

2013



Assam State Disaster Management Authority
& Doctors For You

Public Health in Emergencies

Course Book



To provide medical relief, sustainable healthcare services, capacity building and risk reduction activities for vulnerable communities in both crises and non crises situations.

DOCTORS FOR YOU (DFY), a humanitarian organization based in India, formed by doctors, medical students and like minded people. The thrust of DFY's work is to provide medical relief, sustainable healthcare services, capacity building and risk reduction activities during crisis and non crisis situations. The organization has vast experience of working in disasters which include Mumbai floods 2005, Bihar floods 2008, Andhra Pradesh-Karnataka floods 2009, Orissa floods 2011 and Assam ethnic violence 2012. It has received various recognitions including the prestigious British Medical Journal Award under the best team in crisis zone category for its work during the Bihar Floods.

For more details on DFY please do visit www.doctorsforyou.org

Or email at info@doctorsforyou.org

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1. Basic Disaster Terminologies

Learning Objectives:

- Overview of disasters.
- To understand the different phases of disaster management cycle.
- To understand the type of disaster and resulting public health emergencies.

Introduction:

Disaster is a sudden, unpredictable, unfamiliar, calamitous event, bringing great damage, urgency, uncertainty, threat, loss, and destruction and devastation to life and property. The damage caused by disasters varies with the geographical location, climate and the type of the earth surface, degree of vulnerability.

The Indian National Disaster Management Act, 2005 defines disaster management as a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for:

- a) Prevention of danger or threat of any disaster;
- b) Mitigation or reduction of risk of any disaster or its severity or consequences;
- c) Capacity building;
- d) Preparedness to deal with any disaster;
- e) Prompt response to any threatening disaster situation or disaster;
- f) Assessing severity or magnitude of effects of any disaster, evacuation, rescue and relief;
- g) Rehabilitation and Reconstruction

A disaster is followed by following characteristics: large number of dead, injured and missing, large number of unaccompanied children, loss of normal source of food and potable water, loss of shelter and household necessities, loss of land tenure, loss of means of livelihood, overcrowding and communicable diseases, destruction of environment Communication and logistics problems, insecurity and tension.

Table- Type of Disaster

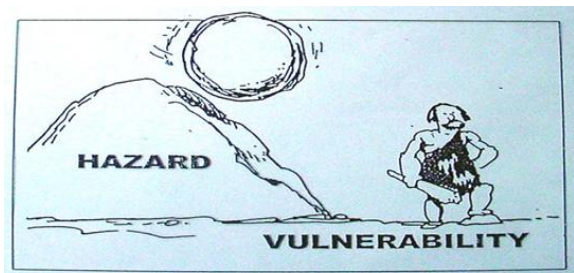
No	Category of Hazard	Type of Disasters
1	Geological	Earthquake Tsunami Landslide
2	Hydro-Metrological	Flood Flash Flood Strom Cyclone Drought
3	Biological	Outbreak Epidemic Pandemic Plant & Animal disease
4	Technological	Transportation Industrial

5	Environmental	Bush, Forest Fire
6	Political, Social, Extremism	Conflict Terrorism

Disaster Terminologies

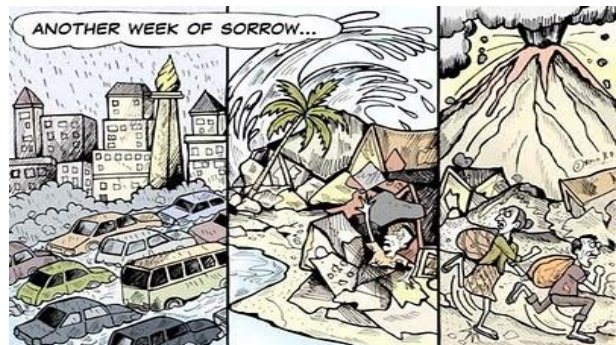
Hazard: An event or occurrence that has the potential for causing injuries to life and damaging property & the environment.

Vulnerability: A condition or sets of Conditions that reduces people's ability to prepare for withstand or respond to a hazard.



Capacity: Conditions or abilities which increase a community's ability to deal with hazards

Disaster: A serious disruption of the functioning of a community causing widespread human, material or environmental losses which exceed the ability of the affected community to cope using its own resources. During disasters **external help or resources are required** by the community.



Emergency: Risk that **can be managed using existing resources** and support in a given condition and situation.

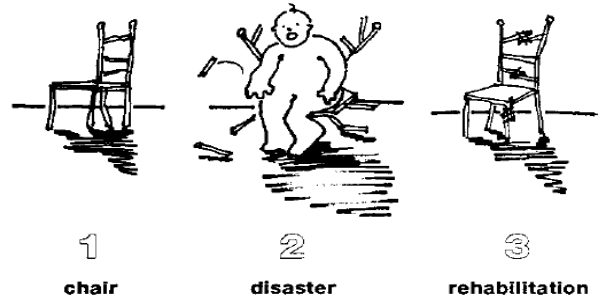


Response: Actions taken immediately following the impact of a disaster when exceptional measures are required to meet the basic needs of the survivors

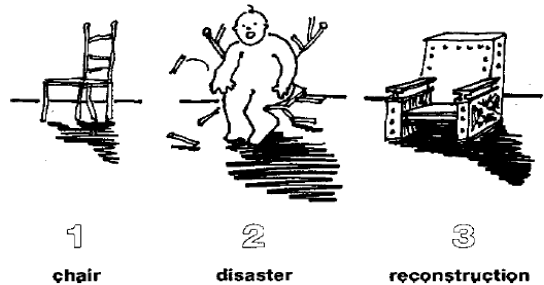


Rehabilitation: Actions taken in the aftermath of a disaster to:

- Assist victims to repair their dwellings;
- Re-establish essential services;
- Revive key economic and social activities



Reconstruction: Permanent measures to repair or replace damaged dwellings and infrastructure and to set the economy back on course

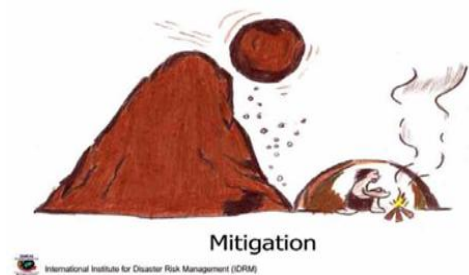


Development: Sustained efforts intended to improve or maintain the social and economic well-being of a community

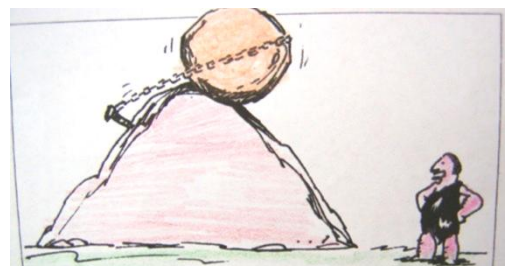
Disaster Preparedness: Ability to predict, respond to and cope with the effect of a disaster



Mitigation: Measures taken in advance of a disaster aimed at reducing its impact on society and the environment

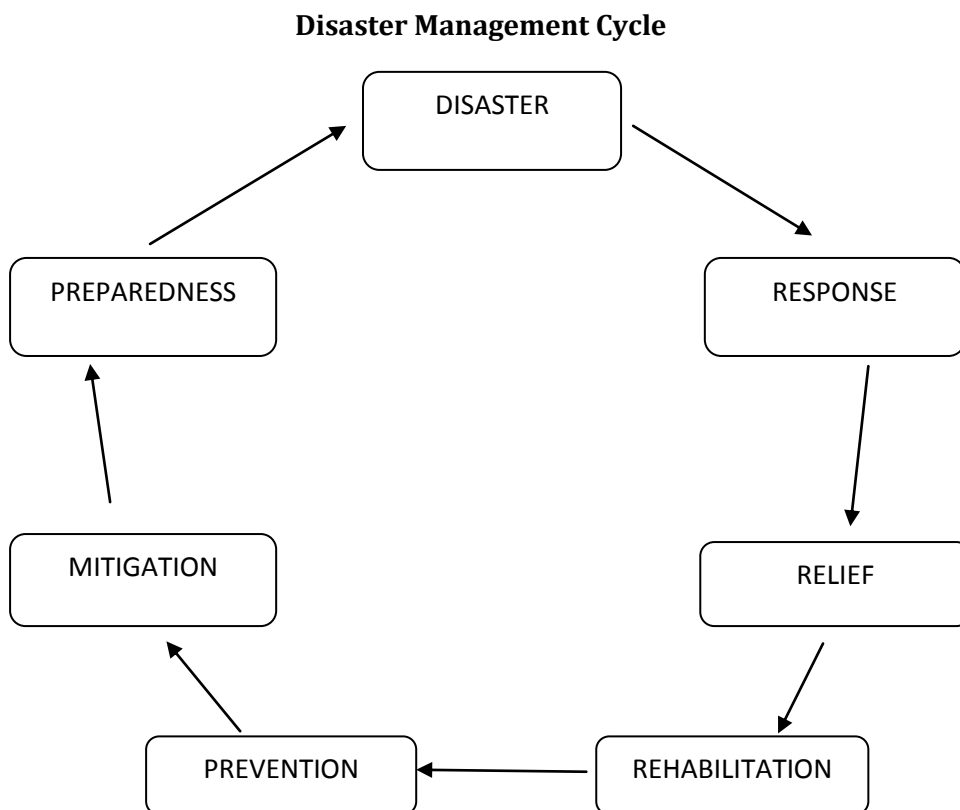
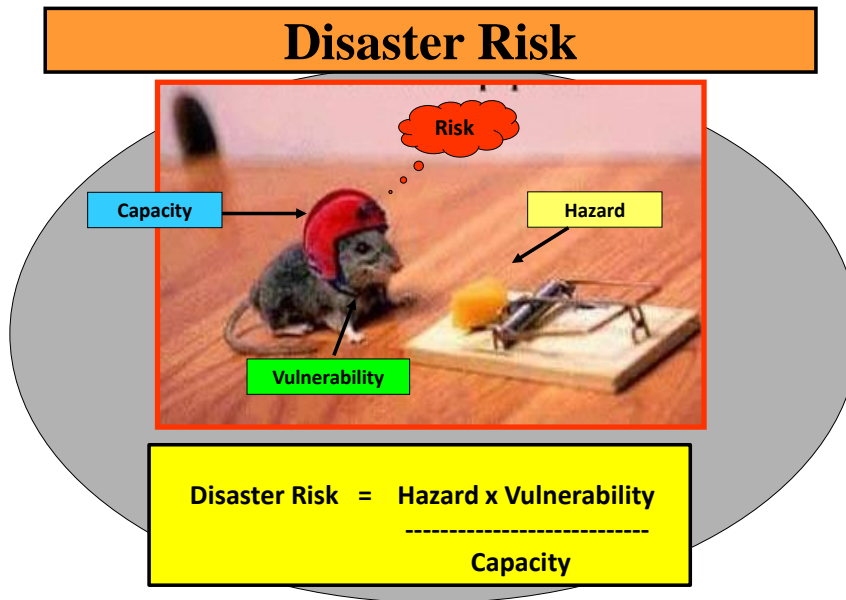


Prevention: Activities designed to provide permanent protection from disasters.



Risk: The probability that negative consequences may arise when hazards interact with vulnerable areas, people, property and environment

Risk=Hazard X Vulnerability/Capacity



2. Water Sanitation and Hygiene Promotion (WASH) in Emergencies

Learning Objectives:

- To know its importance
- To know how it saves life
- To know how it reduces faecal-oral transmission of diseases

Introduction:

What is Wash?

Water, Sanitation and Hygiene (WASH) plays significant role in preventing water related communicable diseases during normal course of development as well as during emergency. The WASH sector deals with safe water supply, safe sanitation services and safe hygiene behaviour. People's participation is the key for any successful WASH intervention and PRIs can play significant role in planning and implementing such interventions during normal course of development as well as during emergency.

The main objective of water supply and sanitation programmes are to reduce the transmission of faecal-oral diseases and exposure to disease-bearing vectors through the promotion of good hygiene practices, the provision of safe drinking water and the reduction of environmental health risks and by establishing the conditions that allow people to live with good health, dignity, comfort and security.

Barriers to break the faecal-oral chain

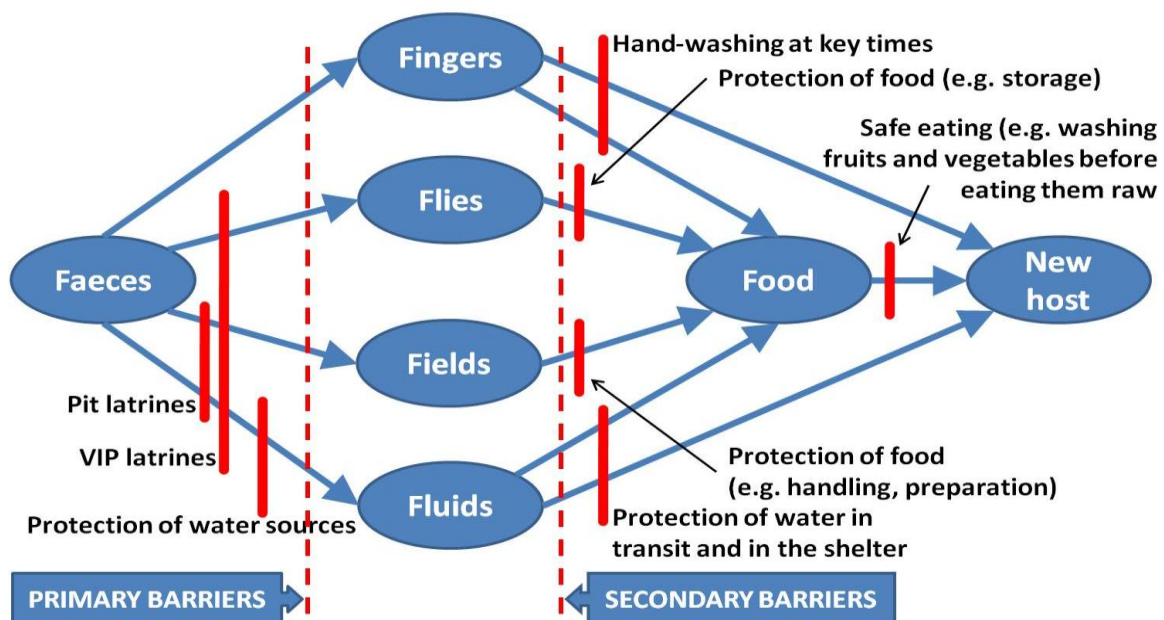
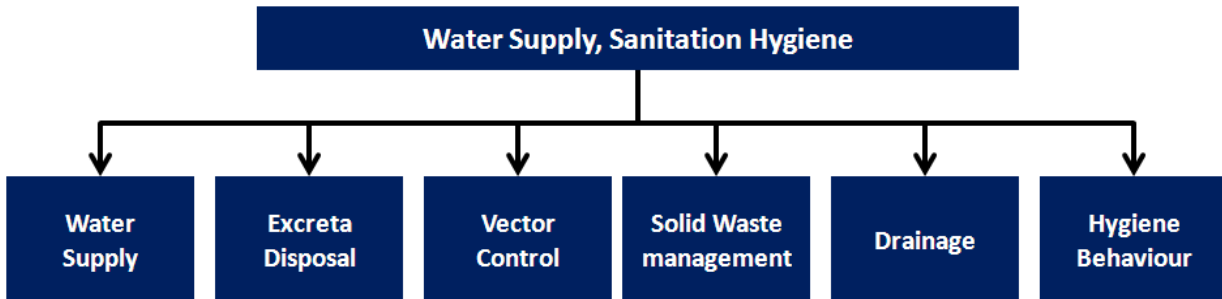


Figure: WASH programme comprises of six elements as shown in the illustration

The Hygiene Improvement Framework

A comprehensive approach to preventing diarrhoea must address the three key elements of any successful program to fight disease: access to the necessary hardware or technologies, promoting healthy behaviour, and support for long-term sustainability.



The Framework has three core components:

- Improving Access to Water and Sanitation “Hardware”
- Promoting Hygiene
- Strengthening the Enabling Environment.

These components are designed to encourage key household behaviors that reduce the incidence of childhood diarrhea, namely: safe disposal of feces, washing hands correctly at the right times, and storing and using safe water for drinking and cooking.

Three components of the Hygiene Improvement Framework are as follows:

Increasing Access to Hardware

The first part of the Framework, the “hardware” component, contains three elements:

- Water Supply Systems
- Improved Sanitation Facilities
- Household Technologies and Materials

Promoting Hygiene

The second part of the Framework consists of five basic strategies that can be applied alone or in combination depending on the nature of the program. The primary target audiences are caretakers of young children and children themselves:

- Communication
- Social mobilization
- Social marketing
- Community participation
- Advocacy.

Strengthening the Enabling Environment

Supporting the enabling environment typically takes the form of one or more of these activities:

- Policy improvement
- Institutional strengthening
- Community involvement
- Financing and cost-recovery activities
- Cross-sector and public-private partnerships

Hygiene Promotion in Emergencies:

This fact sheet outlines some of the key activities in dealing with hygiene promotion in post-disaster emergencies.

What is hygiene promotion?

The goal of hygiene promotion is to help people understand and develop good hygiene practices to prevent disease and promote positive attitudes towards good health practices.

Focus of hygiene promotion in emergencies

The aim of carrying out hygiene promotion in emergencies is to:

- Lower high-risk hygiene behaviour
- Sensitize the target population to the appropriate use and maintenance of facilities.

Hygiene promotion is not simply a matter of providing information. It is more a dialogue with communities about hygiene and related health problems, to encourage improved hygiene practices.

Community meeting in carrying out hygiene promotion includes the following activities:

1. Evaluate current hygiene practices.
2. Plan what is needed to promote.
3. Implementation of plan.
4. Monitoring and evaluation of plan.

Evaluate whether current hygiene practices are good and safe

The main risks are likely to be:

1. Excreta disposal.
2. Use and maintenance of toilets.
3. Lack of hand washing with soap or alternative.
4. Unhygienic collection and storage of water.
5. Unhygienic preparation and storage of food.

Planning which good hygiene practices to promote

Target a small number of practices for each user group: sustained and repeated messages covering a small number of practices are likely to have greater impact than a large amount of

promotional messages centred on several practices. The key is to identify the most harmful practices in each user group and focussing on these. Implement a health promotion programme that meets community needs and is understandable by everyone.

Implementation of plan

Target specific audiences- Direct messages at groups responsible for carrying out the activity.

Messages about diarrhoea in children should be directed at those involved in childcare- It is desirable that all gender groups (women, men, children and those with disabilities), should receive equal attention.

Identify motives for behavioural change- It is important to identify and understand cultural norms and use this knowledge as a basis for articulating motives for change.

Certain behaviours may be seen to confer status within the community and be adopted for this reason.

Hygiene messages need to be positive- Hygiene messages should be presented in a positive light making use of humour wherever possible.

Identify appropriate communication channels- We need to know how different target audiences prefer to receive information and any cultural aspects to this.

Monitor and evaluate the programme to see whether it is meeting targets- There is a need to review hygiene promotion programmes regularly. Ideally, members of the community should be involved to ensure that issues important to them are covered. The review should evaluate members' feelings about the hygiene message and whether they need more information.

Good practices that involve use and maintenance of water and sanitation facilities-

The purpose of water and sanitation facilities is to enable hygiene improvement in order to reduce the public health risks. If these facilities are not properly used or maintained then hygiene improvement is not possible. Some of the good practices that can reduce the disaster risks are:

- Use of latrines
- Avoiding open defecation
- Safe fetching of water (without making hand contact with the inside of the containers)
- Fetching of water from protected water source
- Avoiding water from contaminated sources such as surface water like streams and ponds for the purpose of drinking
- Safe storage of drinking water; store in a container with a lid
- Use of ladle for drawing water and not dipping fingers and hands into the stored water
- Regular maintenance of water abstraction points and sources
- Avoiding use of water at the abstraction point or the source
- Proper drainage of waste water at the household level and community level
- Proper disposal of household and community level garbage and solid waste

Good practices based on structural measures for DRR

Structural measures for DRR need to be designed based on the local context and integrated with the development plan of the village. These measures can be in the form of new installation, repair of existing facilities and maintenance. Some examples:

- Fencing or protecting existing water sources
- Construction of concrete apron (platform) to protect the ground water
- Repairing the cracks in the platform
- Construction of drain at the water abstraction point (hand pump, water tap etc)
- Raising the hand pump corresponding to the high flood level
- Construction of raised latrines
- Construction of incinerators for safe disposal of menstrual cloth
- Installation of garbage bins at specific locations
- Construction of drainage to avoid flooding and also deter vectors like flies and mosquitoes

Why test Water?

Water is tested for the following reasons:

- For choosing water sources. Tests are done to see if the water can be drunk without treatment, or to determine what treatment methods are needed.
- For monitoring water quality once supplies are established; monitoring the quality of untreated water and monitoring the performance of the treatment system.
- For monitoring water quality at the point of consumption, to see whether it has become contaminated during collection and storage.

3. Prevention and Control of Outbreaks

Learning Objectives:

- Basic definitions of outbreak.
- Understand the risk factors for outbreaks in emergency situations
- Basic steps in out-break control

Introduction:

An epidemic is the occurrence of a number of cases of a disease that is unusually large or unexpected for a given place and time. Outbreaks and epidemics refer to the same thing (although lay persons often regard outbreaks as small localized epidemics). Outbreaks can spread very rapidly in emergency situations and lead to high morbidity and mortality rates. The aim is to detect an outbreak as early as possible so as to control the spread of disease among the population at risk.

Major diseases with epidemic potential in emergency situations:

- Cholera
- Meningococcal disease
- Measles
- Shigellosis

In certain geographical areas, the following diseases may have to be included:

- Malaria
- Louse-borne typhus
- Yellow fever
- Trypanosomiasis
- Visceral or cutaneous leishmaniasis
- Viral haemorrhagic fevers
- Relapsing fever
- Typhoid
- Hepatitis A and E

Disease targeted by preventive measures:

Preventive measure	Impact on spread of
Site planning	diarrhoeal diseases, acute respiratory infections
Clean water	diarrhoeal diseases, typhoid fever, guinea worm
Good sanitation	diarrhoeal diseases, vector-borne diseases, scabies

Adequate nutrition	tuberculosis, measles, acute respiratory infections
Vaccination	measles, meningitis, yellow fever, Japanese encephalitis, diphtheria
Vector control	malaria, plague, dengue, Japanese encephalitis, yellow fever, other viral haemorrhagic fevers
Personal protection (insecticide-treated nets)	malaria, <i>Kala Azar</i>
Personal hygiene	louse-borne diseases: typhus, relapsing fever, trench fever
Health education	sexually transmitted infections, HIV/AIDS, diarrhoeal diseases
Case management	cholera, shigellosis, tuberculosis, acute respiratory infections, malaria, dengue haemorrhagic fever, meningitis, typhus, relapsing fever

Risk factors for outbreaks in emergency situations:

Acute respiratory infections	<p>Inadequate shelter with poor ventilation</p> <p>Indoor cooking, poor health care services</p> <p>Malnutrition, overcrowding</p> <p>Age group under 1 year old</p> <p>Large numbers of elderly</p> <p>Cold weather</p>
Diarrhoeal diseases	<p>Overcrowding</p> <p>Inadequate quantity and/or quality of water</p> <p>Poor personal hygiene</p> <p>Poor washing facilities</p> <p>Poor sanitation</p> <p>Insufficient soap</p> <p>Inadequate cooking facilities</p>
Malaria	<p>Movement of people from endemic into malaria-free zones or from areas of low endemicity to hyperendemic areas</p> <p>Interruption of vector control measures</p> <p>Increased population density promoting mosquito bites</p>

	Stagnant water Inadequate health care services Flooding Changes in weather patterns
Measles	Measles vaccination coverage rates below 80% in country of origin, overcrowding, population displacement
Meningococcal meningitis	Meningitis belt (although the pattern is changing to include eastern, southern and central Africa) Dry season Dust storms Overcrowding High rates of acute respiratory infections
Tuberculosis	High HIV seroprevalence rates Overcrowding Malnutrition
Viral haemorrhagic fever	Contact with ape carcasses (filoviruses) Contact with wild-caught rodents (Lassa fever) Tick-infested areas (Crimea-Congo haemorrhagic fever) Poor infection control in health-care facilities
Louse-borne typhus	Highland areas Poor washing facilities Numerous body lice Endemic typhus/cases of Brill-Zinsser disease

Steps in the management of a communicable disease outbreak:

1. PREPARATION

- Health coordination meetings.
- Outbreak response plan for each disease: resources, skills and activities required.
- Stockpiles: sampling kits, appropriate antimicrobial, intravenous fluids, vaccines
- Contingency plans for isolation wards in hospitals
- Laboratory support.

2. DETECTION

The surveillance system must have an early warning mechanism for epidemic-prone diseases. If cases of any of the following diseases/syndromes are diagnosed (i.e. alert threshold is passed),

inform the health coordinator as soon as possible; the health coordinator should inform the Ministry of Health and WHO:

- acute watery diarrhoea in over 5-year olds,
- bloody diarrhoea,
- suspected cholera,
- measles,
- meningitis,
- acute haemorrhagic fever syndrome,
- acute jaundice syndrome,
- suspected poliomyelitis (acute flaccid paralysis),
- a cluster of deaths of unknown origin,

(diseases/syndromes in list to be modified according to country profile).

Take clinical specimen (e.g. stool, serum, cerebrospinal fluid) for laboratory confirmation. Include case in weekly health report.

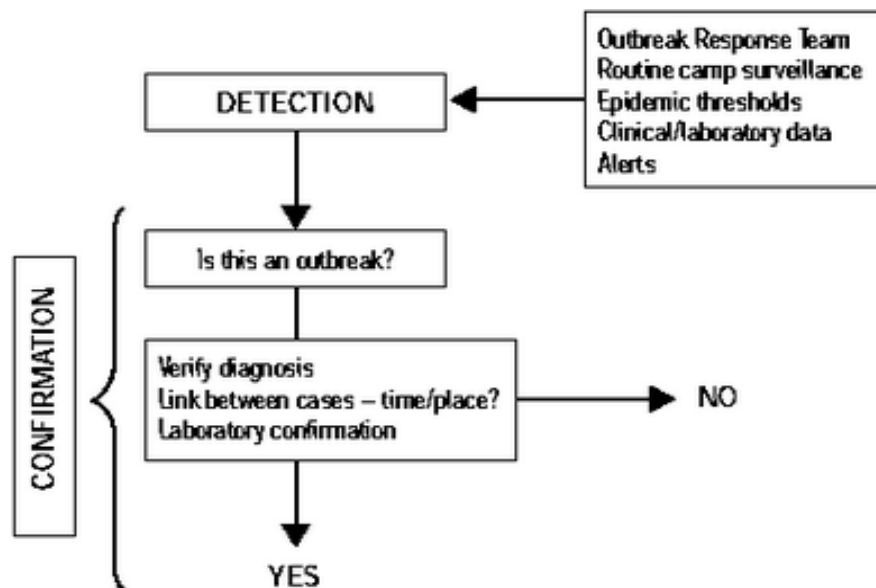


Fig: Detection of an Outbreak

3. RESPONSE

- Confirmation

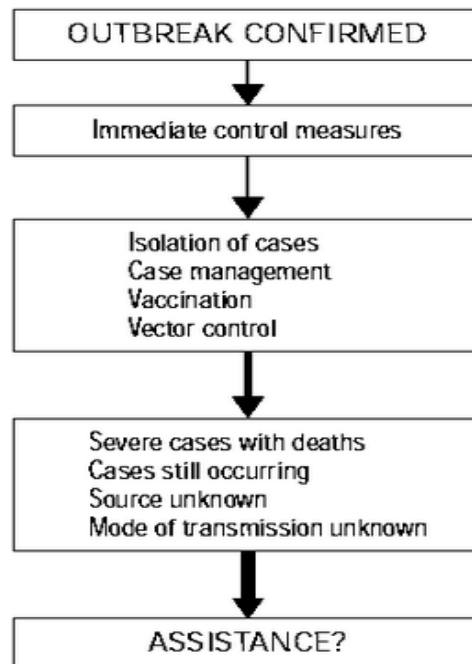


Fig: Confirmation of an Outbreak

- Investigation
- Control

4. EVALUATION

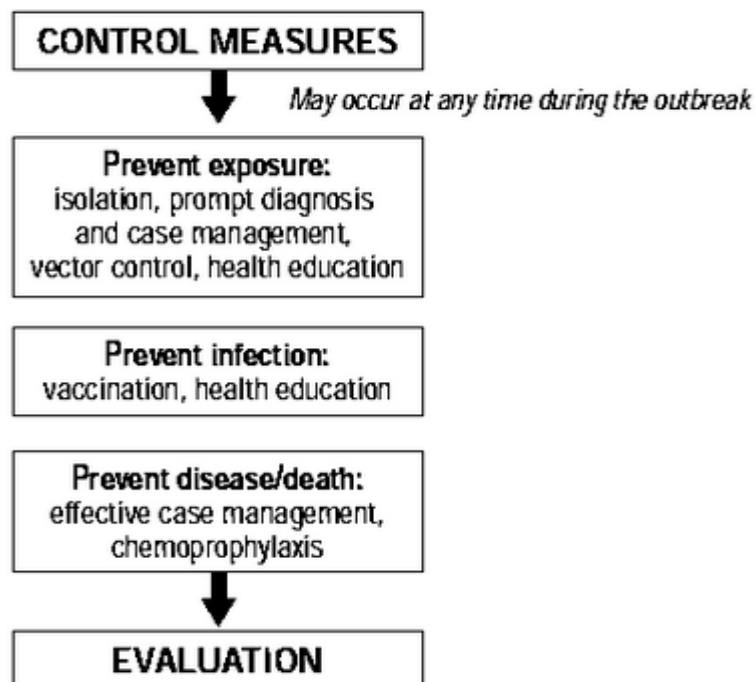


Fig: Evaluation of an Outbreak

4. Nutrition in Emergencies

Learning Objectives:

- Recognising a food and nutrition emergency.
- Targeting and equitably distributing an adequate quality and quantity of food aid.
- Assessment of acute and severe malnutrition.
- Vitamin A supplementation during emergencies.

Introduction:

Access to food and adequate nutrition is critical to survival in an emergency situation. Malnutrition can be the most serious public health problem in an emergency. A food emergency exists if depleted food supplies are not replaced in the short term by food aid. A **nutrition emergency** exists when there is the risk of or an actual rise in mortality due to acute malnutrition.

Worldwide, almost **one billion people are undernourished**:

- 98% live in developing countries.
- 60% are women.

Of 556 million children aged <5 years in developing countries, 19 million are severely wasted; 112 million are underweight; 178 million are stunted.

Disasters exacerbate malnutrition:

- Over 35% of food crises are attributable to human causes, notably conflict.
- Drought is the commonest cause of food short-age in the world. Climate change exacerbates existing adversities.

Food and nutrition insecurity result from the following:

- A natural disaster due to climatic or other environmental conditions such as drought, flooding, major storms or insect infestation such as locusts; global warming might also contribute to an increase in droughts and floods;
- Armed conflict, war or political upheaval;
- Disruption or collapse of the food distribution network and/or the marketing system of a population. This might be the result of an environmental, political or economic crisis;
- Lack or disruption of the provision of emergency food distribution to a population experiencing a food shortage;
- HIV/AIDS;
- Extreme poverty of marginalised populations e.g. the elderly and urban slum populations who have poor access to water, sanitation, health care and livelihoods.

Vulnerable populations

- In a disaster, everybody can be at risk of malnutrition, but some groups are particularly vulnerable:
 - Infants: Suboptimal breastfeeding is estimated to be responsible for 1.4 million child deaths.

- Young children: rapid growth and development requires an adequate diet to achieve full physical and mental potential.
- Pregnant and lactating women: nutrition impacts on both maternal and child health e.g. maternal folate supplements decrease the risk of infant neural tube defects.
- Older people or those with HIV, TB or other underlying chronic conditions.

Mortality Rates:

Malnutrition, even being mildly underweight, is associated with increased under-five mortality. The biggest killer in emergencies is child malnutrition that is either recorded as a direct or as an underlying cause of death. In a nutrition emergency where the prevalence of **acute malnutrition** among young children might be 10% to 15% and of **severe malnutrition**, 2% to 3%, mortality rates can be very high. Elevated **crude mortality** and **under-five mortality** rates are benchmarks for and definitions of a nutrition emergency.

Benchmarks for mortality rates		
Crude mortality rate (deaths/10,000/day)	Under-five mortality rate (deaths/10,000/day)	Health and nutrition situation
0.5	1	Normal
<1	<2	Elevated
1-2	2-4	Serious
>2	>4	Very Serious
>5	>10	Catastrophic

Nutritional Surveillance Benchmarks:

Nutrition situation	Recommended actions
Acute malnutrition rate >15% or 10-14% with aggravating factors*	Emergency food aid: general food ration Blanket supplementary feeding Therapeutic feeding of severely malnourished individuals
Acute malnutrition rate 10-14% or 5-9% with aggravating factors*	No general rations Targeted supplementary feeding Therapeutic feeding of severely malnourished
Acute malnutrition rate <10% with no aggravating factors	No emergency food and nutrition intervention

**Aggravating factors include the following -*

- Household food insecurity;
- High prevalence of HIV/AIDS;
- Crude mortality rate greater than 1/10,000/day;
- Under-five crude mortality rate greater than 2/10,000/day;
- Epidemic of measles or whooping cough (pertussis);
- High prevalence of respiratory or diarrhoeal diseases;
- High prevalence of pre-existing malnutrition, e.g., stunting.

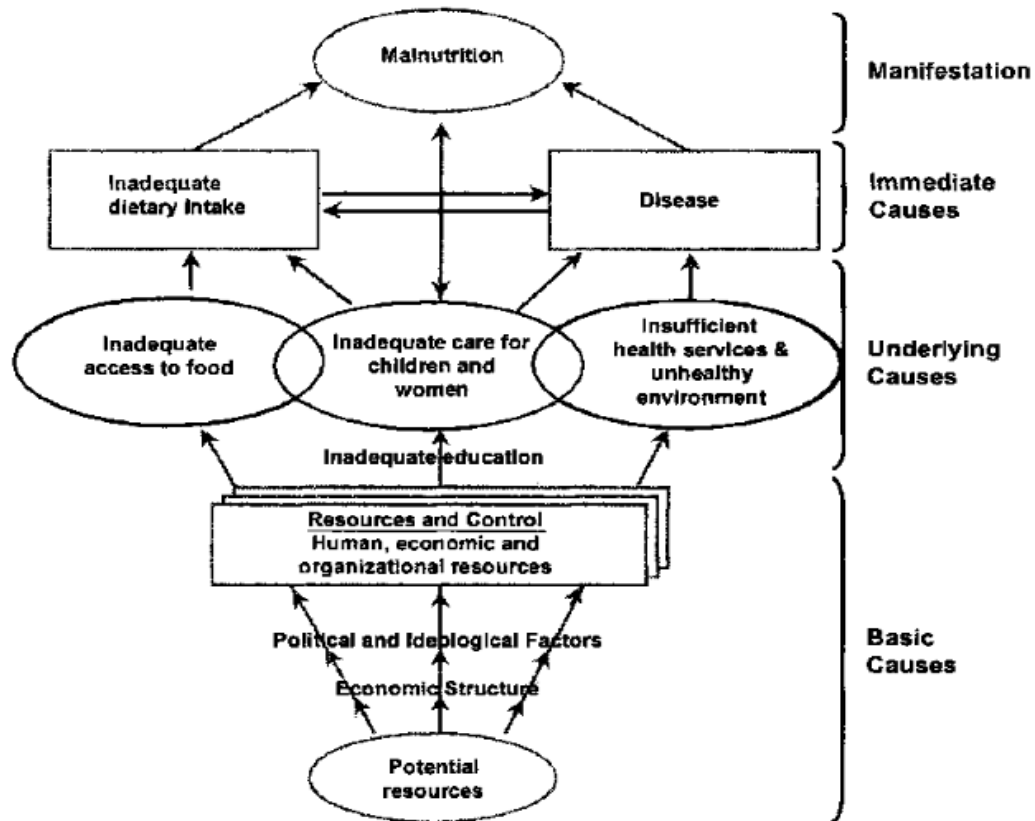


Fig: UNICEF Conceptual framework of the cause's determinants of malnutrition

Malnutrition, kwashiorkor and marasmus:

The consequences of inadequate dietary intake and disease are particularly pronounced during periods of rapid growth under the age of five. Among children, malnutrition is manifested by underweight and growth failure: malnourished children are shorter or stunted and thinner or wasted than they should be for their age. Among adults, acute malnutrition is manifested by underweight.

Child underweight (measured by low weight-for-age) is a combination of stunting (measured by low height-for-age) and wasting (measured by low weight-for-height). Stunting is an indicator of chronic malnutrition. Underweight and wasting are indicators of acute malnutrition.

Marasmus or severe wasting is one of two forms of severe acute malnutrition. Marasmus is defined as a weight-for-height of less than three standard deviations of the reference population median weight-for-height. **Kwashiorkor** is the second form of severe acute malnutrition. It is defined by the presence of bilateral oedema of the both feet. Children who have kwashiorkor may not appear underweight *initially because of their oedema*.

Signs of severe and acute malnutrition

Type of severe acute malnutrition	Clinical signs
Marasmus	Extreme wasting, little fat or muscle, child's skeleton clearly visible, lack of appetite in complicated cases.
Kwashiorkor	Oedema of both feet; thin, sparse and pale hair that

	falls out easily, dry scaly skin especially on the arms and legs, a puffy or moon face, apathy.
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Any child who has kwashiorkor or marasmus should be assumed to be severely anaemic and be treated for severe anaemia in phase 2 when the child regains his appetite and is gaining weight.

Age group	Daily dose	Duration
<2 years	25 mg of iron + 100-400 ug of folate	3 months
2 -12 years	60 mg of iron + 400 ug of folate	3 months
Adolescents and adults, including pregnant women	120 mg of iron + 100-400 ug of folate	3 months

Mid-Upper-Arm Circumference (MUAC), which measures fat and muscle in the mid-upper arm, is sometimes used for rapid assessments and screening for therapeutic feeding of individuals. MUAC of the left arm should be measured. For children, a cut-off value of <12.5 cm should be used for children under five to indicate acute malnutrition and referral for further evaluation. For pregnant and breastfeeding mothers, the cut-off value is 22 cm.

Supplementary Feeding

Supplementary feeding is not a substitute for inadequate general rations and should always be considered in the context of the general food ration. Supplementary feeding programmes include the following:

Blanket supplementary feeding is a stopgap measure to prevent the deterioration of high-risk groups' nutritional status such as children under five, pregnant women, lactating women, HIV/AIDS affected families and the elderly. In emergency situations, the World Food Programme, UNHCR and implementing agencies work to ensure the timely provision of an adequate general food ration. Nevertheless, supplementary food might be needed for a certain period for subpopulations who are either already malnourished or at high risk of becoming malnourished. Blanket supplementary feeding is to be considered for instance at the beginning of a food emergency when the food pipeline for the general food ration is still inadequate;

Targeted supplementary feeding is for acutely malnourished children from six months to five years according to set cut-off criteria (Mid-Upper-Arm Circumference < 12.5 cm or weight of 70% to 79% weight-for-height); for pregnant women in the second or third trimester of pregnancy; lactating women up to six months postpartum; adults who are severely malnourished based on Body Mass Index (BMI <16); and the **elderly**. A specific group giving major concern is families affected by HIV/AIDS. The purpose of targeted supplementary feeding is to prevent severe acute malnutrition among the moderately malnourished and to limit the need for widespread therapeutic feeding among children in particular. Targeted supplementary feeding is often implemented on a limited scale;

Supplementary feeding linked to therapeutic feeding is for children discharged from therapeutic feeding but are still moderately malnourished. Children are generally discharged from these supplementary feeding programmes when they reach 85% of median weight-for-height and maintain this weight for two successive weighing.

“When information about the prevalence of acute malnutrition is lacking in a nutrition emergency, planning figures of 15% acute malnutrition among children under five can be used to estimate supplementary food requirements for these children.”

Dry rations for home preparation should be provided whenever possible. **Wet rations** (cooked food) should be limited to situations following a major disaster when people do not have the means to cook for themselves or when the distribution of dry rations could put them in danger for instance while walking home. Take-home supplementary food dry rations provide 1,000 to 1,250 kcal/person/day while on-site feeding or wet rations provide 500 kcal/person/day.

High-energy biscuits (called BP5 and BP100) are sometimes used for supplementary feeding when fortified blended food or cereal/pulse blends are not available. The biscuits should be dissolved in water if used for feeding young children. High-energy biscuits are inappropriate for children recovering from severe malnutrition and should not be used in therapeutic feeding. High-energy biscuits can, however, supplement the diets and energy intakes of pregnant women in their second trimester to reduce the incidence of low birth weight.

Criteria for opening and closing emergency supplementary feeding

	When to open	When to close
Blanket supplementary feeding	At onset of an emergency, before the food pipeline and general food ration are improved and sustained. Outbreak of scurvy, beriberi or pellagra in the target population.	When the food pipeline and general food ration distribution are adequate. When there are no cases of scurvy, beriberi or pellagra in the target population.
Targeted supplementary feeding	To prevent deterioration in the nutritional status of vulnerable groups in the population (children under five, pregnant women, lactating women, families affected by HIV/AIDS, the elderly) and when there is a need for large-scale therapeutic feeding.	When the prevalence of global acute malnutrition is stable or declining.
Supplementary feeding linked to therapeutic feeding	When there are too many severely malnourished individuals to be treated adequately in existing health care facilities	When the number of severely malnourished cases decreases to a number that can be adequately treated in clinics or hospitals.

Infant and child feeding in emergencies:

Infant and young child feeding practices include breastfeeding, complementary feeding, psychosocial care and nutritional care of sick and malnourished children, personal hygiene and food safety both in the home and at therapeutic and supplementary feeding sites. In food emergencies, **breastfeeding** can be life-saving. Outbreaks of diseases such as diarrhoeal diseases and malaria with conditions of poor sanitation and inadequate access to water make breastfeeding the safest and only practical choice for feeding infants and young children.

Complementary foods are non-breast-milk foods. Appropriate complementary feeding is: **Timely - Complementary foods are introduced at about six months of age.**

Nutritional care of sick and malnourished children includes the use of Integrated Management of Child Illness protocols for assessment and treatment, continued feeding during illness and increased variety, frequency and amounts of food during convalescence.

Psychosocial care giving means that the caregiver actively helps her child to eat while remaining sensitive to the demands of the child; she is patient and allows the child to eat at its own pace, verbally encourages the child to eat without force feeding and allows it to try different foods if it refuses to eat.

Personal hygiene and food safety mean that foods are stored, prepared and fed with clean hands; utensils and baby bottles are not used.

Breastfeeding messages during emergencies

1. Nearly every woman can breastfeed her baby;
2. Breast milk has everything the baby needs for the first six months of life;
3. Breastfeeding protects against infections, especially diarrhoea and acute respiratory infections;
4. Breastfeeding is cost-effective;
5. Malnourished and traumatised mothers can produce adequate quantities of breast milk;
6. Hormones released during breastfeeding help to relax the mother and counteract stress.

Recommendations to promote and support breastfeeding in emergencies

1. All breastfed infants in emergencies should continue to be breastfed;
2. Infants should be exclusively breastfed until six months of age and beyond if safe (uncontaminated) complementary foods are not available;
3. Infants should continue breastfeeding alongside complementary feeding into the second year of life;
4. At least one member of each humanitarian field team should have breastfeeding management skills to help mothers breastfeed, including:
 - Positioning and attachment of the baby to the breast;
 - Keeping mothers and babies together and letting them sleep together;
 - Frequent nursing (eight to twelve times in twenty-four hours);
 - Exclusive breastfeeding for the first six months of life;
 - Avoidance of bottles and pacifiers;
 - Expression of milk and feeding by cup for babies unable to suckle;
5. Access to lactation expertise for training and non-routine breastfeeding situations;
6. Restriction of donations of breast milk substitutes and supplies for bottle-feeding. Donations must adhere to the terms of the International Code of Marketing of Breast-milk Substitutes;
7. Relactation when breastfeeding has not started or has stopped prematurely. There must be an exceptional availability of breast milk substitutes for babies during the transition;
8. Public relations with the media and quick response when the media report that emergencies compromise a mother's ability to breastfeed her baby.

Vitamin A Supplementation:

Vitamin A deficiency is a major contributing factor to mortality in emergencies. High dose vitamin A supplementation can reduce the duration of the disease, its severity, complications and prevent nutritional blindness or xerophthalmia. Vitamin A supplementation can be provided with immunisations as appropriate e.g. measles in the affected population. Vitamin A supplementation coverage of the population should be at least 70%.

High-dose vitamin A supplements should also be given to all cases of:

- Xerophthalmia and children living in the same household or community as a child who has xerophthalmia;
- Measles;
- Severe acute malnutrition, kwashiorkor and marasmus.

	Age in months	Immediately	Next Day	2 weeks later
Severe malnutrition	0-5	50,000 IU	50,000 IU	
	6 -11	100,000 IU	100,000 IU	
	>12	200,000 IU	200,000 IU	
Xerophthalmia	0 -5	50,000 IU	50,000 IU	50,000 IU
	6 -11	100,000 IU	100,000 IU	100,000 IU
	>12	200,000 IU	200,000 IU	200,000 IU
Measles	0-5	50,000 IU	50,000 IU	
	6-11	100,000 IU	100,000 IU	
	>12	200,000 IU	200,000 IU	

Activities to support key nutrition outcomes:

Outcome	Activities
Exclusive breastfeeding	<p>Support the Breastfeeding Friendly Hospital Initiative and the International Code for Marketing of Breast milk Substitutes;</p> <p>Train health staff in breastfeeding counselling (WHO/UNICEF); Reach out to all women during pregnancy, at delivery and postpartum through women's groups, breastfeeding support groups and traditional birth attendants;</p> <p>Increase community awareness of exclusive breastfeeding in the community through communication activities;</p> <p>Include the lactational Amenorrhea method in all family planning activities.</p>
Feeding children 6-24 months old	<p>Identify problem areas that affect the growth and feeding of children six to twenty-four months. Use local feeding recommendations;</p> <p>Support community health workers to assess and counsel on feeding practices;</p> <p>Train and supervise health workers to train and support caregivers and community groups on feeding well children, sick children and convalescing children as well as breastfeeding. Refer families who need social support, including HIV-positive mothers;</p> <p>Increase community awareness of appropriate infant and young child feeding practices in the community through communication activities.</p>
Sick and malnourished children	<p>Support breastfeeding of all sick children up to twenty-four months of age;</p>

	<p>Support feeding during illness and increase variety, frequency and amounts after illness;</p> <p>Use health protocols (Integrated Management of Childhood Illness) for assessment and treatment at health facilities;</p> <p>Identify local perceptions and caring practices for sick and malnourished children and use this information in counselling;</p> <p>Establish at least one high-quality unit for treating severely malnourished children to serve as a referral facility for the administrative area.</p>
Vitamin A intake	<p>At all health contacts, encourage the daily intake of vitamin A-rich foods by young children and women;</p> <p>Encourage breastfeeding;</p> <p>At all sick-child contacts give high-dose vitamin A supplements to children with measles, severe malnutrition, prolonged diarrhoea and other infections;</p> <p>Train health staff to detect and treat clinical vitamin A deficiency with high-dose vitamin A;</p> <p>Implement preventive supplementation for children six to fifty-nine months every four to six months in areas where deficiency is known to be a public health problem.</p>
Iron intake	<p>Train health workers and community health workers to detect severe anaemia and to give iron supplements to young children and pregnant women presenting with severe anaemia;</p> <p>Ensure supply of iron supplements;</p> <p>Promote the consumption of iron-rich food, vitamin C-rich foods and iron fortified foods (except formula, which tends to replace breast milk) by women of reproductive age, infants and young children;</p> <p>Strengthen preventive measures such as malaria bed nets and de-worming.</p>
Iodine intake	<p>Ensure that only iodised salt is sold in the community by increasing awareness among salt suppliers, consumers and local authorities;</p> <p>Teach community health workers how to test salt for iodisation.</p>

Key Learning's

- Risks of under-nutrition can be managed by optimising infant and child feeding, improving food security and ensuring access to health care.
- Emergency preparedness is vital for communities in both developed and developing countries to:
 - Minimize nutritional vulnerabilities for infants, e.g. by increasing breast feeding rates.
 - Improve the impact of nutritional responses: e.g. networks of trained personnel ready to act in an emergency.
- Nutritional interventions can be either:
 - Blanket e.g. general food distributions, micronutrient fortification of staple foods.
 - Targeted at specific high risk subgroups.
- Scale-up and scale-down of nutritional responses should be informed by assessment of specific situations.
- Choosing and prioritizing nutritional interventions and nutritional products should be informed by evidence and follow latest best-practice.
- In developing countries, tackling high risk severe acute malnutrition (SAM) is a priority.
- Defining SAM using new WHO growth standards rather than old NCHS references results in greater numbers of infants and children eligible for therapeutic feeding. This has caseload and resource implications.
- Appropriate infant and young child feeding saves lives. Operational guidance should be followed¹. This includes active support for breastfeeding.
- Multisectoral emergency response is coordinated at local and national levels.

5. Diarrhoeal Disease Control

Learning Objectives:

- Causes of Diarrhoeal disease
- Prevention of diarrhoeal disease
- Control measures

Introduction:

Diarrhoeal diseases are a major cause of morbidity and mortality in emergency situations, mainly because of inadequate water supply in terms of quality and quantity, insufficient, poorly maintained sanitation facilities and overcrowding. In camp situations, diarrhoeal diseases have accounted for more than 40% of deaths in the acute phase of the emergency. Over 80% of deaths are among children under 2 years of age.

Bacillary dysentery (shigellosis)

Basic facts –

- Bacillary dysentery is an acute bacterial disease involving the large and small intestine.
- It is caused by bacteria of the genus *Shigella*, of which *S. dysenteriae* type 1 causes the most severe disease and the largest outbreaks.
- It is the most important cause of acute bloody diarrhoea.

Shigella dysenteriae type 1

- The disease is most severe in young children, the elderly and the malnourished.
- Displaced populations are at high risk in situations of overcrowding, poor sanitation and limited access to safe water.
- In an outbreak, up to one-third of the population at risk may be infected.
- Transmission occurs through contaminated food and water and from person to person.
- The disease is highly contagious - the infective dose is only 10-100 organisms.
- Treatment is with antimicrobials, which decrease the severity and reduce the duration of illness.
- The disease is not usually associated with a marked loss of fluid and electrolytes.
- Without prompt, effective treatment the case-fatality rate can be as high as 10%.

High-risk patients

- Children under 5 years of age, and especially infants, severely malnourished children and children who have had measles in the past 6 weeks
- Older children and adults who are obviously malnourished
- Patients who are severely dehydrated, have had a convulsion, or are seriously ill when first seen
- Adults 50 years of age or older

Diagnosis

- Blood is observed in a fresh stool specimen.

Case management

- Refer seriously ill or severely malnourished patients to hospital immediately.
- Treat dehydration with oral rehydration salts or intravenous fluids if severe.

Other diarrhoeal diseases:

Common sources of infection in emergency situations

Outbreak investigations in emergency situations have identified the following risk factors for infection:

- polluted water sources (e.g. by faecally contaminated surface water entering an incompletely sealed well), or contamination during storage or transport (e.g. by contact with hands soiled by faeces);
- shared water containers and cooking pots;
- lack of soap;
- contaminated food items (e.g. dried fish, shellfish).

Clinical features

Diarrhoea is defined as three or more abnormally loose or fluid stools over a period of 24 hours. Bacteria such as *Salmonella* (commonly *S. Enteritidis* or *S. Typhimurium*) and *Escherichia coli* can cause diarrhoea, but the most severe outbreaks are caused by *Shigella dysenteriae* type 1 and *Vibrio cholerae*. Other pathogens that cause diarrhoea include protozoa (such as *Giardia lamblia*, *E. histolytica*, *C. parvum*) and viruses (such as rotavirus and Norwalk virus). Diarrhoea may occur as one of the symptoms of other infections (e.g. measles).

The major complications of diarrhoea are dehydration and the negative effect on nutritional status.

Diagnosis

The diagnosis of diarrhoeal diseases is usually based on clinical signs and symptoms. However, in outbreak situations stool samples must be collected from 10-20 cases to confirm the cause and to identify antimicrobial sensitivity. Once the outbreak has been confirmed, it is not necessary to obtain laboratory confirmation for every patient as this depletes laboratory supplies.

IMPORTANT. Do not wait for laboratory results before starting treatment/control activities.

Case management

Prevention and control measures

The prevention of diarrhoeal diseases depends on the provision and use of safe water, adequate sanitation and health education. An adequate water supply is essential to protect health and is one of the highest priorities for camp planners. A supply of adequate quantities of water (reasonably clean if possible) in emergency situations is more important than a supply of small quantities of microbiologically pure water.

Key components in the prevention of diarrhoeal diseases

Practices or activities	Interventions to move theory to practice
Safe drinking-water	Provision of an adequate supply, collection, transport and storage system Provision of information on the importance of clean water with appropriate use of water container lids and household storage
Safe disposal of human excreta	Provision of adequate facilities for the disposal of human waste Provision of information on the importance of human waste disposal, also covering the use and maintenance of the facilities
Food safety	Provision of adequate storage facilities for food (both uncooked and cooked), cooking utensils, adequate quantity of water, and fuel to allow for cooking and reheating Provision of information on the importance of food safety
Hand-washing with soap	Provision of soap, allowing for bathing and laundry Provision of information on the diseases spread through lack of or poor hand-washing, and demonstration of good hand-washing
Breastfeeding	Provision of information on: the protective qualities of breastfeeding and the importance of breastfeeding sick children Practical support to enable mothers to breastfeed sick children

6. Vector Borne Disease Control

Learning Objectives:

- To know the causes of diarrhoeal disease.
- Prevention of diarrhoeal disease.
- Control measures.

Introduction:

The purpose of a vector control programme is to reduce disease transmission by rendering the environment unfavourable for the development and survival of the vector. Prevention is better than cure, and when the planning and construction of camps is undertaken, preventing the development of vector problems should be taken into account. Complete eradication of a vector is neither rarely possible nor necessarily desirable, but the vector population and its life expectancy should be kept to a minimum. Community adhesion and participation in a vector control programme is essential for its success. Early diagnostic and treatment are needed to prevent severe forms of the disease (especially for malaria) when transmission control is needed to reduce incidence. Both are complementary and two essential components of any effective vector borne disease control programme.

The major biological vectors are mosquitoes, sand flies, triatomine bugs, tsetse flies, blackflies, ticks, fleas, lice, mites. Important carrier reservoirs or intermediary hosts are synanthropic flies, snails and rodents.

The diseases most commonly spread by vectors are malaria, filariasis, dengue fever, yellow fever, leishmaniasis, Chagas disease, sleeping sickness, oncho-cerciasis, borreliosis, typhus, and plague. Major diseases transmitted by intermediate hosts or carriers are schistosomiasis, diarrhoeal diseases and trachoma.

The main methods of vector prevention and control can be classified as personal protection; **environmental control; campsite, shelter and food store sanitation; community awareness; and chemical control such as residual or space spraying, insecticide-treated traps, selective larviciding and the use of rodenticides.** Vector control is very specific to the ecology of the vector, the epidemiology of the disease, the human and social environment as well as resources locally available (e.g. technical staff, structures, logistics).

It is important to seek the advice of an entomologist/environmental hygienist when designing a vector control programme. This person will assist by:

- identifying the vectors responsible for local transmission of disease,
- determining the factors that influence transmission,
- locating breeding grounds, and adult resting habits,
- deciding which control measures need to be implemented,
- deciding which specific chemical control measures to use,
- deciding which chemicals to use,
- deciding the method and interval of application,
- deciding the time and place of application,
- deciding the safety precautions necessary in the storage and use of hazardous chemicals.

Major arthropod vectors and associated diseases:

Care should be taken to ensure that any insecticides, rodenticides, etc. that are used in control activities are registered for use in the relevant countries or that permission to use them is obtained from the appropriate government departments.

Mosquitoes

Mosquitoes are the vectors of malaria, filariasis, dengue, Japanese encephalitis and yellow fever.

Diseases spread by mosquitoes and their treatment and prevention

Disease	Case fatality	Treatment	Prevention
Malaria <i>Plasmodium falciparum</i> <i>P. vivax</i> <i>P. ovale</i> <i>P. malariae</i>	Often fatal to non-immune people Usually considered non-fatal Usually considered non-fatal Usually considered non-fatal	Antimalarial drugs	<ul style="list-style-type: none"> • Vector control: <ul style="list-style-type: none"> - insecticide-treated mosquito nets - long-lasting insecticidal nets - repellents - residual spraying - environmental management • Case management: <ul style="list-style-type: none"> - prophylactic drugs - rapid diagnosis and effective case management <p>Monitoring the effectiveness of control methods particularly during epidemics</p>
Yellow fever	Fatal in up to 50% of cases	No specific treatment available	<ul style="list-style-type: none"> • Isolation of infected people • Vaccination of the population • Chemical control (larviciding + space spraying) and environmental management to limit urban breeding sites of <i>Aedes</i> spp. mosquitoes
Dengue, Dengue haemorrhagic	Non-fatal Can be fatal in	No specific treatment available	<ul style="list-style-type: none"> • Isolation of infected people • Chemical control (larviciding + space spraying) and environmental

fever	10% of cases		management to limit urban breeding sites of <i>Aedes</i> spp. mosquitoes
Japanese encephalitis	Fatal in 0.5-60% of cases	No specific treatment available	<ul style="list-style-type: none"> • Isolation of infected people • Vaccination of the population • Environmental management
Filariasis	Non-fatal, may lead to elephantiasis	Diethylcarbamazine (DEC) or ivermectin + albendazole	<ul style="list-style-type: none"> • Environmental sanitation to prevent breeding of <i>Culex</i> spp. mosquitoes in polluted waters • Treated mosquito nets and residual spraying in areas where vectors are anophelines

The various options for mosquito control are outlined below:

Choice of control methods for different mosquitoes

Mosquito behaviour	Control programme	Vector species	Control of transmission	Control schedule
For all mosquitoes	Local destruction of breeding sites by drainage or filling if identifiable	Most mosquito vectors; not suitable for <i>An. gambiae</i>	Totally effective	Permanent
	Larviciding with temephos		2-3 weeks partially effective	Repeated every 1-2 weeks for <i>Anopheles</i> and every 2 months for <i>Aedes</i>
	Space spraying	All mosquitoes	Effective Very effective	Weekly Daily in early mornings or evenings
	Repellents	All mosquitoes	Lasts up to 6 hours with good effectiveness	Apply daily during biting hours

Indoor biting	Screening of doors and windows in house	<i>Anopheles, Culex, Aedes, Mansonia</i>	Partially effective	Put in place when house is built, repair annually
Indoor biting at night	Mosquito nets	<i>Anopheles, Culex, Mansonia</i>	Partially effective	Proper use of well-maintained bed net, change every 2- 5 years
	Insecticide-treated mosquito nets		Partially or completely effective	Net must be impregnated with permethrin every 6-12 months
Indoor resting	Indoor residual spraying	<i>Anopheles, Culex, Mansonia and Aedes aegypti</i>	2-3 weeks partially or completely effective	Every 3-6 months, before the transmission season
Mosquito larvae attach to roots of aquatic vegetation	Removal of vegetation, especially water lettuce from all standing water	<i>Mansonia</i>	Partially effective	Check possible breeding sites weekly in the growing season

Lice

There are three species of louse: head, body and pubic. Head lice are not vectors of any particular disease but cause discomfort for those infested. Body lice are vectors of typhus, relapsing fever and trench fever. Pubic lice are not disease vectors. Body lice are widespread in impoverished communities in temperate climates or in mountainous areas in tropical countries. Head lice and pubic lice are present throughout the world.

Louse-borne infections are common in overcrowded situations, particularly in settlements. Lice are spread via human clothing.

Diseases spread by lice, their treatment and prevention

Vector	Disease	Morbidity and mortality when untreated	Treatment	Prevention
Body lice	Louse-borne typhus	Fatal in 10-40% of cases	Antimicrobial	Change of clothing
	Relapsing fever	Fatal in 2-10% of cases	Change of clothing	Delousing
	Trench fever	Typically non-fatal	Delousing	
Head lice	No disease			
Pubic lice	No disease			

Control methods for lice

Type	Control programme	Control of transmission
Head lice	<p>If shaving is culturally acceptable, adults and children can shave their heads; blades can be distributed to families</p> <p>Pharmaceutical anti-lice insecticide lotions such as malathion or permethrin can also be used and are recommended during a mass campaign</p> <p>People with head lice who sleep under impregnated mosquito nets commonly lose the infestation</p>	Delouse new arrivals
Body lice	<p>Information programme on the dangers of body lice and proposed control methods</p> <p>Change all clothing</p> <p>Boil or steam clothing for 15 minutes</p> <p>Treat non-washable clothing with insecticide and repeat after 1 week</p> <p>Impregnate clothing with permethrin during rinsing (see below)</p>	<p>Delouse new arrivals</p> <p>Care should be taken to delouse all feverish persons as well as corpses</p>

	<p><i>or</i></p> <p>For mass campaigns, administer 50 grams of insecticidal dusting powder to each individual in the population via the neck band, waistband and sleeves, paying particular attention to seams and underwear</p>	
Pubic lice	Pharmaceutical anti-lice insecticide lotions such as malathion or permethrin	Delouse new arrivals

Impregnation of clothing with insecticides

Impregnation of clothing with permethrin or etofenprox when rinsing is an effective way of controlling arthropod ectoparasites. Permethrin is safe for this purpose, but if impregnation is carried out the same safety precautions must be used as for impregnating mosquito nets. Impregnation should be done at a central point by trained staff and not by individual families. Clothing treated in this way will retain its insecticidal properties for several washes. Avoid the use of other pyrethroids, especially the cyanopyrethroids (alpha-cypermethrin, cyfluthrin, deltamethrin, lambda-cyhalothrin), as they may cause strong skin irritation.

Application of dusts for control of body lice

Application of insecticidal dusts for louse control requires the appropriate apparatus. Simple hand-pumped dusters are available and are effective but not very rapid to use. For mass treatment, powered dusters are more effective but need to be selected carefully. Dusts can easily clog spray nozzles, especially if the air is damp. Compressed air is therefore not ideal for pressurizing such equipment. Sprayers powered by carbon dioxide have been devised but are heavy and require supplies of the gas.

Mass dusting programmes require careful planning and staff must be properly trained. The public must be informed carefully about the nature of and reasons for the programme. Staff will need good protective clothing and effective dust masks that protect the whole face.

Flies

Filth flies are considered important carriers of diarrhoeal disease and eye infections. The common filth flies are the housefly (*Musca domestica*), *M. sorbens*, and the blowfly (blue or green big flies). The housefly and *M. sorbens* are the most important in the spread of disease. The housefly is thought to be important in the spread of diarrhoea, while *M. sorbens* spreads the eye infection trachoma. The role of blowflies, proliferating in emergency settings, in the spread of disease is unknown.

Main diseases in emergency situations spread by flies and their treatment and prevention

Disease	Morbidity and mortality when untreated	Treatment	Prevention
Diarrhoeal disease (e.g. shigellosis or salmonellosis)	1-10% fatality rate	Rehydration (antimicrobial may be needed)	Good personal and kitchen hygiene, safe water and sanitary disposal of faeces Sanitation (garbage disposal, latrines...) and fly control
Trachoma	Non-fatal - eye damage, including blindness, in severe untreated infections	Cleaning the eye Antimicrobial	Good personal hygiene Adequate supplies of soap and water for washing face and hands

The control of flies is very difficult as they have many breeding and resting sites. The control measures that can be adopted include:

- sanitation: safe faecal and garbage disposal systems,
- selective application of insecticides in garbage containers, wall and fences around latrines as well as resting site of flies,
- prompt burial of corpses,
- screens for kitchens,
- safe food storage systems,
- good personal and environmental hygiene.

Mites

Mites are associated with disease, either as vectors or as burrowers into the flesh leading to secondary infections. Scabies and jiggers are examples of burrowing infestations. The trombiculid mite is the vector for scrub typhus. Its breeds in vegetation and transmission occurs during the day. Scabies is the main mite infestation seen in refugee situations.

Diseases spread by mites, their treatment and prevention

Disease	Morbidity and mortality when untreated	Treatment	Prevention
Scabies	Non-fatal but severe cases of infection can lead to eczema	Sulfur ointment or benzyl-benzoate Ivermectin treatment	Good personal and environmental hygiene, adequate supplies of soap and water, frequent bathing and laundry
Scrub typhus	1-60% fatality rates	Antimicrobial Apply disinfecting lotion to skin Disinfect all bed linen and mattresses	Avoid scrub areas or wear protective clothing or dust with sulfur powder before going into infected areas

The choice of control methods for mites

Type of mite	Control programme
Trombiculid mite	Treat infected persons Locate infested areas ("mite islands") Destroy the mite by destroying scrub areas or spraying with residual permethrin or deltamethrin insecticide spray around houses, hospitals and camp sites

Vector control strategies:

The main methods of arthropod vector control in emergency situations can be classified into the following groups:

- residual spraying,
- personal protection,
- environmental control,
- campsite and shelter design and layout,
- community awareness.

The choice of control strategies in an emergency situation depends on:

- the type of shelter available - permanent housing, tents, plastic sheeting,
- human behaviour - culture, sleeping practices, mobility,
- vector behaviour - biting cycle, indoor or outdoor resting,
- availability of tools, equipment and trained personnel for implementation.

Recommendations for selecting vector control interventions and insecticides will depend on whether the people to be protected are located in temporary settlements, such as camps, or in permanent communities.

Residual spraying

- Residual spraying can be conducted indoors or outdoors. It is important to ensure that:
- the community is involved in planning the spraying exercise and is aware of the conditions required for an effective spraying programme;
- painting or application of fresh mud or mortar is completed prior to the spraying exercise;
- the living accommodation and animal sheds of every household are also sprayed;
- the walls, ceiling and roof are covered with the chemical, paying particular attention to corners and crevices; application should be repeated according to the residual life of the insecticide and the duration of the transmission season.

Indoor residual spraying is a recommended technique for controlling mosquitoes, sandflies and triatomine bugs. It is the most common method in the post-emergency phase when the displaced population is living in more permanent dwellings such as huts or houses.

Ground space spraying, either ultra-low-volume (ULV) cold mist or thermal fogging, is not the preferred intervention for malaria vector control in emergency situations. It has no residual effect and is not effective against endophilic mosquitoes. In the context of camps, especially in crowded areas, ground space spraying can be resorted to if residual spraying is delayed or cannot be implemented. Treatment must be done either early in the morning or in the evening, before people close the shelters for the night. Applications should be repeated at least once a week. Pyrethrins or pyrethroids are the best choice for such application but organophosphate insecticides are also suitable.

Aerial spraying is not recommended in most emergency situations.

Personal protection:

Personal protection against the spread of disease includes a variety of methods: insecticide-treated nets, treated sheets and blankets, personal hygiene, insect repellents and clothing, and dusting powder.

Insecticide-treated nets (ITNs) are primarily used to protect against mosquito bites; however, they also provide a barrier against other vectors such as sandflies, triatomine bugs as well as pests such as bed bugs or cockroaches.

- Non-treated bednets provide partial protection against malaria.

- The effectiveness of bednets can be increased by impregnating them with pyrethroid insecticides.
- The bednets should be soaked in insecticide after every third wash or at least once a year.
- After soaking in the chemical, they should preferably be dried flat so as to maintain an even concentration of the chemical throughout the nets.

ITNs must be available to displaced populations in time to be effective. Distribution of nets must be supplemented by information and educational activities, which may be difficult in an emergency situation. In addition, nets are not easy to hang in tents and are almost impossible to use in shelters. ITNs are regarded more as a tool for long-term prevention, which should be introduced into communities with a number of accompanying measures in order to be effective and sustainable.

Long-lasting insecticidal nets (LLINs) are nets treated at factory level with insecticide either incorporated into or coated around the fibres, resistant to multiple washes and whose biological activity lasts as long as the net itself (3 to 4 years for polyester nets, 4 to 5 years for polyethylene ones).

LLINs offer a practical solution in terms of wash resistance, safe use of coloured nets and purchase of ready-to-use pre-treated nets, providing they fulfil specifications.

Treated sheets and blankets are easy to distribute and effective. In this case, only permethrin (25:75 *cis:trans* isomeric ratio) EC or etofenprox EW should be used, at a dose of 1 g/m². Other pyrethroids are not recommended for this type of application for safety reasons and because of possible skin irritation. Treatment can be made by classical dipping or by spraying sheets and blankets laid on the ground, using either a pressurized hand sprayer or a backpack motorized one.

Personal hygiene. Daily bathing, washing of hands after using the latrine, regular washing of clothes, and good food and water storage practices can prevent the spread of fly-borne diseases.

Insect repellents and clothing. Biting by mosquitoes, flies and ticks can be reduced by wearing long-sleeved shirts and long trousers, and by using insect repellents. Insect repellents can include traditional repellent mixtures, mosquito coils or commercially produced products. Wearing shoes can prevent infestation with jiggers.

Dusting powder. Appropriate dusting powders can be used in the treatment of flea and louse infestations. It is important that the powder is applied correctly and that it covers the undergarments and the inner seams of clothing.

Environmental control

Environmental control strategies aim to minimize the spread of disease by reducing the number of vector breeding sites. Some of the most important measures, namely the provision of clean water, the provision and maintenance of sanitary latrines and the efficient and safe disposal of waste, are described earlier in this manual.

Drainage of clean water around water tap stands and rainwater drains is a further important measure in the environmental control of disease vectors. This may include the drainage of ponds, although this may not be acceptable if the water is used for washing

Larvicides destroy the larvae of mosquitoes before they mature into adults. Larvicides may be applied via hand-carried, vehicle-mounted or aerial equipment. The larvicide is added to water at sites that are recognized breeding grounds, such as ponds or water jars, in areas where the breeding sites are limited in number. In addition, the efficacy of larvicides is very short (less than a week) and treatment thus requires to be repeated at weekly intervals.

Campsite and shelter

- The following are important aspects of shelter construction.
- Ideally shelters should be of adequate size and spaced sufficiently apart to prevent the spread of communicable diseases.
- The walls should allow residual spraying against biting insects.
- Cracks and crevices should be filled, as they are perfect breeding grounds and habitats for certain vectors.
- Openings in houses should never be sited downwind, as this increases the ability of the vector to reach its host.

Community awareness and health education

- Community participation in a vector control programme is essential for its success.
- It allows the implementing agency to develop an awareness of community practices that prevent or encourage the spread of disease.
- Both the community and the vector control team can develop strategies that can be implemented with some degree of success.
- Information on the spread of disease can be disseminated in a culturally sensitive manner.

Rodents and their control:

Rodents are disease vectors, reservoir hosts and pests in emergency situations. The main problems associated with rodents are disease transmission, consumption and spoiling of food, damage to stored products, damage to electrical systems, destruction of vegetable gardens, and biting and disturbing people while they sleep.

Diseases spread by rodents and their prevention

Mode of transmission	Disease	Prevention
Rodent urine	Leptospirosis	Rodent-proofing of food stores and containers Good environmental and personal hygiene (e.g. washing of food before eating and storing of cooked food in sealed containers)

		Removal of pools of standing water
Rodent urine and saliva Food contaminated with rodent body fluids	Lassa fever	
Food contaminated with rodent body fluids	Salmonellosis	
Consumption of rodent meat	Toxoplasmosis	

The elimination of rodents is difficult, particularly in densely crowded camps and in villages or towns, but the rodent population should be kept to a minimum. Rodent control should include safe and regular garbage disposal, trapping, poisoning in selected circumstances, rodent proofing of stores and careful storage of food.

Staff undertaking rodent control programmes must be properly trained and given proper protective clothing. Public awareness campaigns should be undertaken to inform people on how to control rodents and how to detect evidence of increasing rodent infestation.

Garbage disposal

Trapping

- Large numbers of traps should be used.
- There are various types of rodent trap; locally available traps may be more suitable for use by the staff and community than imported equipment.
- The bait must be soft; a banana is ideal for attracting rodents.
- Any rodents caught alive must be killed immediately and carcasses burnt.
- Traps must be checked and reset daily.
- Traps must be placed close to areas where rodents seek food, such as food stores and drains, or next to walls or coverings where they tend to move.
- Traps should be used with care in dwellings. Snap traps have strong springs that can damage children's fingers. The action of certain types of trap (e.g. snap traps) can cause the explosive expulsion of bodily fluids, which can be dangerous in the case of certain diseases (e.g. Lassa fever) that are spread in rodent excreta.

Poisoning

- Poisons must be used only in secure areas, such as stores, since there is a danger of children eating the poison or families eating poisoned rodents to supplement their diet.

- If rodenticides are used, the community must be informed and warned not to consume rodents.
- The best rodenticides are the second-generation anticoagulants (e.g. difenacoum, brodifacoum), which can kill rodents after only a single meal.
- Those used should contain Bitrex, which makes the poison too bitter for human consumption.
- Acute poisons such as red phosphorus and cyanide should *never* be used.
- Rodenticides based on pathogens such as *Salmonella* are ineffective and *dangerous* to humans.
- Rodenticides based on reproductive hormones are *not* effective.
- Poisoning programmes should always be preceded by the use of insecticides to treat runs and burrows to kill fleas, which would otherwise leave their rodent hosts and attack humans.
- Poisoning campaigns are not effective on their own in the long term. Other rodent control measures, such as removal of rubbish and improvement of food stores, should always be part of control programmes.
- If rubbish has accumulated and rodent populations have built up, a rodenticide programme should always precede the removal of rubbish, otherwise the rodents will tend to move into dwellings and worsen the health problem.

Making buildings rat-proof

All doors should be as tight-fitting as possible and should have a galvanized steel strip at least 30 cm deep attached to the bottom to prevent rodent access. Gaps under doors should be reduced to a few millimetres by careful placement of this metal strip.

- All holes in walls should be filled.
- Any drainpipes should be fitted with rat guards.
- Wiring entering buildings should be fitted with rat guards.
- All windows should be covered with 6-mm chicken wire.
- Vegetation should be cleared from around buildings.
- Overhanging vegetation should be removed.
- Stores must have pallets or shelves for storage purposes.
- All opened food must be stored in airtight containers (preferably metal or metal covered).

Food storage guidelines

- All foodstuffs must be stored on pallets or on shelves off the floor at a minimum height of 45 cm to minimize damage by water or rodents. No pallets should be against the wall as this makes cleaning very difficult.
- Pallets should be arranged in stacks not more than four pallets square, with at least 60 cm between stacks to allow access for cleaning.
- Empty sacks must be stored on pallets and not against wall in piles.
- Opened food must be placed in airtight metal bins.
- The store must be well lit and well ventilated.

- The store must be cleaned daily.
- Food in dwellings should be subject to the same careful storage as that in main stores. If possible it should be stored in rodent-proof (metal or well made wooden) bins, which should be inspected regularly for signs of rodent attack.

Key Learning's

Some control measures require their implementation by individuals or family units themselves.

- The indicators for measuring the coverage of such a programme are:
 - the percentage of the population that received the relevant information/ education,
 - the percentage of the population that implemented the information,
 - the percentage reduction or rise in the disease (entomological evaluation can be implemented and analysed only by specialists).

Chemical control measures are usually implemented by specially trained staff. Some indicators of the coverage of such a programme are:

- the percentage of the target area covered with the intervention,
- the supply and safe application of the chemical according to WHO and manufacturer's guidelines,
- the percentage reduction or rise in the vector population.

The major indicators for measuring an effective programme are when:

- suitable control measures are properly implemented and used,
- control measures are successful in reducing incidence of disease (same as above regarding entomological evaluation),
- control measures can be sustained by the population.

7. Community Participation in Emergencies

Learning Objectives:

- Role of community participation in emergencies
- Principles of effective community participation
- Volunteer contribution

Introduction:

Health education and community participation

Health education and community participation in interventions play a key role in communicable disease prevention and control.

Some areas where health education and community participation can be beneficial:

- Improving recognition of severe disease by the population.
- Improving health-seeking behaviour.
- Promotion of early and appropriate use of ORS in treatment of diarrhoeal disease.
- Promotion of vector control programmes e.g. use of ITNs.
- Promotion of hygiene/hand-washing for prevention of diarrhoeal disease.
- Promotion of safe water use and storage.
- Promotion of appropriate sanitation.
- Promotion of environment management to prevent degradation and vector reproduction.
- Active case-finding in outbreaks.
- Communicable disease surveillance system.
- Data collection for mortality and population statistics.
- Community mobilization for vaccination campaigns/vaccination.

Principles of effective community participation in complex emergencies:

- Have knowledge of displaced or refugee, and host population communities:
 - social structure,
 - vulnerable groups,
 - members of formal organizations,
 - members of semi-formal organizations such as schools, faith-based organizations, social organizations,
 - community leaders or spokespeople,
 - family/kin networks,
 - roles within community,
 - customs and practices, e.g. belief against giving water to sick children (use of colouring to make water look like medicine to render it culturally acceptable), use of chaddars as

top-sheets for sleeping (can impregnate with permethrin for prevention of mosquito bites).

- Identify community concerns and priorities.
- Use community members to collect data.
- Involve community in implementation of activities, e.g. surveillance of deaths, case-finding, health education, sanitation and environmental improvement.
- Ensure effective communication between population, host communities, government and agencies involved in response.

Volunteer collaboration:

Volunteer collaboration within a community enables participatory mapping of priorities and needs, allows working with elders and leaders for advocacy and support, identifies volunteers who can help in organizing the community to address problems, and enables reporting information to the coordination body or local district. Success depends on whether volunteers' actions are measurable and make a difference. Important questions to ask include: Are there volunteers in each community? Are there enough volunteers to cover the whole community? Do the volunteers know the community and how to approach health topics? Do the volunteers know key messages for each health problem? Do the volunteers know what information to collect in order to measure effectiveness?

Volunteers should be from the community in which they work, even in emergencies. They should work with their elders, leaders and local health staff (health workers and traditional birth attendants). Volunteers should know the traditional beliefs about diseases and know what priority health problems the community wants to solve. They should also know what other groups are doing in their community about priority health problems and know the families and visit them regularly to provide key messages.

Volunteers are part-time and need to reorganize themselves in order to accomplish their designated tasks. Community action where groups of volunteers work at the same time on a project requires a leader to ensure coordination.

8. Managing Reproductive and Child Health Services in Emergencies

Learning Objectives:

- To understand Minimum Initial Service Package during emergencies
- Importance of reproductive health care during emergencies
- Managing deliveries during emergencies

Introduction:

Reproductive health care in emergencies is not a luxury, but a necessity that saves lives and reduces illness. Until recently, it has been a neglected area of relief work, despite the fact that poor reproductive health becomes a significant cause of death and disease especially in camp settings once emergency health needs have been met. The International Federation recognizes the importance of reproductive health in emergencies by stating, "Reproductive health in times of disaster is one of the most important technical areas to cover efficiently."

Some facts:

- 75% of most refugee populations are women and children including about 30% who are adolescents.
- 25% are in the reproductive stage of their lives, at 15-45 years old.
- 20% of women of reproductive age (15-45), including refugees and internally displaced, are pregnant.
- More than 200 million women who want to limit or space their pregnancies lack the means to do so effectively.
- In developing countries, women's risk of dying from pregnancy and childbirth is 1 in 48.
- Additionally, it estimated that every year more than 50 million women experience pregnancy-related complications, many of which result in long-term illness or disability.

Minimum Initial Service Package:

The Minimum Initial Service Package (MISP)¹ for reproductive health is a coordinated set of priority activities designed to: prevent and manage the consequences of sexual violence; prevent excess neonatal and maternal morbidity and mortality; reduce HIV transmission; and plan for comprehensive reproductive health services in the early days and weeks of an emergency.

- Minimum refers to the basic, limited reproductive health needs that need to be addressed.
- Initial refers needs fulfilled in early phases of an emergency, without specific needs assessment
- Services to be delivered to those in need
- Package refers to the supplies i.e. Reproductive Health Kit and other activities such as coordination / planning which should be done as early as possible.

MISP Objectives & Activities:

1. ***Identify an organization(s) and individual(s) to facilitate the coordination and implementation of the MISP*** by:

¹Women Commission for Refugee Women and Children: Minimum Initial Service Package for Reproductive Health in Crisis Situations, 2007

- ⤴ ensuring the overall Reproductive Health Coordinator is in place and functioning under the health coordination team
- ⤴ ensuring Reproductive Health focal points in camps and implementing agencies are in place
- ⤴ making available material for implementing the MISP and ensuring its use

2. Prevent sexual violence and provide appropriate assistance to survivors by:

- ⤴ ensuring systems are in place to protect displaced populations, particularly women and girls, from sexual violence
- ⤴ ensuring medical services, including psychosocial support, are available for survivors of sexual violence

3. Reduce the transmission of HIV by:

- ⤴ enforcing respect for universal precautions
- ⤴ guaranteeing the availability of free condoms
- ⤴ **ensuring that blood for transfusion is safe**

4. Prevent excess maternal and neonatal morbidity and mortality by:

- ⤴ providing clean delivery kits to all visibly pregnant women and birth attendants to promote clean home deliveries
- ⤴ providing midwife delivery kits (UNICEF or equivalent) to facilitate clean and safe deliveries at the health facility
- ⤴ initiating the establishment of a referral system to manage obstetric emergencies

5. Plan for the provision of comprehensive reproductive health services, integrated into Primary Health Care (PHC), as the situation permits by:

- ⤴ collecting basic background information identifying sites for future delivery of comprehensive RH services
- ⤴ assessing staff and identifying training protocols
- ⤴ identifying procurement channels and assessing monthly drug consumption

Coordination of the MISP

Coordination of MISP activities is necessary at multiple levels, including within each agency responding to the emergency as well as at the local/camp, district, regional, state, national and international level. It is to ensure that efforts are not duplicated, useful data and information are shared among humanitarian stakeholders in time and scarce resources are used efficiently. The qualified and experienced health staff coordinating for reproductive health from the local health authority side should be identified at the earliest. Emergency Reproductive Health professionals should be in their post for a minimum of six months, as it typically takes at least this amount of time to implement the MISP and take the transition to provide comprehensive reproductive health services. It is the coordinator role to monitor and evaluate the MISP activities. She/he should collect or estimate basic demographic and health information of the affected population.

MISP Indicators:

The following data should be collected and monitored every month as a minimum

Indicators on safe motherhood:

- ▲ Coverage of clean delivery kits
- ▲ Percentage as per types of obstetric complications treated at the primary health centre/camp level and referral level
- ▲ Percentage of maternal and neonatal deaths in health facilities

Indicators on sexual violence:

- ▲ Number of incidents of sexual violence anonymously reported to health and protection services and security officers
- ▲ Number of survivors of sexual violence who seek and receive health care (anonymous reporting is of utmost importance)

Indicators on STI and HIV prevention:

- ▲ Percentage of health facilities with sufficient supplies for universal precautions: disposable injection materials, gloves, protective clothing and safe disposal protocols for sharp objects
- ▲ Percentage of referral hospitals with sufficient HIV tests to screen blood and consistently using them
- ▲ Number of condom distributed in a specified time period.

Prevention and responding to sexual violence

The following key actions should be taken:

I. To reduce the risk of sexual violence

- ▲ Design and locate settlements for displaced populations, in consultation with the population and women in particular, to enhance physical security
- ▲ Locate latrines, hygiene and water points in accessible, secure places
- ▲ Provide latches to lock latrines and washing facilities
- ▲ Provide adequate lightening on paths used at night
- ▲ Provide security patrols
- ▲ Provide direct transport to firewood collection sites or patrol collection routes in close collaboration with displaced women and girls
- ▲ Ensure the inclusions of female workers in food distribution registration and other services
- ▲ Ensure the presence of female protection officers
- ▲ Discuss sexual violence issues during health coordination meetings
- ▲ Identify individuals or groups that may be at higher risk of sexual violence (e.g. Single female-headed households, unaccompanied minors etc.) and in consultation with these persons themselves, address their protection and assistance needs.
- ▲ Ensure confidential reporting system (so beneficiaries have the possibility of reporting suspicious and threatening behaviour before incidents occur).

II. To respond appropriately to survivors

- ⤴ Ensure a standard medical response to sexual violence survivors, including the option of emergency contraception, preventive treatment of STIs, post-exposure prophylaxis for prevention of transmission of HIV, and tetanus and hepatitis B vaccination and wound care as appropriate.
- ⤴ Ensure privacy and confidentiality of the survivors.
- ⤴ Ensure the presence of same-sex, same-language health worker and, if the survivor wishes, a friend or family member, present for any medical examination.
- ⤴ Ensure the physical safety of survivor immediately following an incident of sexual violence
- ⤴ Ensure the displaced population is informed of the availability and location of services for sexual violence survivors
- ⤴ Ensure the availability of appropriate, culturally appropriate psychological support.
- ⤴ Ensure that locations where incidents of sexual violence have occurred are identified and documented and relevant preventive measures are established.

Reduce transmission of HIV and STIs

Women and adolescent girls are very vulnerable to sexual violence and hence to STI and HIV infection in the environment of poverty, insecurity, instability and powerlessness in the beginning phase of emergencies. It is necessary to do everything possible to contribute to the efforts to stop and reverse the increase of new infections.

The following activities should be undertaken:

I. Enforce respect for universal precautions

II. Guarantee the availability of free condoms

III. Safe blood transfusion

Prevent excess maternal and neonatal mortality and morbidity

- I. Antenatal and postnatal care***
- II. Counselling and orientation on danger signs***
- III. Clean delivery kits***
- IV. Establishing or maintaining referral system***
- V. Neonatal care***
- VI. Continuing postnatal care***

Setting-up Comprehensive Reproductive Health Services

9. Measles and Routine Immunization during Emergencies

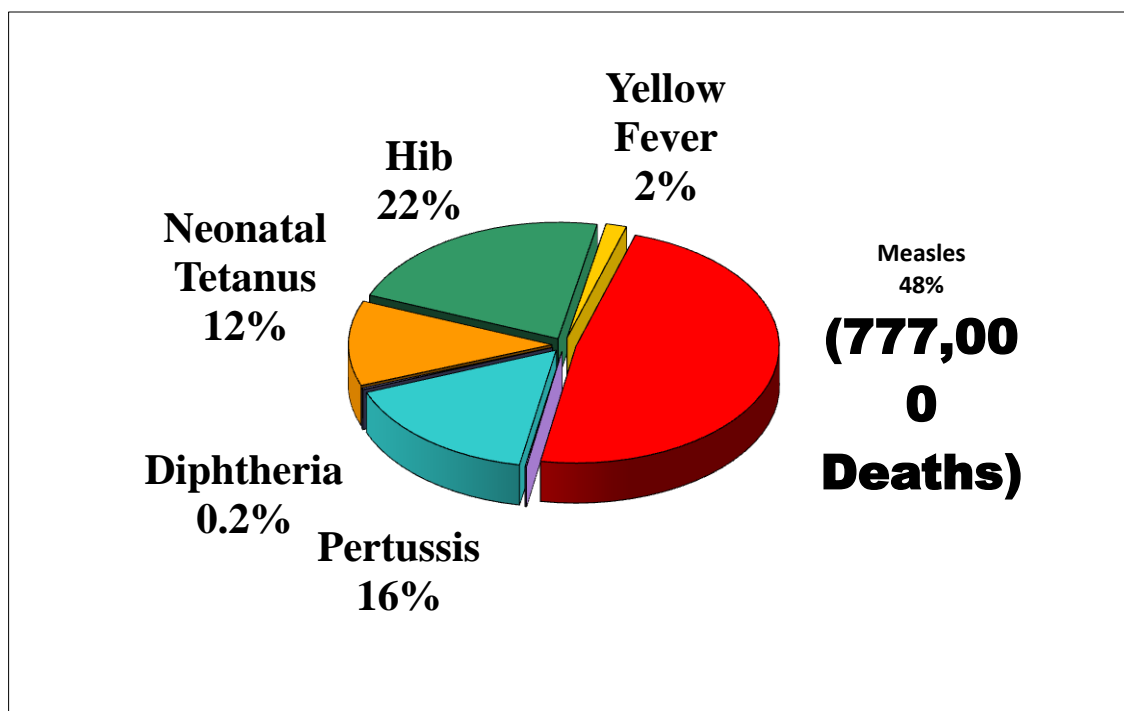
Learning Objectives:

- Understand case definition
- Measles in emergency situation
- Role of health worker in identifying measles

During Emergency:

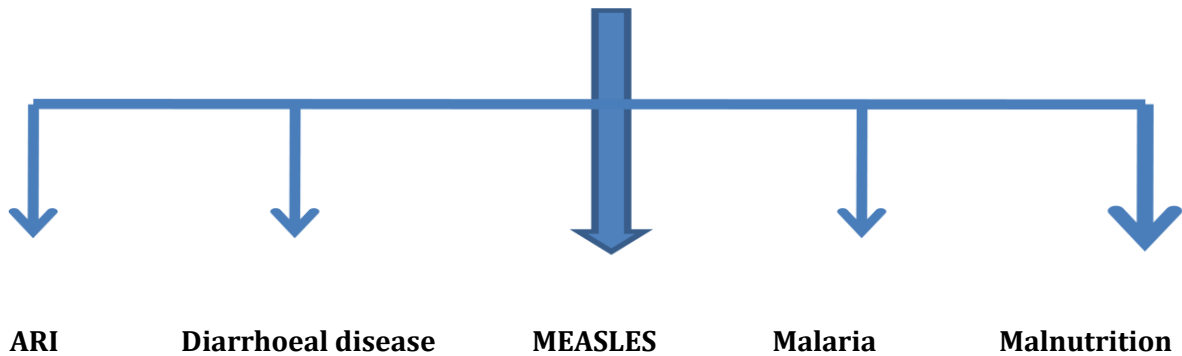
1. Vaccinate all children between 6 months and 14 years of age against measles
2. Provide vitamin A supplementation
3. Provide vaccines and critical inputs such as cold-chain equipment, training and social mobilization expertise
4. Provide other emergency supplies such as blankets, tarpaulins and cooking sets.
5. Introduce nutritional monitoring and surveillance
6. Support the establishment of essential health-care services
7. Provide essential drugs, emergency health kits

The Causes of 1.6 million vaccine-preventable deaths among children Worldwide, 2000



Measles and emergencies:

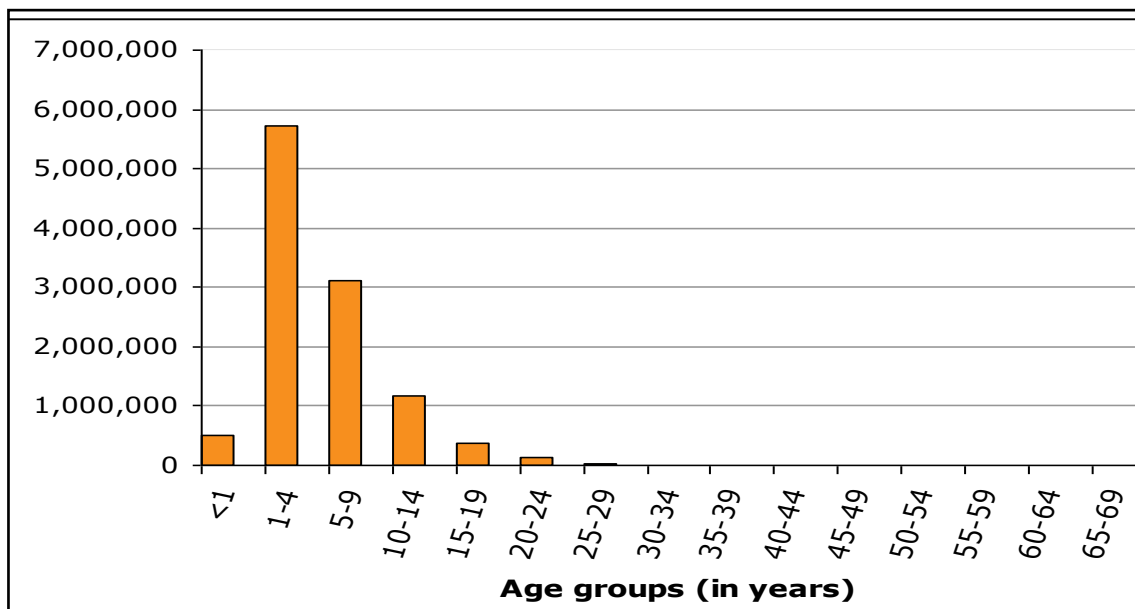
Five Major causes of under 5 Mortality



Why Measles Outbreak Investigation:

- 45 % Vaccine Preventable Diseases deaths are due to Measles .
- 54% of Children affected from Measles suffer from Malnutrition .
- Measles Infected Children don't die because of Measles but Post Measles Complication – Diarrhoea/Pneumonia/Malnutrition all preventable causes.
- 54% Post Measles deaths can be prevented by timely & adequate doses of Vitamin –A administration.

Age distribution of measles cases in India



For operational purposes a Clinical Measles outbreak is:

≥ 5 clinical case of measles in a block in a week

or

Any measles associated death in a block in a week

or

≥ 5 clinical cases in an area bordering more than one adjacent block.

Clinical Features:

- **Prodromal Stage:**
 - High Fever, Coryza, Cough, Conjunctivities, Koplik's spots on buccal mucosa.
 - After 4-5 days rashes develop on face and upper neck, which gradually proceed downward.
 - Rashes fades in order of appearance
 - Transmission by Droplet
- **Eruption Stage:**
 - Rashes appears 4-5 days of Prodromal stage
 - Rashes are Typical, Dusky – Red, Macular, Maculo – Papular
 - Brownish discoloration scar for 2 month
- **Post Measles Stage / Complication stage**
 - Pneumonia
 - Diarrhea
 - Otitis media
 - Encephalitis
 - Sub-acute Sclerosing Pan Encephalitis
 - Blindness

Immunity:

- No age is immune, if there was no previous infection.
- One attack of measles generally confers life-long-immunity.
- 2nd attack rare.
- Infants are protected by maternal antibodies up to 6months of age. (In some maternal antibodies may persist up to 9months.)
- Immunity after vaccination is quite long lasting.
- Vaccine efficacy: 85% if given 9-12 months and 95% if given after 12 months.

Nutrition:

- Measles becomes very severe in malnourished child and mortality up to 400 times> well nourished child.

Seasonal Trend:

- Measles generally occur all over the year.
- More in winter-probably people crowd-together indoors.

- Epidemic mainly occurs during winter and early Springs (January-April)
- Population density and movement do affect epidemicity.

Which type of emergency requires Measles and Vitamin-A administration?

- Complex emergencies with rehabilitation situations
- Emergencies where people are rehabilitated for more than 2-3 weeks like :
 - Cyclone ILA
 - Tsunami
 - Earth Quake like : Bhuj, J&K
 - Floods like KOSI, Assam
 - Ethnic clashes with large scale displacement of population.

Measles and Emergencies:

- One of major 5 causes of mortality
 - CFRs is 2 - 22% (Compare 1 - 10 %)
- Risk: Low vaccination coverage (60%) and low exposure to natural infection
- Overcrowding brings susceptible together to a critical threshold for outbreaks to occur
- Seeding of measles infection ignites the outbreak
- Severity depends on:
 - Overcrowding
 - Malnutrition

Why measles campaign important in disaster affected populations?

In emergencies/disasters there is major loss of lives due to the increased incidence of disease and injuries. The diseases responsible for such morbidity and mortality are Measles, diarrhoeal disease, acute respiratory infections, malnutrition and malaria. The high mortality due to measles is preventable and mass immunization coupled with Vitamin A distribution is a top priority in an emergency.

What are the goals of an emergency measles campaign?

When there is no current outbreak of Measles or an outbreak is anticipated:

- To prevent outbreaks of measles from occurring and therefore reduce the risk of mortality and morbidity due to the measles infection

When there is outbreak of Measles:

- To contain/limit the outbreak
- To prevent the spread of measles infection into other geographical area that is not affected.

- To reduce the case fatality rates in vulnerable or high risk population those are in affected areas.

What are the specific objectives of the emergency measles campaign?

- To vaccinate 100 % of the target group against measles

Measles is one of the most highly communicable diseases in man. Due to the low epidemic threshold outbreaks can occur even in highly vaccinated populations. To stop the transmission of measles a minimum 95% coverage is required.

- To provide Vitamin A supplementation to 100% of children 6-59 months.

What are the age groups for emergency measles campaigns?

- In emergency and disaster settings the age group for vaccination during a campaign is increased to cover 6 months to 14 years*.
- Children from 6 - 8 months will still receive the routine measles vaccination at the age of 9 months.
- ALL children receive the vaccination, even if they have received measles vaccination in the past.
- If resources doesn't allow vaccination upto 14 year, at least children from 6m-5 yr should be vaccinated.

Why is Vitamin A supplementation important?

- **Disaster populations are at increased risk of VAD**

Vitamin A Deficiency (VAD) initially compromises the integrity of the epithelial barriers and the immune system, this is then followed by impairment of the visual system. Consequently, there is increased severity of some infections and increased risk of death, especially among children.

- **Vitamin A Supplementation can reduce the risk of mortality from measles by about 50 % and overall mortality by 25-35%**

Calculating supplies for emergency campaigns:

- On-site supply of Measles vaccine: Equals 135% of the target population, including 10% for wastage and 25% reserve stocks.
- On-site supply of AD syringes: Equals 135% of the target population, including 10% for wastage and 25% reserve stocks.
- Syringe and needles for reconstitution: 1 set per measles vial and 10% wastage
- Vitamin A: Equals 125% of the target population, including 25% reserve stocks.

While planning for campaigns, ensure that:

- **Case management for affected children**
 - Symptomatic treatment and 2 doses of Vitamin A.
- **Planning for**
 - Waste management of injection waste

- AEFI management
- IEC and social mobilization
- Surveillance and monitoring
- Use Outbreak investigation cum case management format

Key Learning's:

While this section details the diagnosis and case management of measles, vaccination remains the most important strategy for measles control. Measles vaccination campaigns are one of the highest priorities in emergency situations.

10. Psychosocial Health in Emergencies (PFA)

Learning Objectives:

- To identify people who require Psychological First Aid in Emergencies
- To know the basic steps of PFA
- Do's and don'ts while providing PFA

Introduction:

PFA involves –

- providing practical care and support, which does not intrude;
- assessing needs and concerns;
- helping people to address basic needs (for example, food and water, information);
- listening to people, but not pressuring them to talk;
- comforting people and helping them to feel calm;
- helping people connect to information, services and social supports;
- Protecting people from further harm.

It is also important to understand what PFA is not:

- It is not something that only professionals can do.
- It is not “psychological debriefing” in that PFA does not necessarily involve a detailed discussion of the event that caused the distress.
- It is not asking someone to analyze what happened to them or to put time and events in order.
- Although PFA involves being available to listen to people's stories, it is not about pressuring people to tell you their feelings and reactions to an event.

Who is PFA for?

PFA is for distressed people who have been recently exposed to a serious crisis event. You can provide help to both children and adults. However, not everyone who experiences a crisis event will need or want PFA. Does not force help on people who do not want it, but make yourself easily available to those who may want support.

People who need more immediate advanced support:

1. people with serious, life-threatening injuries who need emergency medical care
2. people who are so upset that they cannot care for themselves or their children
3. People who may hurt themselves
4. people who may hurt others

When is PFA provided?

Although people may need access to help and support for a long time after an event, PFA is aimed at helping people who have been very recently affected by a crisis event. You can provide PFA when you first have contact with very distressed people. This is usually during or immediately after an event. However, it may sometimes be days or weeks after, depending on how long the event lasted and how severe it was.



Where is PFA provided?

You can offer PFA wherever it is safe enough for you to do so. This is often in community settings, such as at the scene of an accident, or places where distressed people are served, such as health centers, shelters or camps, schools and distribution sites for food or other types of help. Ideally, try to provide PFA where you can have some privacy to talk with the person when appropriate. For people who have been exposed to certain types of crisis events, such as sexual violence, privacy is essential for confidentiality and to respect the person's dignity.

Respect safety, dignity and rights:

When you take on the responsibility to help in situations where people have been affected by a distressing event, it is important to act in ways that respect the safety, dignity and rights of the people you are helping. The following principles apply to any person or agency involved in humanitarian response, including those who provide PFA:

Respect people's...

Safety

- Avoid putting people at further risk of harm as a result of your actions.
- Make sure, to the best of your ability, that the adults and children you help are safe and protect them from physical or psychological harm.

Dignity

- Treat people with respect and according to their cultural and social norms.

Rights

- Make sure people can access help fairly and without discrimination.
- Help people to claim their rights and access available support.
- Act only in the best interest of any person you encounter.

Do's	Don'ts
Be honest and trustworthy	Don't exploit your relationship as a helper
Respect people's right to make their own decisions	Don't ask the person for any money or favour for helping them
Be aware of and set aside your own biases and prejudices	Don't make false promises or give false information
Make it clear to people that even if they refuse help now, they can still access help in the future	Don't exaggerate your skills
Respect privacy and keep the person's story confidential, if this is appropriate	Don't force help on people, and don't be intrusive or pushy
Behave appropriately by considering the person's culture, age and gender	Don't pressure people to tell you their story
	Don't share the person's story with others
	Don't judge the person for their actions or feelings

Providing PFA:

Good Communication – Being calm and showing understanding can help people in distress feel more safe and secure, understood, respected and cared for appropriately.

Things to say and do – Try to find a quiet place to talk, and minimize outside distractions.

- Respect privacy and keep the person's story confidential, if this is appropriate.
- Stay near the person but keep an appropriate distance depending on their age, gender and culture.
- Let them know you are listening; for example, nod your head or say "hmmmm...."
- Be patient and calm.
- Provide factual information, if you have it. Be honest about what you know and don't know. "I don't know, but I will try to find out about that for you."
- Give information in a way the person can understand – keep it simple.
- Acknowledge how they are feeling and any losses or important events they tell you about, such as loss of their home or death of a loved one. "I'm so sorry. I can imagine this is very sad for you."
- Acknowledge the person's strengths and how they have helped themselves.
- Allow for silence.

Things NOT to say and do –

- Don't pressure someone to tell their story.
- Don't interrupt or rush someone's story (for example, don't look at your watch or speak too rapidly).
- Don't touch the person if you're not sure it is appropriate to do so.

- Don't judge what they have or haven't done, or how they are feeling. Don't say: "You shouldn't feel that way," or "You should feel lucky you survived."
- Don't make up things you don't know.
- Don't use terms that are too technical.
- Don't tell them someone else's story.
- Don't talk about your own troubles.
- Don't give false promises or false reassurances. »» Don't think and act as if you must solve all the person's problems for them.
- Don't take away the person's strength and sense of being able to care for themselves.
- Don't talk about people in negative terms (for example, don't call them "crazy" or "mad").

Action principles of PFA:

There are three action principles of PFA – look, listen and link

a. Look

- Check for safety.
- Check for people with obvious urgent basic needs.
- Check for people with serious distress reactions.

Look	Questions	Important message
Safety	<ul style="list-style-type: none"> • What dangers can you see in the environment, such as active conflict, damaged roads, unstable buildings or flooding? • Can you be there without likely harm to yourself or others? 	If you are not certain about the safety of the crisis site, then do not go. Try to get help for people in need. If possible, communicate with people in distress from a safe distance.
People with obvious urgent basic needs	<ul style="list-style-type: none"> • Does anyone appear to be critically injured and in need of emergency medical help? • Does anyone seem to need rescuing, such as people trapped or in immediate danger? • Does anyone have obvious urgent basic needs, such as protection from 	Know your role and try to get help for people who need special assistance or who have obvious urgent basic needs. Refer critically injured people to medical personnel or others trained in physical first aid.

	<p>the weather, torn clothing?</p> <ul style="list-style-type: none"> • Which people may need help in terms of accessing basic services and special attention to be protected from discrimination and violence? • Who else is available around me to help? 	
People with serious distress reactions	<ul style="list-style-type: none"> • Are there people who appear extremely upset, not able to move on their own, not responding to others, or in shock? • Where and who are the most distressed people? 	Consider who may benefit from PFA and how you can best help.

People may react in various ways to a crisis. Some examples of distress responses to crisis are listed below:

- Physical symptoms (for example, shaking, headaches, feeling very tired, loss of appetite, aches and pains)
- Crying, sadness, depressed mood, grief
- Anxiety, fear
- Being “on guard” or “jumpy”
- Worry that something really bad is going to happen
- Insomnia, nightmares
- Irritability, anger
- Guilt, shame (for example, for having survived, or for not helping or saving others)
- Confused, emotionally numb, or feeling unreal or in a daze
- Appearing withdrawn or very still (not moving)
- Not responding to others, not speaking at all
- Disorientation (for example, not knowing their own name, where they are from, or what happened)
- Not being able to care for themselves or their children (for example, not eating or drinking, not able to make simple decisions)

Some people may only be mildly distressed or not distressed at all. Most people will recover well over time, especially if they can restore their basic needs and receive support such as help from those around them and/or PFA.

b. Listen

- Approach people who may need support.
- Ask about people's needs and concerns.
- Listen to people, and help them to feel calm.

Listening properly to people you are helping is essential to understand their situation and needs, to help them to feel calm, and to be able to offer appropriate help. Learn to listen with your:

- Eyes – Giving the person your undivided attention
- Ears – Truly hearing their concerns
- Heart – With caring and showing respect

Steps:**Approach people who may need support:**

- Approach people respectfully and according to their culture.
- Introduce yourself by name and organization.
- Ask if you can provide help.
- If possible, find a safe and quiet place to talk.
- Help the person feel comfortable; for example, offer water if you can.
- Try to keep the person safe.
- Remove the person from immediate danger, if it is safe to do so.
- Try to protect the person from exposure to the media for their privacy and dignity.
- If the person is very distressed, try to make sure they are not alone.

Ask about people's needs and concerns:

- Although some needs may be obvious, such as a blanket or covering for someone whose clothing is torn, always ask what people need and what their concerns are.
- Find out what is most important to them at this moment, and help them work out what their priorities are.

Listen to people and help them to feel calm:

- Stay close to the person.
- Do not pressure the person to talk.
- Listen in case they want to talk about what happened.
- If they are very distressed, help them to feel calm and try to make sure they are not alone.

c. Link

- Help people address basic needs and access services.
- Help people cope with problems.
- Give information.
- Connect people with loved ones and social support.

Frequent needs:

- Basic needs, such as shelter, food, and water and sanitation.
- Health services for injuries or help with chronic (long-term) medical conditions.
- Understandable and correct information about the event, loved ones and available services.
- Being able to contact loved ones, friends and other social supports.
- Access to specific support related to one's culture or religion.
- Being consulted and involved in important decisions.

Ending your help

When and how you stop providing help will depend on the context of the crisis, your role and situation, and the needs of the people you are helping. Use your best judgment of the situation, the person's needs and your own needs. If appropriate, explain to the person that you are leaving, and if someone else will be helping them from that point on, try and introduce them to that person. If you have linked the person with other services, let them know what to expect and be sure they have the details to follow up. No matter what your experience has been with the person, you can say goodbye in a positive way by wishing them.

11. Management of Human Remains in Disasters

Learning Objectives:

- Common myths associated with human remains
- Management of human remains during emergencies

Introduction:

Management of the dead is one of the most difficult aspects of disaster response. It has profound and long-lasting consequences for survivors and communities. Globally, disasters claim thousands of lives each year. However, care of the deceased is often overlooked in disaster planning and the absence of guidance for first responders has recently been highlighted following several large disasters.

Immediately after a major disaster, identifying and disposing of human remains are often done by local communities. Forensic specialists may not be available or unable to rapidly access the affected area. There are simple steps that first responders can take to ensure the dead are treated in a dignified way and that can assist in their identification.

Activities for effective management of human remains:

The following recommendations are a summary of the main activities that are required to make the management of human remains more effective.

The World Health Organization promotes the dissemination of these recommendations to all authorities, agencies and institutions involved in the management of human remains.

1. Define within the Emergency Operations Committee, the institution that will coordinate all processes related to the management of corpses.
2. Determine rapidly (within the first 24 hours) the magnitude of the event, the available resources, and the most urgent needs.
3. Have a single official spokesperson to provide information concerning the tasks of recovery, identification, and location of victims.
4. Notify family members of the death or disappearance of victims in a clear, orderly, and individualized manner.
5. Facilitate access to the bodies for the persons concerned, and provide all possible assistance in final disposition of the body.
6. Bury the corpses in a way that will allow later exhumation. The use of common graves or mass cremations should be avoided in all circumstances.
7. Ensure that there is a plan for the psychological and physical care for the relief workers. Handling a large number of corpses can have an enormous impact on the health of the working team.
8. Burial of bodies in common graves or the use of mass cremation is unnecessary and a violation of the human rights of the surviving family members.

9. Emphasize that, in general, the presence of exposed corpses poses no threat of epidemics. The corpse has a lower risk for contagion than an infected living person. The key to preventing disease is to improve sanitary conditions and to educate the public.
10. Avoid subjecting relief workers and the general population to mass vaccination campaigns against diseases that are supposedly transmitted by dead bodies.
11. Respect the cultural beliefs and religious norms of the affected populations; when the religious beliefs of the deceased are unknown, respect those of the community where the tragedy occurs.
12. The identification of a large number of corpses is a technical challenge that can be met regardless of the number of victims if the authorities act in accordance with specific procedures. Failure to follow these procedures can result in legal consequences in that survivors might present claims of material and moral damages.

Myths and realities of management of dead bodies in disasters:

Myth: Disasters cause random deaths.

Reality: Disasters have the most serious effect on vulnerable (high-risk) geographical areas which is where the poorest populations generally settle.

Myth: The fastest way to dispose of dead bodies and to avoid the spread of disease is to bury them in mass graves or cremate them, a process that will relieve the population.

Reality: The population will be reassured and can better bear the pain from the loss of loved ones when they follow their beliefs and carry out religious rituals, and know that there is a possibility of identifying and recovering the bodies.

Myth: After a disaster, dead bodies always cause epidemics.

Reality: Dead bodies do not cause epidemics in cases of disasters.

Myth: It is better to restrict information concerning the magnitude of the tragedy.

Reality: Restrictions on information promote distrust in the population, resulting in inappropriate behaviors and even violence.

Myth: It is impossible to identify large numbers of dead bodies after a tragedy.

Reality: There are always methods that allow the identification of bodies or body parts.

Myth: DNA technology for the identification of corpses is still not accessible for the majority of countries because of its high cost and the highly technical processes needed.

Reality: DNA profiling is rapidly becoming an identification tool that is accessible for all countries. Furthermore, in cases of major disasters, the majority of countries can provide support with economic and technological resources, among them, DNA technology.

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