the State personnel, drawn from different cadres/services/personnel and for procurement of Equipment for the management of disasters, to be judiciously exploited. The India Disaster Resource Network (IDRN) portal linked to all stake-holders will display information about locations of various forensic laboratories with availability of Forensic experts and those associated with DNA fingerprinting. The various components needed for developing the capacities are as under:

  - **Human Resource Development**

    * Shortfall of professional and skilled manpower for management of the dead will be fulfilled over a stipulated period of time. The immediate deficiency of these human resources will be met by conducting short term training courses for various teams for the recovery of dead bodies, retrieval, storage, preservation and identification by various forensic methods, including DNA profiling. These teams will help the local authorities for disposal of the dead and psycho-social support to the surviving relatives. Various teams will be constituted from the available pool of different departments, First Responders and the local community.
    * A short standardized course will be developed for training the general duty medical officers for carrying out medico-legal post-mortem as there is an acute deficiency of forensic experts in our country. In areas where expertise in Forensic Medicine and Pathology is lacking, they will be pooled in from the nearest medical colleges

and other professional institutions.

- **Education and Training**
  - All professional and scientific institutions will impart education on the subject related to management of the dead, both at the undergraduate and the post-graduate levels.
  - Educational curriculum for laboratory technicians and other skilled personnel will include knowledge related to management of the dead, in their respective fields.
  - Refresher courses will also be carried out from time to time, for consolidating the knowledge and skills related to this subject.
  - Some of the academic institutions defined as nodal centres for training Medical Officers will impart short-term modules for training.
  - Specialized training courses will be conducted for professional embalmers and other forensic laboratory staff who are usually engaged in carrying out various tasks, related to management of the dead.
  - The embalmers will be further trained in facial reconstruction techniques. The laboratory staff will undergo refresher training on a regular basis.
  - It is important for District Authorities to know the legal and social requirements and the methods for proper disposal of the dead. Training institutions and other district institutions will train the trainers from district administration and other stake-holders for proper disposal of the dead, based on standardized training modules. For this, standardized workshops will be conducted by all concerned. These modules will also include all administrative aspects related to management of the dead.
  - Short courses on the management of dead bodies will be organized at various levels for Medical First
  - Responders, belonging to the Police, Fire Services, Civil Defence, NDRF and other paramilitary forces.
  - Body handlers will be sensitized with the knowledge on the subject, related to ethnic, cultural and religious issues, prevailing in the community.
  - Mock drills, conducted for various kinds of disasters, will also focus on all activities related to management of the dead.
  - Specialized training modules for management of CBRN contaminated bodies need to be evolved and implemented.

- **Community Preparedness**

Community, usually being the first responder, plays an important role during disasters,

and therefore, it is important to organize training for an effective community based disaster response. The community first responders will also be sensitized on issues related to customs, cultures, social and sensitive religious issues which need to be respected, while managing the dead.

- Community teams, comprising of religious leaders, teachers, elderly people, elected representatives and local NGOs will be constituted for the following roles:
  - To sensitize the community to various issues related to management of the dead;
  - To help the district administration in identification of the dead and in final rituals, as per prevailing customs and religious sensitivities;
  - To coordinate with and help district authorities to control the crowd and to prevent unauthorized persons from entering the prohibited area;
  - To disseminate correct information, so as to prevent the spread of rumour and panic;
  - To generate awareness of the fact that, generally, there is no public health threat from dead bodies, as they are not a source of disease or infection;
  - To make provision of short and long term psycho-social support to the grieving relatives.

- Community teams will also be constituted by identification of task forces from Civil Defence (CD), Home Guards (HGs), National Cadet Corps (NCC), National Service Scheme (NSS), Nehru Yuva Kendra Sangathan (NYKS), Indian Red Cross Society (IRCS), State Disaster Response Force (SDRF), Aapda Mitra, NGOs and other voluntary organizations.

- Periodic courses will be run to train community teams on body handling, transportation, soft skills, identification of dead bodies, assistance in documentation and other prevailing best practices, related to storage and preservation of the dead. The Community first responders will thus prove a great help to the district administration. Nonetheless, the authorities shall remain the main responsible actor at all times.

- NDRF first responders, who have been trained in management of the dead, will help district administration and community teams in conducting such courses. Services of the Indian Red Cross Society, the ICRC and other organizations may be utilized for community preparedness.

- Community teams will also be associated in all the mock drills, conducted by various disaster management authorities, at all levels.
- State/Union Territory Website portal will display the information about:
  - The correct procedure of management of the dead.
  - Information, related to the dead bodies.

2. Session objectives

- To understand that Dignified Management of the Dead is multi-disciplinary field and require a cooperative approach from various Govt. Departments/ Organizations/ Medical Colleges/ Institutions.
- To be aware and empowered with the knowledge of management of dead in disaster aftermath.
- To recognize the capacity building areas in terms of infrastructure, logistics, human resource, education, community preparedness, and sensitize others in their capacity and make the best use of available resources to work for Dignified Management of the Dead.

3. Duration: 45 minutes

4. Methodology

- PowerPoint Presentation
- Lecture
- Discussion

5. Trainers' Note

This session presents that Dignified Management of the Dead is multi-disciplinary field requiring support and coordination from various departments/ organizations and Institutions. Towards the concluding session trainer should emphasis on a more cooperative approach on the subject. And swifts towards capacity building needs in the areas of infrastructure, logistics, human resource, and community preparedness to meet the challenging and ambitious programme of Dignified Management of the Dead and to self-empower with the knowledge gained thus far on the subject.

6. Session Plan

Contents	Trainers' Note	Duration
A Cooperative Approach to Disaster Management	Describe to trainees the multi-disciplinary aspects of Dignified Management of the Dead and the need for a cooperative approach towards the subject	10 min

Establishment of Command, Control and Coordination	Provide the hierarchy of the officials responsible for Command and Control Coordination during the scene of incidence.	10 min
Preparedness and Capacity Development	Describes how to be better prepared for the scene of incidence, recognize the gaps and find capacity building needs in terms of infrastructure, logistics, human resource, education and community preparedness, and work efficiently toward the programme utilizing the best of available resources.	25 min

7. Training/ Performance Aids

- E-Copy of presentation.
- Flipchart/ markers.

Post-Training Evaluation & Conclusion

Context & Description

At the end of the training, evaluation of the knowledge, skill and attitude of the participants would determine their exit behavior. The level of increase of knowledge and skill from the inputs given through the training has to be evaluated. Feedback from trainees regarding the training and related facilities would help in modifying future modules to make it more effective.

Objectives

- To assess the exit behavior of the participants at the end of the course.
- To evaluate the knowledge and skills gained during the course.
- To carry out formal internal evaluation

Duration: 75 minutes

Methodology

- Any one of the following methods can be followed, according to the trainers' discretion:
- Formal structured questionnaire – Each trainee is asked to fill up a structured questionnaire that evaluates their knowledge gained through the course.
- Quiz on the course – Divide into groups and give points for correct answers. The group that wins gets a small prize.
- Informal discussion– The trainees divide into groups and identify the key learning points of the training and write them on a flip chart. After they finish, they move on to the next flip-chart and add or comment on the points raised by other groups. At the end of the exercise, all the points are collated by the trainer and discussed.

Trainers' Note and Session Plan

The session should be covered in two parts; evaluation of knowledge and exit behaviour and feedback of the training. The first 30 minutes of the training should be devoted to evaluation of knowledge gained during the course of the programme through any of the methods described above. The last 30 minutes should be devoted to taking feedback from the trainees and their suggestions for more effective implementation of training in future. This can be done either through a structured questionnaire or through discussion wherein the training team notes down the suggestions of participants.

Training/ Performance Aids

Depending on the methodology chosen:

- Copies of pre-decided questionnaires or
- Flip charts, Markers, Tag-boards to pin the handouts

This successfully concludes the "Training Programme on Dignified Management of the Dead".

A formal closing ceremony can be organized according to the protocol/ tradition followed by the host organization after the conclusion of the course.

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