DANA

Damage Assessment and Needs Analysis in the Health Sector in Disaster Situations

Manual for Disaster Response Teams

PAHO
Pan American Health Organization
World Health Organization
Regional Office for the Americas

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INTRODUCTION

Disasters have negative effects on health, which vary according to the type of event, place of impact, socio-economic characteristics, the population's level of exposure and preparedness to deal with different hazards, quality of infrastructure, and installed capacity to respond, among other factors.

Only through precise knowledge of damage and effects can a determination be made of where help is needed, what type of help is needed, and how much is required to assist disaster victims. A damage assessment and needs analysis (DANA) makes it possible to identify the impact of a disaster, the risk factors affecting health, and technical needs in areas such as water and sanitation, epidemiological surveillance, health services, shelters, etc.

In 2004, PAHO published the **Manual on Damage Assessment and Needs Analysis in the Health Sector in Disasters Situations**. However, the experiences and lessons of recent years in managing emergencies and disasters in the health sector have highlighted the need to review this assessment and update the proposed tools for assessing damages and needs. To achieve this, existing manuals, guides, and other documents on the subject have also been taken into account, along with the recommendations of multiple disaster experts in the Region.

In this new edition of **Damage Assessment and Needs Analysis (DANA)** in the Health Sector in Disaster Situations, emphasis has been placed on the organization of the health sector, from the creation of an emergency operations committee to the health situation room––a structure that must be reproduced at the national, regional, and local levels. DANA characteristics are analyzed here, and model formats for collecting and analyzing health information are presented, with a view to ensuring that decision-making is based on high-quality technical information, making it possible to assess, prioritize, and plan interventions and request resources for effective emergency response.

II ORGANIZATIONAL MODEL OF THE HEALTH SECTOR IN DISASTER SITUATIONS

A. Structure of the health sector

B. Role of the health sector in emergencies and disasters

1. Responsibilities and actions in the preparedness phase
2. Responsibilities and actions in response efforts

A. Structure of the health sector

The health sector is made up of organizations, individuals, and standards aimed at improving health, whose actions are designed to prevent and control diseases, provide services to the population, conduct scientific research, train personnel, and disseminate health information.

In addition to health care centers and providers of health care services, the sector comprises or has close links with universities, operational emergency response entities, non-governmental organizations, and agencies that provide public services such as water and basic sanitation, carrying out work at the national, regional, and local levels.

> The health system comprises all the organizations, individuals, and actions whose prime purpose is to improve, maintain, or restore health. This covers actions to influence the health determinants and to improve the health situation (...).
>
> Each country organizes its own health system: relations between the health sector and other social and economic sectors; a dynamic vision of the sector that takes account of changes in institutions and their members and in the economic context in which they carry out their activities, and their set of values, knowledge, skills, organization, resources, technologies, interests, and power imbalances; and the functional analysis of the system of health services and the implications for action.
>
> Source: Health in the Americas, PAHO/WHO, 2007.

In the countries of Latin American and the Caribbean, health systems have varying levels of development, and different levels of decentralization and/or privatization, though their core functions are similar. While each country has its own values and principles, all embody the concept that the State is responsible for the health of its population.

The functions of the ministries of health,[1] or of the entity overseeing the national health system, include: defining policies and strategies, and promoting plans and programs aimed at guaranteeing access and quality in the provision of health services, identifying health problems and risk factors, and furthering all efforts involving health promotion, prevention, care, and rehabilitation.

Similarly, all of the Region's countries have established a national system for disaster assistance and prevention, civil protection and civil defense,[2] which always includes the health sector, and in which the sector participates in decision-making within the emergency operations committee. This committee serves as the intersectoral coordination body for decision-making in crisis situations. Its functions are similar throughout the Region, although, its name may vary from one country to another (crisis committee, intersectoral committee, general or national emergency operations committee, etc.).

1 In this guide, "Ministry of Health" refers to the entity responsible for stewardship of the national public health system.

2 Considering the different names and organizational structures in the various countries of Latin America and the Caribbean, this document refers to the "national disaster prevention and assistance system" as the set of institutions, rules, and procedures involved in a country's risk management system.

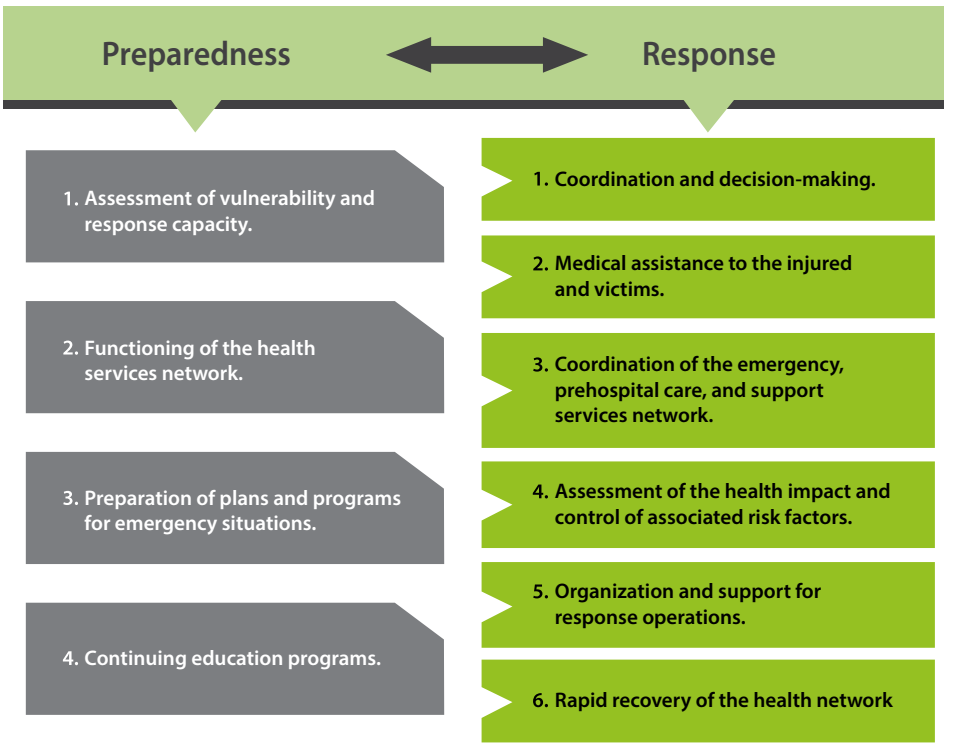
B. Role of the health sector in emergencies and disasters

The scope and responsibilities of the national health system in matters related to emergency and disaster prevention and assistance depend on the structure, operation, and particular laws of each country.

All countries in Latin America and the Caribbean have an area within the Ministry of Health that is responsible for planning and implementing strategies for strengthening the health sector, forming the necessary partnerships for coordinating response efforts in the event of an emergency or disaster, and developing knowledge, training, research, and information management related to preparedness and response.

The Ministry of Health is responsible for coordinating, developing, and implementing emergency and disaster preparedness plans that include reducing the vulnerability of health services, adopting sanitation measures and other actions aimed at minimizing risk factors, protecting the health of people affected, reducing mortality, and mitigating the impact on the health of the general population.

The main responsibilities and actions in emergency preparedness and response are described below:



1. Responsibilities and actions of the health sector during the preparedness phase

Responsibilities	Actions
Assess conditions: threats, vulnerabilities, and response capacity.	**Outline threats, vulnerabilities, and health sector capacities.** This establishes the critical aspects to ensure the proper functioning of the network, evaluate its operational capacity, taking into account risk management, and propose alternative solutions in order to be prepared for any threats.
Ensure the functioning of the health services network.	**Harmonize the referral and counter-referral system and link the network of institutions** (health care facilities, clinical laboratories, pharmacies, etc.). This involves establishing and disseminating criteria for efficient patient care, utilizing the resources available in the network. **Organize the communications, information, and logistics systems** that make up the operational platform that serves as the foundation for an adequate response. It is important to define procedures and channels to ensure effective communication and information flow.
Prepare plans and programs, and implement and disseminate procedures and actions to be followed in emergency situations.	**Establish mechanisms for coordination within and between sectors.** It is important to establish and bring together the participation of members of the Emergency Operations Committee, and collectively define mechanisms and processes for communication and decision-making. **Develop and review contingency plans and action protocols for the different areas and levels of care.**
Design and implement continuing education programs.	**Educate and train health personnel** at the different levels of decision-making and care.

2.Specific responsibilities and actions in the health sector response

Responsibilities	Actions
Enable coordination and decision-making.	**Convene the health sector emergency operations committee**, bringing together the different technical areas of the sector for decision-making, according to the established processes and mechanisms. **Analyze information, make decisions, prioritize actions**, (action plan), **and provide follow-up and feedback** on the actions taken, until the situation is restored to normal. **Request support and coordinate actions** between the different sectors and actors.
Provide medical assistance to the injured and victims.	**Provide first aid, medical assistance, and emergency medical/surgical care.** This is a top-priority activity that should be initiated immediately, within the first 24 hours of an adverse event. It includes search, rescue, first aid, and triage activities. Health facilities should implement response plans, prepared according to their competencies and capabilities.
Coordinate the network of emergency, prehospital care, and support services among the different levels of care.	**Make the necessary contacts between the different health institutions** within the network in order to ensure that patients are cared for at the level required. **Coordinate transfers, shipments of samples, and prehospital care** between different levels of care. **Coordinate the operational capacity of support services** (laboratories, blood banks, diagnostic imaging, hospital waste management, and pharmacy).

Responsibilities	Actions
▸ Assess the impact on public health and on the network of services, and control morbidity, mortality, and associated risk factors.	> **Collect and maintain updated information; deploy damage assessment personnel, and provide support where necessary; verify, in the field, the information received** in the affected areas, coordinating with the authorities and entities capable of providing support. > **Strengthen situation rooms** in the collection and technical analysis of information to be used as input for decision-making. > **Ensure that the epidemiological surveillance system is equipped** to meet the requirements of responding to the emergency or disaster. > **Establish and evaluate the degrees of impact** in the different technical areas (health, monitoring and control of water quality, sewage and wastewater disposal), integrated solid waste management (household /municipal/ and hospital waste, vector control, shelters conditions, and food-supply conditions).
▸ Coordinate and support the needs of response operations.	> **Organize the supply system:** stocks, sorting, and storage of supplies, medicines, and emergency/disaster support items. > **Channel donations and mobilize resources and supplies,** based on needs.
▸ Establish measures for rapid recovery of the health network.	> **Reorganize the network** of service providers. > **Locate supplies and human resources** necessary to ensure care. > **Rapidly rehabilitate** affected health services.

II COORDINATION AND DECISION-MAKING MECHANISMS IN EMERGENCIES AND DISASTERS

Introduction

A. Health Sector Emergency Operations Committee (EOC-HS)

1. Operational and functional structure of the EOC-HS
2. Responsibilities and actions
3. Levels of coordination in the response

B. Information Management

1. Information management process
2. Information flow for decision-making

C. Situation room

1. Main products

Introduction

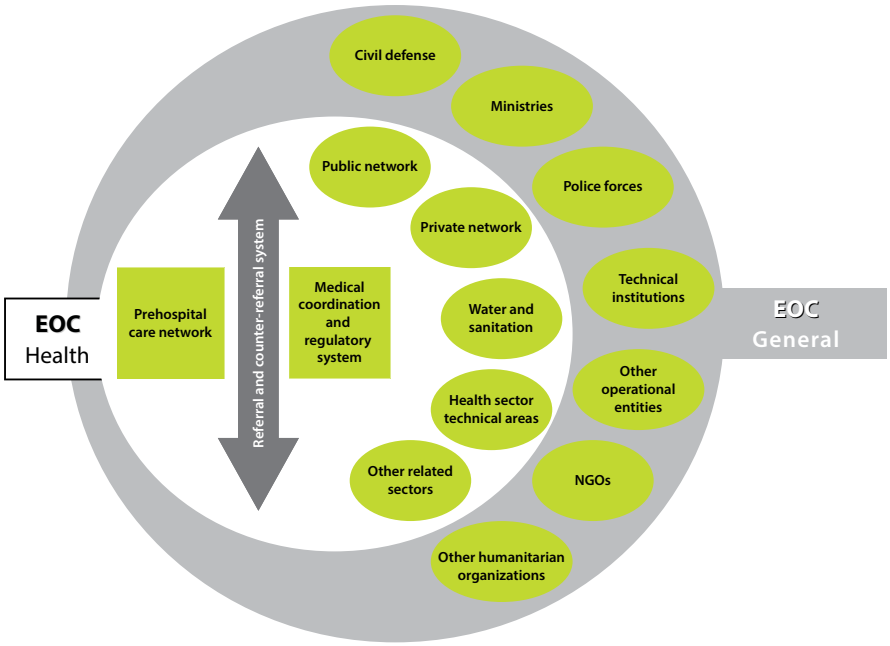
In order to deal with emergency and disaster situations, ministries of health must adapt their structure to ensure that there are efficient mechanisms and procedures for coordination within and between sectors, and for decision-making at all levels of care (national, regional, and local); they must facilitate and ensure the flow of information, monitor actions, and evaluate the impact of such actions in crisis situations. Hospitals should form a hospital crisis committee, i.e., a hospital EOC-HS.

Although the most critical impact of emergencies and disasters is reflected in health (the injured, victims, the missing and in other event-related risk factors), there are other factors that can aggravate the situation, such as road closures, damage to basic services and telecommunications, and social unrest. These events require coordination with the different sectors of society, in order to restore functional capacity and respond to the need for water supply, adequate coverage and quality of basic services and sanitation, food supplies, and personal and security needs.

This intersectoral coordination is carried out through the general or intersectoral emergency operations committee, chaired by the top political authority, with the involvement of sectoral authorities.

At the same time, there must be coordination within the health sector, in order to work effectively and bring any problems to the attention of the emergency operations committee.

The EOC Health within the national disaster response system.



A.Health Sector Emergency Operations Committee (EOC-HS)

In Latin America and the Caribbean, there has been widespread use of health sector emergency operations committees[1] (EOC-HS) as an operational model for dealing with emergencies and disasters. These are led, at each territorial level, by the top health authority (minister of health, secretary of health, etc.). The EOC-HS must make decisions and prioritize needs with the appropriate technical support, obtain the necessary support from other sectors and entities, and develop an action plan to address the emergency and to avoid major risks to health.

Regardless of the name, responsibilities, and organizational structure in each country, it is important that all essential functions to address the emergency or disaster and the processes of collecting information are represented on the Committee, in order to address the health needs of the population and facilitate evidence-based decision-making, based on technical knowledge.

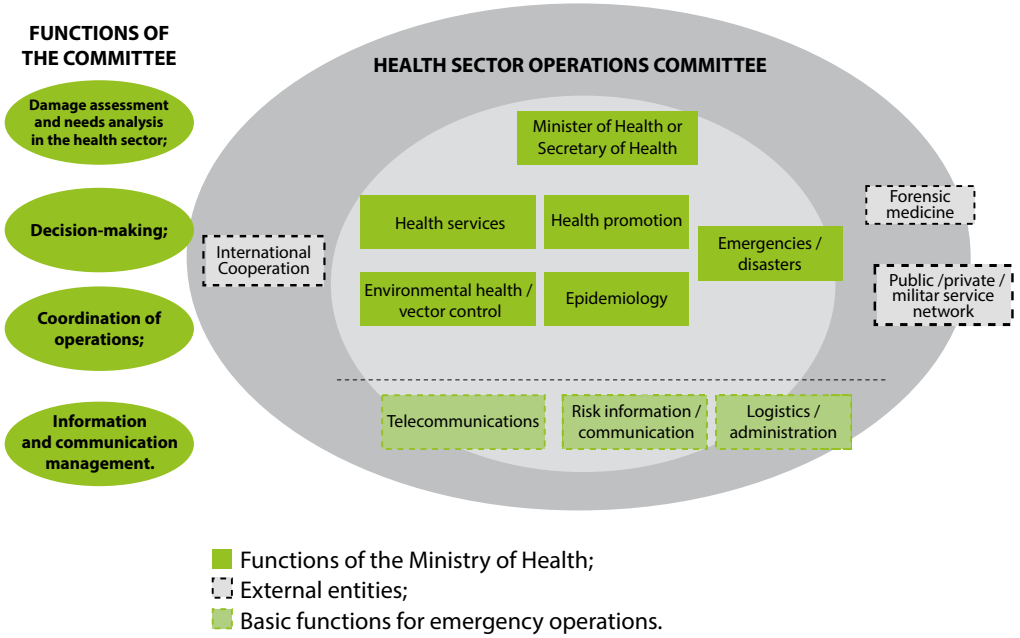
This makes the EOC-HS an effective mechanism for decision-making, basing its work on damage assessments and health situation analyses provided at all territorial levels by the various sectoral entities. This is a collaborative effort in which the information and analyses generated by the "situation rooms" are shared.

Forming a health sector emergency operations committee has the following advantages. It:

- facilitates decision-making and reduces room for error.
- provides for unified command and control, enabling leadership in the health sector.
- establishes a simplified organization, defining clear lines of authority, decision-making, and control.
- facilitates crisis management.
- facilitates the orderly management of information.

1 In some countries, the EOC is known as the crisis committee, emergency health commission, or sectoral committee.

1. Operational and functional structure of the health sector emergency operations committee



In general terms, the health sector emergency operations committee is made up of managers in the key technical areas of the response of the Ministry or Secretariat of Health, such as:

- Minister or Secretary of Health.
- Epidemiology.
- Environmental health (water, basic sanitation, vector control, etc.).
- Health services.
- Emergencies and disasters (ideally the coordinator of the EOC-HS or its executive secretary).
- Health Promotion.
- Communications.
- Administration.
- Logistics. This is usually not part of the ministry structure; however it is indispensable in supporting emergency operations, and should therefore be assigned to a professional. It should be overseen by a skilled and recognized professional within the structure.

- Entities or representatives of sectors involved in emergency and disaster assistance (indicated in the dotted boxes in the diagram on page 10).
- Networks of public and private health services; the military.
- Forensic medicine. This is usually part of the judicial branch, and is an essential element in contingency planning for the management of dead bodies.
- Relief and international cooperation agencies: The Red Cross, United Nations, and others.
- The technical secretariat of the EOC-HS should report to the disaster management office of the Ministry of Health, given its experience in crisis management and the coordinating role it generally plays.

The Committee should meet in executive sessions, i.e., with concrete objectives and a pre-established agenda. The frequency of meetings is determined according to the decision-making needs and dynamics of the emergency.

Technical aspects should be worked out within each area, and problems or issues that require input from other sectors or entities, for strategic and operational decision-making, should be assigned to the committee.

Remember:

It is essential to strengthen the operational, logistical, and telecommunications capacity at the central level of the health sector (warehouse, pharmacy, fleet management, cold chain, etc.), and to ensure that there is a person responsible for these aspects within the health EOC, with representation at all levels (national, regional, and local).

2. Responsibilities and actions of the health sector emergency operations committee

Responsibilities	Actions
1. Coordinate the immediate health sector response.	> Declare the necessary alert level, according to each country's definition. > Make a rapid assessment of the situation (health, infrastructure, accessibility, and response capacity). > Activate the pre-established contingency plans in each of the technical areas. > Deploy response teams when necessary. > Quickly restore the emergency network and priority health programs.
2. Assess damages, prioritize needs, and formulate an action plan.	> Collect information from the different levels. > Strengthen the situation rooms at all levels. > Secure the means of communication and flow of information. > Assess the damages, specify the needs analysis, and ensure that it is continually updated
3. Coordinate with the different sectors in implementing the action plan.	> Based on the needs analysis, identify the support requirements of other sectors with regard to specific issues. > Participate in the general EOC in prioritizing and decision-making. > Channel resources and supplies from different sources (national and international).

In summary, the essential actions and/or products are: prioritizing actions and decision-making, assessing health and the degree to which it has been impacted, outlining capacities and needs, and establishing and implementing the action plan.

These measures make it possible to request the necessary support from the national emergency operations committee or national crisis committee, and to present the health sector's action plan, in order to coordinate efforts with the other sectors.

Securing an efficient coordination and response depends largely on foresight and strategic alliances, in order to ensure that communication, information, and logistics systems––which comprise the operating platform during a crisis––can function properly.

3. Levels of coordination in the response

Based on the degree of decentralization, operational capacity at the local and regional levels, and level of development in each country (in terms of response preparedness), the structure, coordination, and responsibilities are established based on agreements within and between institutions. The basic functions, according to the level of coordination, are presented below.

Levels of coordination	Functions
National	Coordinates the **national action plan** and ensures integration of the national intersectoral health system in the national disaster assistance system **(sectoral action plan)**.
Regional (Region, department, province, etc.)	Coordinates the **regional action plan**, implements actions, monitors progress, and complements local preparedness and response efforts.
Local (Municipality, district, canton, community)	Coordinates the **local action plan**, implements actions, monitors progress, promotes local participation, and coordinates hospital response in its territory.
Hospital (Institution providing health services)	Implements the **hospital emergency plan** according to the health needs generated by the emergency/ disaster, with emphasis on epidemiological surveillance, patient care,referral and counter-referral, increased care capacity, and preparing health care personnel for massive levels of patient care.

B. Information management

Emergencies and disasters are characterized by difficulties in obtaining and processing information efficiently and in real time. Decision-making at the different levels of authority within the health sector should be guided by an analysis of information collected from the impacted areas.

This process requires channels of communication between the various bodies and institutions, so that, at each level, decisions are designed to reduce or eliminate morbidity and mortality, and to re-establish or maintain access to health services.

1. Information management process

Information management

Collection	Analysis	Products
▸ Source of information ▸ Data collection tools and mechanisms ▸ Ongoing updates ▸ Validation, organization, and systematization of information	▸ Converting data into information ▸ Defining analytic criteria ▸ Cross-referencing analytic variables ▸ Processing information ▸ Graphic representation ▸ Analyzing the results	▸ Technical reports ▸ Analysis of health and risk factors ▸ Assessment reports ▸ Dissemination and distribution mechanisms

1.1. Collection:

Information is collected at the local level (place of impact) and must be valid, clear, timely, and expressed simply, with periodic updates. The main sources and instruments used in data collection are:

Sources	Instruments
▸ **Primary sources:** These are collected by the local health assessment team and health authorities.	> Epidemiological health surveillance forms > DANA (damage assessment and needs analysis) forms > Field missions
▸ **Secondary sources:** These come from other sectors and from local stakeholders.	> Reports from other entities (government, NGOs, etc.) > Previous field studies and investigations, thematic maps > Press reports or monitoring > Database

Remember:

It is important to validate information through field visits and contact with other stakeholders, creating exchange mechanisms that confirm, correct, or refute information.

Having information from one or more specific locations within the area of impact informs the decision to send an assessment mission.

1.2. Analysis:

This is the result of interpreting the available information after organizing it, considering all known variables, cross-referencing it, and providing a structured synthesis. It is important to consider:

- The type of event, zoning, and magnitude.
- The affected population, morbidity/mortality, and social and institutional response.
- The impact, needs, provision, quantity, and quality of services/supplies (health, water, energy, housing, sewage disposal, food, supplies, equipment, medicines, advisory services, etc.).
- The effective use, supply, and demand for humanitarian aid.
- The resources used, mobilized, and distributed, and how effectively they are used.

Remember:
Analyzing information in emergency situations is essential for identifying needs, making evidence-based decisions, prioritizing actions, monitoring the health situation, and preparing and disseminating reports.

1.3. Specific products:

The results of collecting and analyzing information are captured in structured reports that can be used by technical teams and decision-makers. The reports are classified into:

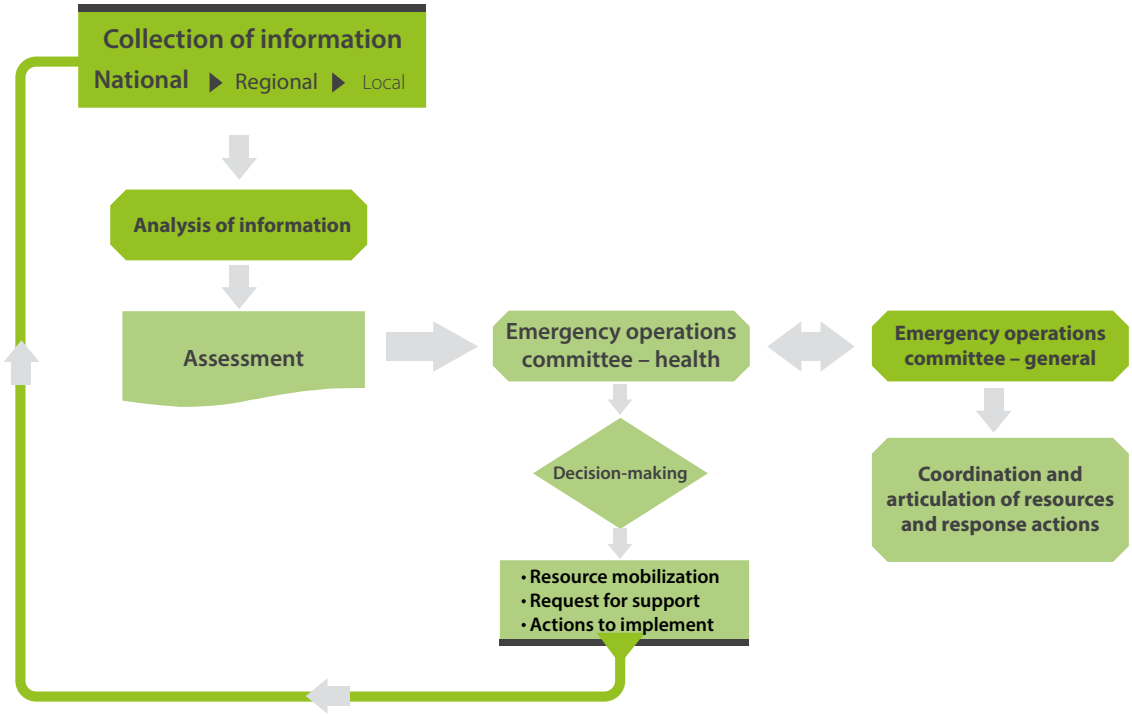
- Technical reports (epidemiological reports, reports on sanitation, operations and response reports, situational reports, reports on damage and impacts on health, and identification of risk factors). [1]
- Analysis of the health situation and risk factors.
- Monitoring and evaluation reports.
- Sampling and study results.

During the information management process, it should be kept in mind that the objective of the product is to support decision-making. The analysis must therefore take account of the following elements:

- Timely provision.
- Appropriate channels and mechanisms for dissemination.
- Relationship between information sources and decision-makers.
- Transparency.
- Dissemination and feedback to the appropriate levels.

1 For more information on the various elements of the reports, please see: Information management and communication in emergencies and disasters. Manual for Disaster Response Teams. PAHO/WHO, pp. 51–57. Panama City, 2009.

2. Information flow for decision-making



Information is captured on the ground (areas impacted, incident command posts, hospitals or health brigades deployed on the ground, response teams) and the results are analyzed by local authorities, who carry out immediate control and assistance actions based on their capabilities. However, the flow of information (impact, operations, capabilities, requirements, decisions, and results) continues to the higher levels of coordination.

In the health emergency operations center, decisions are made concerning the different requirements, resulting in: mobilization of existing resources, request for external support from the international community, or other immediate actions to be implemented (reorganization of the services network, dispatch of evaluation missions, specialized technical teams, etc.). This information flow continues without pause for the duration of the emergency.

Remember:
Do not expect perfectly consolidated information; by the time such information arrives, it may be too late for it to be useful.

Between the different levels of the health sector, information should flow from the local to the national level. The most important information and the needs that require the intervention of other sectors are transmitted to the national emergency operations committee.

Information should also flow to the international level, where cooperation agencies and donors act to support the country.

C. Situation room

This is the physical or virtual place where the process of analyzing information about the health situation is conducted, making use of technical and logistical support (equipment, maps, graphics, and telecommunications media). It provides the emergency operations committee with the information necessary for decision-making and for managing the necessary resources.

The health situation is monitored continuously by the epidemiological surveillance systems, allowing comparisons to be made with previous events through the collection, processing, graphic representation, and analysis of information.

In emergency or disaster situations, the situation room, in addition to utilizing information from the regular surveillance system, incorporates all information relevant to health sector operations. It receives information from different sectors and technical areas – health services, water, epidemiology, outbreak and vector control, health infrastructure, inputs, etc. – involved in controlling risk factors, and in local and regional operations.

The situation room reinforces the health emergency operations committee, and provides ordered, analyzed, synthesized information for decision-making, turning raw data into reliable information.

1. Main products

- Data analysis: preparation of maps, schematics, tables, graphs, diagrams, photographs, etc., as necessary.
- Communications: receiving and sending information.
- Technical and epidemiological reports, reports on health and sanitation infrastructure, on population displacements, and, more generally, on morbidity/mortality, and all available sector-related information.
- Monitoring of news and possible rumors.

Remember:

- The health sector emergency operations committee is a team of high-level officials that meets to make decisions in the event of emergencies and disasters. Its members establish an action plan to respond to the effects and damages of the ongoing event.
- The health sector emergency operations center is the place where technicians and specialists provide operational monitoring of health-related actions and information on how the event is progressing.

  The main characteristics that the health sector emergency operations center should have are: a secure area, a protected and suitable building, a perimeter security system, appropriate signage and access, warehouses functioning around the clock, water reserves, and a power generator.
- The situation room is the place where health information is received (epidemiological information, information on health care and on access to services, and any other information related to the response and to public health). This is where technical staff process, graph, and analyze information coming from the field; once the information is analyzed, it is transmitted to the health sector emergency operations committee.

  The situation room is managed by the epidemiology and public health teams. It is essential, however, that information for other technical health-related areas be incorporated during crisis situations in order to cross-reference variables and provide input for decision-making within the health EOC.

  The situation room is never a substitute or replacement for the EOC-HS; rather, its analysis and the information it generates reinforce the EOC-HS.
- Three elements––the health sector emergency operations center, the emergency operations committee, and the situation room–– must be replicated at all territorial levels (national/provincial, state, departmental/municipal, depending on the individual country's types of administrative divisions).
- Neither the equipment nor the facilities are the most important elements; what matters is technical capacity, quality of information analysis, validation of processes, ability to adapt to circumstances, a positive attitude, actions undertaken, implementation, and ongoing monitoring. Also essential are good leadership, teamwork, and proper delegation of functions.

III DAMAGE ASSESSMENT AND NEEDS ANALYSIS IN HEALTH AND DECISION-MAKING

A. Essential areas for assessment

B. Tools for information collection and analysis

C. Assessment of response systems

A. Essential areas for assessment

Damage assessment and needs analysis (DANA) must be carried out by health authorities and by entities providing emergency and disaster assistance in order to generate technical, high-quality information for assessing, prioritizing, and planning interventions in the sector and requesting resources for responding effectively.

It is important to use standardized formats to collect, organize, consolidate, and analyze the information in a way that, once it is screened by the situation room's various technical areas (epidemiology, health services, water and sanitation, etc.), it can be presented to decision-makers. Using this information, the health sector crisis committee or emergency operations committee must then formulate an action plan to strengthen or focus immediate health-related response efforts.

This chapter describes the areas in which DANA should be prioritized, the main aspects to be assessed, and the needs to be identified. The tools for collecting and analyzing information and for assessing the response are analyzed. Lastly, a set of formats and technical indications is presented, in order to guide and facilitate the assessment process. Countries or organizations can adapt these formats to their individual needs, or can simply use them as comparative models. What is important is that they exist, that they meet the desired requirements, and that they are widely known and shared before an emergency occurs..

Area	Effects of disasters	Aspects to be assessed	Needs to be identified
HEALTH	Direct public health effects (people injured, killed, or missing) and indirect effects (environmental impact)	> Morbidity > Mental health > Mortality > General public health conditions > Dead body management	> Requirement for search, rescue, and recovery personnel > Support for human resources in health > Emergency supplies (medical supplies and medications) > Epidemiological surveillance > Dead body management
	Damage to the health services network	> Functionality of health services (health institutions) > Response capacity > Network functionality (referral and counter-referral, communications and information) > Logistics system	> Patient referral and transfer > Medical supplies and medicines > Communication and information system (interconnection) linking institutions in the network > Logistical needs (alternative transportation, communications equipment, storage and inventory systems, etc.)

Area	Effects of disasters	Aspects to be assessed	Needs to be identified
HABITAT* – Water	Interruption, contamination, or reduction of water supply	> Availability of sources of water supply > Supply and water quality (quantity, quality, and timeliness/ continuity, related to frequency of service) > Identification of critical points in the water supply systems, from point of capture to user	> Personnel, equipment and/or supplies/reagents for water quality control and treatment > Recovery and/or rehabilitation of water supply sources/systems > Safe water storage and supply (community or individual tanks) > Inputs for re-establishing critical points in supply systems > Containers suitable for home > Health education
HABITAT* – Basic sanitation	Interruption of sewage, wastewater, and solid waste disposal systems, or saturation due to increased demand	> Level of effect on basic services > Population exposed to risk factors due to inadequate basic sanitation > Identification of critical points in sewerage and wastewater disposal systems > Other associated risks (environmental, soil, and water pollution)	> Epidemiological surveillance > Control of environmental risk factors > Control of associated diseases > Technological solutions for adequate basic sanitation (treatment and disposal) > Inputs for re-establishing critical points in sewerage and wastewater disposal systems > Health education
HABITAT* – Housing	Impact on housing Increased risk factors Cuts or limits on the provision of basic services	> Provision of shelters or temporary housing in good condition > Hygienic-sanitary conditions of shelters or temporary housing	> Temporary accommodations > Control of environmental risk factors > Technological solutions for water and basic sanitation > Personnel to staff shelters/temporary housing > Health education
FOOD	Limited access as to quantity and/or quality of food (affected and/or displaced populations)	> Food preparation safety > Nutritional balance	> Provision of balanced diets > Food supplements for special populations > Nutritional assessments > Support in the proper handling of food preparation

* The term "habitat" refers to living conditions, water, sanitation, and housing.

B. Tools for information collection and analysis

The assessment should lead to an analysis of the damage that has occurred, health needs, and response capacity, in order to:

- Make decisions that respond in a timely and effective manner to the priority areas of: initial intervention (search, rescue, or evacuation), health care, basic sanitation, and rapid rehabilitation of health infrastructure.
- Modify the intervention and design new strategies and measures to protect public health while the disaster's effects on health persist.
- Implement plans and programs that lead to the search for information and analysis of health needs, in order to determine their impact and to adjust programs and implement new strategies.

Below are some tools for assessing each of the essential areas, and decisions that can be made based on analysis of the information obtained.

Area	Tools	Objective	Decisions to make
HEALTH	**Form for rapid health assessment (Annex 1).** Contains: A. General information B. Effects on health C. Damage to the health services network D. Support requirements for the services network	> Determine and report, as soon as possible, the type and extent of effects on the health of the affected populations, the damage caused, and the areas requiring the most urgent interventions.	> Dispatch of personnel > Requesting and/or coordinating support for the transfer and care of victims > Coordinating and managing network information > Patient referrals > Redistribution of the services network > Requesting (specific) emergency supplies > Coordinating with other entities operating in the region > Implementing the daily epidemiological surveillance system
	Form for rapid damage assessment of health facilities (Annex 2)	> Determine the damage to health institutions, the functionality of their services, and response capacity.	> Reorganizing the network and distribution of human resources

Area	Tools	Objective	Decisions to make
HEALTH	Daily epidemiological surveillance form **(Annex 3)**	> Determine (using a form detailing symptomatic conditions) effects on the health of the population in shelters and of those staying with relatives or neighbors.	> Definition of sites and type of care provided to persons identified > Verification of the conditions of people with underlying health conditions, and definition of the type and system for supplying medications > Coordination of solutions for people with special needs
HABITAT* Water	Forms for assessing water supply and quality **(Annex 4).** Contains: A. Assessment of the water systems (general) B. Water quality control record (periodic)	> Determine the impact on water quality and water supply, and on storage systems.	> Requesting support and/or dispatching personnel, equipment and/or supplies to assist in water quality control or purification > Strengthening the water quality and control surveillance system (including laboratory work and strengthening laboratories) > Requesting support for supply of safe water > Implementing epidemiological surveillance of risk factors associated with water quality
HABITAT* Sanitation	Form for rapid health assessment (see Annex 1 on rapid health assessment, p. 34)	> The purpose of this section is to quickly determine the basic services affected and possible risk factors associated with the event	> Definition of a model of care in health and response appropriate to the emergency > Measures to expand evaluation of the impact on the population's health > Coordination and prioritization of health care measures > DANA and logistics to ensure care for those affected > Coordination of actions with other sectors to improve the access to services and to reduce risk factors

Area		Tools	Objective	Decisions to make
HABITAT*	Sanitation			> Request for support for safe water supply and rehabilitation of water supply sources and/or systems > Implementation of epidemiological surveillance of risk factors associated with basic sanitation
	Housing	Form for rapid shelter assessment **(Annex 4).** Contains: A. Identification of the shelters (consolidated) B. Patient identification (information for the nearest or most appropriate medical center)	> Identify populations at risk of being displaced from their homes. > Determine the link between shelters and the health sector. > Identify vulnerable populations in the shelters. Identify environmental risk factors and food preparation/ distribution conditions.	> Coordinate medical care, cleaning services, and health promotion for shelters > Manage and/or provide services and medications for populations with special needs and based on age and gender, and coordinate intersectoral assistance > Epidemiological surveillance of risk factors

C. Assessment of response systems

Area	Tools	Objective	Decisions to make
Health	Form for logistics system verification **(Annex 6)**	> Establish the logistical capacity of the health network at each level of care.	> Identify solutions and/or alternatives to improve logistical factors and to increase the effectiveness of health-related actions required by the crisis.
Shelters	Form for assessing health in shelters **(Annex 7).** Contains: 1. General information 2. Distribution of the population 3. Water supply 4. Sewage disposal 5. Solid waste 6. Vector control 7. Food	> Determine environmental risk factors in facilities dedicated to sheltering people after an emergency or disaster.	Implementation and coordination of control efforts at the local health level, in conjunction with other sectors, in light of various risk factors. > Overcrowding > Safety > Distribution of the sheltered population > Provision of latrines Safe water management and disposal > Monitoring and control of water quality > Solid waste management > Rodent and vector control > Community participation > Health education > Care for people with special needs > Ensuring medications for patients > with chronic health problems > Medical care for identified health conditions > Hygiene and control measures
	Sanitation guide for temporary shelters **(Annex 8).**	> Determine environmental risk factors in facilities dedicated to sheltering people after an emergency or disaster.	> Identification and implementation of actions with regard to water quantity, quality, treatment, and use > Identification of critical aspects for the proper use of water in shelters

Area	Tools	Objective	Decisions to make
Shelters			> Organization of water management in shelters > Implementation of actions for the disposal and management of sewage and solid waste in the shelter > Identification of actions for proper food handling > Health education
Food	**Minimum requirements for water, sanitation, and nutrition (Annex 9).**	> Remember to consider the allowable basic levels for shelters.	> Ensure basic levels of water, sanitation, and nutrition

ANNEXES

Annex 1. Rapid Health Assessment

Annex 2. Rapid Damage Assessment of Health Facilities

Annex 3. Epidemiological surveillance

Annex 4. Assessment of water supply and quality

Annex 5. Rapid Shelter Assessment

Annex 6. Logistics System Verification

Annex 7. Assessment of health conditions in shelters

Annex 8. Water and sanitation in emergencies

Annex 9. Minimum requirements for water, sanitation, and nutrition

Annex 1

Rapid Health Assessment – A. General information

(Report as soon as possible)

Report No. _____ **Date of preparation:** M D Y **Time:** _____

Prepared by: _____
(Name / Title)

Event Type: _____ **Event Date:** M D Y **No. of Days After Event:** _____

Location of the event: _____ **Country:** _____
(Geographic location by administrative/political division)

Population sheltered/evacuated: Yes ☐ No ☐ **No. Shelters** _____ **Approx. population** _____

General description of the damages:

Place(s) affected (1) (Specify neighborhood/canton/commune/ municipality-department/region)		Total population (2)	Basic services affected (3)												Types of available access (waterway, air) (4)			Comments (5)
			Water supply		Trash collection		Sewerage/ sewage/ drainage		Electrical power		Communications		Transportation					
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Specify	
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10(6)																		

(1) Indicate the location of the event, including the administrative/political division (e.g. municipality, province, region, department, and country), and specify, in each of the table's rows, each area (sub-level) affected by the event.
(2) Enter the population (number) of each of location affected.
(3) Identify the impact on basic services, marking an X to indicate whether or not the service described in each of the areas was affected.
(4) Indicate whether there is available access to the affected location, and specify the type of access (land or road access, river, air).
(5) In the comments section, detail the data you consider necessary for decision-making, based on each of the locations affected.
(6) If more lines are needed, use a new form and continue the data record.

Annex 1

Rapid Health Assessment – B. Effects on health

(Report as soon as possible)

	Location(s) affected (1) (Specify neighborhood/canton/commune/ municipality-department/region)	Injured (2)		Victims (3)		Sufficient morgue capacity		Other problems in identifying or management of dead bodies (4)	Comments (5)
		Local treatment	Need for transfer	Dead	Missing	Yes	No		
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

(1) Data correspond for the distribution in the affected area, according to the political-administrative division.
(2) Indicate the number of injured, taking into account the local capacity for treatment and the need for transfer to another level or location.
(3) Indicate the number of victims, specifying the number of dead and missing at each location affected.
(4) Indicate the problems in identifying cadavers (body bags, final disposal, personnel).
(5) In the comments section, detail the data you consider necessary for decision-making, based on each of the locations affected.

Annex 1

Rapid Health Assessment – C. Damage to the health services network

(Report as soon as possible)

Existing hospital network in the area affected (1)	Names of institutions in the network (2)	Hospital level of complexity (3) 1, 2, 3 – high 1/2 – low	Operation (4)		Access (5)		No. beds available (6)	Services available: surgery, anesthesia, orthopedics, imaging, etc. (7)	Comments (8)
			Total	Partial	Yes	No			

(1) Based on the distribution of the services network, identify the health region to which the institutions belong (hospitals, health centers and health care posts that are part of the network in their area of influence).
(2) Indicate the name of each of the institutions that are part of the hospital network.
(3) Indicate the level of complexity or specialization of the institution, based on the country scale, specifying a greater or lesser degree of specialization.
(4) Identify whether the institution is fully or partially functioning (mark with an X, as appropriate).
(5) Indicate whether or not there is access to the institution (mark with an X, as appropriate).
(6) Indicate the number of beds available (in each institution).
(7) Indicate the services available for each institution.
(8) Use the comments box to clarify or provide important information on damage that requires prompt resolution. Clarify the availability of health personnel, if necessary.

Annex 1

Rapid Health Assessment – D. Support requirements in the health services network

(Report as soon as possible)

Functionality of the network	Yes	No	Actions/resources	Problems	Priorities	Comments
Are there other entities working on health in the affected areas?						
Is the system of coordination between the services network working?						
Are the institutions in the services network connected?						
Is there a flow of information within the services network?						
Is the referral and counter-referral system working?						
Is the prehospital care system working?						
Is the medication distribution/warehouse system working?						
Is there a need for emergency supplies?						
Have logistical needs been assessed?						
Is there a need for dead body management?						

Additional comments:

Annex 2

Rapid Damage Assessment of Health Facilities

Event: _____ **Assessment date:** M D Y

Institution: _____ **Name of the evaluator:** _____

No. of beds available (post-event): _____ **Total no. of beds (pre-event):** _____ **Total services available:** _____

List of services	State of the services	Human resources	Supplies	Equipment	Infrastructure	Comments
General medicine						
General surgery						
Gynecology/obstetrics						
Pediatrics						
Operating room						
Outpatient						
Emergency						
Pharmacy						
X-ray						
Laboratory						
Physiotherapy						
Support services						
Laundry						
Sterilization						
Nutrition						
Transportation (Ambulance)						
Morgue						
Basic services						
Electricity		N/A	N/A			
Water supply		N/A	N/A			
Communications						
Telephones		N/A	N/A			
Radiotelephone						

Instructions: Fill in the boxes according to the corresponding codes; add any clarifications in the comments box.

Code	Status of service	Personnel	Supplies	Equipment	Infrastructure
0	No service	No personnel	No supplies	Not functioning	Not functioning
1	Emergency service only	Emergency personnel only	Emergency supplies only	Moderate damage, limited operation	Moderate damage, limited operation
2	Limited service	Limited personnel	Limited supplies	Minor functional damage	Minor damage
3	Normal service	Normal personnel	Normal supplies	No damage	Functional
X	Not available	Not available	Not functioning normally	Not functioning normally	No damage

Annex 3

Epidemiological surveillance (*1)

Hospital/health facility/shelter details:

Name/Location: _____ _____

Name — Location/ city/ site

Prepared by: _____ **Date:** _____

Name/title

Symptomatic conditions:

Sign, symptom, or condition	Distribution by age group and sex												Comments
	0 - 1		0 - 4		5 - 14		15 - 59		60 +		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	
Fever													
Fever and cough													
Fever and hives (skin rash)													
Fever and bleeding													
Diarrhea													
Jaundice (yellow skin)													
Other conditions (specify)													
Injured (2)													
Dead (2)													
Patients with disabilities (2)													
Patients with chronic diseases (2)													
Other important health information (3)													

(*1) This form can be used by non-specialized personnel, with basic guidance. The idea is to capture the information on a daily basis originating from the sites of shelters for affected individuals, to serve as guidance and warning to the medical personnel responsible for the area, and to facilitate the monitoring of health conditions and assist decision-making.
(2) Indicate only the new census for the day.
(3) Record the identified problem and the name of the affected person under comments.

Annex 4

Assessment of water supply and quality – A. Assessment of the water systems (general)

Location(s) affected (1) (Specify neighborhood /canton/commune /municipality-department /region)	Total population (2)	Availability of water services (3)			Previous treatment (4)		Damage to sources (5)			Damage to storage tanks (6)			Water Quality Control (WCC) (7)		Requires supplies /staff for WCC (8)		Pipelines (9)			Estimated rehabilitation time (days /months /years) (10)	Local means for rehabilitation (11)		Comments (Specify requirements) (12)
		Yes	No	Pop.	Yes	No	Yes	No	m^3	Yes	No	Cap. m^3	Yes	No	Yes	No	Yes	No	Meters		Yes	No	

(1) Name of the site where the test was performed or sample taken (for subsequent locating).
(2) Total or approximate population of the location referenced.
(3) Indicate with an X, as appropriate, whether or not there is water service and the size of the population covered.
(4) Indicate with an X, as appropriate, whether the water supplied is pretreated.
(5) Indicate with an X, as appropriate, whether or not there is damage to the water sources, and approximately how many m3 are calculated to have been lost.
(6) Indicate with an X, as appropriate, whether or not there is damage to the storage tanks, and approximately how many m3 are calculated to have been lost.
(7) Indicate with an X, as appropriate, whether water quality control is in place.
(8) Indicate with an X, as appropriate, whether supplies or personnel for water quality control are required.
(9) Indicate with an X, as appropriate, whether or not there are pipelines, and the approximate linear meters of damaged lines (if information is available).
(10) Indicate, if known, the estimated time required for rehabilitation, in days/months/years.
(11) Indicate whether there are local means to rehabilitate the service (personnel, pipes, supplies).
(12) In comments, specify the requirements and, if the location was affected but no information is available, record that also in this column.

Annex 4

Assessment of water supply and quality – B. Water quality control (periodic)

No.	Number or location of site where sample was taken (1)	Date (Day/Month/Year)	Name of disinfecting agent (2)	Residual chlorine (3)	Responsible party (4)	Comments (5)

(1) Name of the site where the test was performed or the sample taken (for subsequent locating). Record the GPS coordinates if available.
(2) Name or symbol of the disinfecting agent used.
(3) Record the value of chlorine found, if applicable, or indicate N/A if not applicable.
(4) Indicate the name of the person responsible for taking the sample or making the measurement.
(5) Record comments on hygienic-sanitary conditions, water distribution, quantity, and supply deemed relevant, or storage conditions, and possible solution to the problem. Record the contact telephone numbers of the people responsible at each site.

Annex 5

Rapid Shelter assessment - A. Identification of shelters (consolidated)

Site/area (1)	Name of the shelter (2)	Population being sheltered (total)	Type of shelter (3)			Health (4)												Environmental sanitation						Food safety inspection		Comments (6)
			Official	Improvised	In a family home	Receives health care		Reports to the ESS (4)		Older adults (5)		# people with chronic diseases (5)		# persons with functional limitations		# people with special nutritional needs (5)		Adapted sewage disposal		Waste-water drainage		Solid waste disposal				
						Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		

(1) Identify the location and address or site. If there is insufficient space, use another sheet and continue recording.
(2) Indicate the name by which the shelter is known.
(3) Identify with an X the type of shelter: official, improvised, or in a family home.
(4) Epidemiological Surveillance System (ESS). Identify with an X whether or not this form is being delivered regularly to the nearest medical personnel or health center.
(5) Identify with an X whether or not there are older adults in the shelter, or people with chronic diseases or other identified risk factors. Record, report, and send to the nearest medical center.
(6) In comments, add any useful additional information available for each location and/or any identified risk factors.

Annex 5

Rapid Shelter Assessment – B. Identification of patients (information for the nearest medical center or other, as appropriate)*

Shelter or institution	Name and surname of the patient	Medical requirement or formula	Availability				Comments
			Yes	No	Quantity	For how long	

* Indicate the names and exact location of patients, with the requirements, and report them to the nearest health care center.

Annex 6

Logistics System Verification

Functions	Description	Performed (1)			Responsible party (2)	Comments (3)
		Yes	No	Partial		
Management of the health supply chain	Supply chain and human resources contracted or overseen by logistics					
Procurement and purchases	Selection, procurement, subcontracting					
Storage and inventory	Warehouse management					
	Inventory movement					
IT, radios, and communications	Network functioning					
	Communications center					
	Field offices					
Transportation	Goods					
	Means of transport					
	Transportation provider management					
	Fleet management					
Maintenance	Communications equipment					
	Medical systems					
	Vehicles					
Imports and donations	Handling of documents and procedures for imports and donations					
Implementation of LSS-SUMA (or other systems)	System for donations and supplies					
Basic needs for regional emergency response team operations	Set up to operate, food, security, morbidity					

(1) Mark with an X to indicate whether the function described is: met, unmet, or partially met.
(2) Record the name and contact telephone number of the person responsible for the process cited.
(3) Add any comments you consider relevant.

Annex 7

Assessment of health conditions in the shelter

1. General information

Name of the shelter:	Address/location/GPS coordinates:	Size of shelter (area in m2):
Person responsible for the shelter/entity:	Telephone number(s):	Approximate area (m2) per person:

2. Population distribution

Total population sheltered:	
Male:	Female:

Origin(s) of displaced population(*):	
Urban area	**Rural area**
Comments	
(*) Describe the place where the sheltered come from, as appropriate.	

Distribution by age group:			Comments
	Male	Female	
Under 1 year old			
1-4 years old			
5-14 years old			
15-59 years old			
60 years old and older			

Indicate the number of people with:	
Chronic diseases	
Medical treatment or special care requirements	
Disability or requiring special care	

Annex 7

Assessment of health conditions in shelters

3. Water supply

Is there water for human consumption?	☐ Yes	☐ No	Frequency:	☐ Daily	☐ Weekly	☐ Other			
Origin of the water:	☐ Public network	☐ Well	☐ Water Truck / tank truck	☐ Stationary tank	☐ Other (specify) _____				
Storage: ☐ Tank ☐ Other system _____ (*) List the tanks to identify and locate them for sampling. If there is insufficient space in comments, use the reverse side of the sheet. Capacity (m3): _____ Material: _____ Condition: ☐ Adequate ☐ Inadequate							Comments (*)		
Treatment:	☐ Yes	☐ No	Type:	☐ Sedimentation	☐ Filtration	☐ Disinfection	☐ Other (specify the chemical) _____		
Quality control:	☐ Yes	☐ No	Frequency:	☐ Daily	☐ Weekly	☐ Other			
Comments*									

* Complete the information, add clarifications, indicate the entity or NGO providing water support and technical assistance. Name of the contact person(s).

Annex 7

Assessment of health conditions in shelters

4. Sewage disposal

Existing sewage disposal system: ☐ Yes ☐ No Comments: _____

☐ Sewerage ☐ Latrine ☐ Septic tank ☐ Mobile /chemical units ☐ Other (specify) _____

Is there rainwater drainage? ☐ Yes ☐ No Condition:

Is there availability of sanitary units?

Item	Number available for			Condition at time of viewing (1)		Comments/Recommendations
	Children	Women	Men	Good	Bad	
Sanitation units						
Toilet bowls						
Sinks						
Showers						
Urinals						
Community organized for cleaning: ☐ Yes ☐ No						
Frequency of cleaning ☐ Daily ☐ Periodic ☐ Weekly						
Safe for users ☐ Yes ☐ No						
Distance to the shelter _____ meters						
Distance to water sources _____ meters						
Water and cleaning supplies implements available ☐ Yes ☐ No						

(1) Record the conditions found at the time of the inspection; specify damage, and add any additional remarks in comments.

Annex 7

Assessment of health conditions in shelters

5. Solid waste

	Comments
Internal collection: **Sufficient:** ☐ Yes ☐ No Conditions: ☐ Good ☐ Bad ☐ Fair **Containers (drums, bins):** ☐ Yes ☐ No Sufficient: ☐ Yes ☐ No **Frequency of collection:** ☐ Daily ☐ Weekly **Person responsible:** _____	
Internal collection: ☐ Yes ☐ No Conditions: ☐ Good ☐ Bad ☐ Fair **Frequency of collection:** ☐ Daily ☐ Weekly ☐ Periodic **Person responsible:** _____	
Cleaning of the shelter: ☐ Yes ☐ No **Community participates:** ☐ Yes ☐ No **Frequency:** ☐ Daily ☐ Weekly ☐ Periodic **Person responsible:** _____	

6. Vector control

	Comments
Detection of breeding sites/foci: ☐ Yes ☐ No **Control measures:** ☐ Yes ☐ No	
Detection of vectors/rodents: ☐ Yes ☐ No **Specify**	
Control measures:	
Responsible institutions or entities:	

Annex 7

Assessment of health conditions in shelters

7. Food

		Comments/Recommendations
Assessment of the kitchen:	☐ Adequate ☐ Inadequate ☐ Options/needs	
Person in charge of food/kitchen:	_____	
Fuel used:	☐ Kerosene ☐ Propane gas ☐ Firewood ☐ Charcoal ☐ Other (specify) _____	
Sanitary conditions:	☐ Adequate ☐ Inadequate	
Safety measures:	☐ Adequate ☐ Inadequate	
Infrastructure:	☐ Adequate ☐ Inadequate	
Rules of conduct:	☐ Yes ☐ No	

Assessment of the food:		Comments
Refrigerator	☐ Yes ☐ No ☐ Insufficient	
Type of preservation	☐ Adequate ☐ Inadequate	
Sufficient food	☐ Yes ☐ No	
Regular supply	☐ Yes ☐ No	
Problem(s)/description:		

Water and sanitation in emergencies

Health entities must be proactive with local and national authorities to achieve rapid rehabilitation of water supply and disposal of sewage and solid waste. A sanitation system in shelters and camps should consider the application of simple engineering techniques, social and cultural factors in the location where the intervention is to occur, analysis of available local resources, cost, and time.

The health sector should promote coordination with the institutions responsible for basic sanitation and emergency management (municipalities, civil defense, ministry of health, water and sewerage companies, etc.), as well as seeking joint solutions. A rapid assessment of the situation is also essential, in order to formulate a sanitation assistance plan. The specific indications for sanitation that should be considered are described below.

1. Water

		What to do
Quantity	General indications	Verify that there is the ability to store water properly in shelters, homes, and health institutions. The distance from the Water source should be no more than 500 meters. People with special needs should be taken into account, so that, according to the circumstances, the necessary supply of water can be provided for: (*) Food preparation: 3–6 liters/person/day. (*) Ensure survival: 2.5–3 liters/person/day. (*) Total recommended availability: 7.5–15 liters/day.
	Health entities	Inpatient: 40–60 liters/patient/day; Outpatient: 5 liters/patient/day.
Quality	General indications	(*) Confirm the origin of the water being supplied. (*) Identify what treatment is being applied, person responsible, and frequency of treatment. (*) Identify type and condition of the tank that makes the water distribution (*) Identify who is carrying out water quality control (both for the vehicle that transports the water and on-site). (*) Verify sampling taken, shipment and reception at the laboratory, and processing and delivery of results, so actions can be implemented accordingly (*) Verify whether there are tanks, lidded drums, and faucets. Identify whether the supply and storage conditions (such as raised tanks with lids and valves) are sufficient and adequate. (*) Request from the appropriate person the necessary items for water treatment, cleaning, family water containers, and general hygiene items.
Recommendations	Utilization	(*) Locate the best site for water intake; distance from the intake point should be no more than 500 meters. (*) Verify that families have what is needed for water collection; monitor the frequency of filling and proper water use. (*) Verify internal water distribution process. (*) Verify the state and use of materials. (*) Verify who oversees the procedures involved in water use. (*) Verify proper use of water in toilets. (*) Verify proper use of water for laundering clothes. (*) Verify proper use of water for personal hygiene. (*) Verify proper use of water for food preparation. (*) Verify the state of wastewater drains.
	Organization	(*) Organize community teams responsible for health, food, water, sanitation, cleaning and hygiene, health education, recreation, and safety. (*) Coordinate water distribution (distribution points, frequency, schedules); provide ongoing reports to the community. (*) Monitor water quality at: points of delivery, storage, and use (shelter, homes, communal tanks).

* Avoid requesting water, stock, and supplies without having first made a serious and responsible assessment of the state of local water systems. Avoid installing technologies without prior training. Quality should be assessed by water and sanitation technicians.

Annex 8

Water and sanitation in emergencies

1. Water

What to do

Water treatment and disinfection of storage tanks

General indications

- **Sodium hypochlorite** is a solution that can be obtained in concentrations of 1% to 10%. It is unstable at concentrations greater than 10%. Commercial hypochlorite solutions may be appropriate, but if they are produced specifically for washing clothes and general household cleaning, they usually contain other toxic substances, in which case they should not be used for disinfecting water for human consumption.
- **Calcium hypochlorite** is sold in powder or granular form in available chlorine concentrations of 20%, 35%, 65%, and 70%, and in tablet form in available chlorine concentrations of 65% and 70%. From a practical perspective, it is generally much easier and more precise to use a hypochlorite solution rather than a powder or granular solution when disinfecting water for household use. Thus, it is common practice to prepare a standard solution with an available chlorine concentration of 1% for this purpose.
- Preparation of one liter of 1% hypochlorite solution with various calcium hypochlorite compounds:

Recommendations

Name of compound	Available chlorine
Chlorinated lime	20
Chlorinated lime	25
Calcium hypochlorite	35
HTH calcium hypochlorite	65
HTH calcium hypochlorite	70

Recommendations for household and individual use

If using calcium hypochlorite at 65% active chlorine, prepare a stock solution (10 grams per 20 liters of water) and use it to wash the containers; leave on for 5 minutes and rinse very well with water.
If using sodium hypochlorite: moisten a cloth or sponge, rub on the walls and bottom of the container, leave for 5 minutes, and rinse.
Common commercial disinfectants available on the market, for household and individual use:

BRAND NAME Active chemical ingredients	PACKAGING AND RECOMMENDED DOSE	COST/TABLET IN US$
Halazone (carboxybenzene sulfur dichloride)	Bottle of 100 tablets	
4.0 mg tablets	1 tab. per liter of water	0,02
160 mg tablets	1 tab. per 40 liters of water	0,05
Potable water or Globalin (tetraglycine hydroperiyodide)	Bottle of 50 tablets	0,05 - 0,10
8 mg tablets	1 tab. per liter of water	
Aquatabs (sodium dihydroisocyanate)	Strip of 50 tablets	
17 mg tablets	1 tab. per five liters of water	0,0065
85 mg tablets	1 tab. per 25 liters of water	0.0158
167 mg tablets	1 tab. per 50 liters of water	0,005
Chlor-floc (sodium dichloroisocyanurate)	Package of 10 tablets	0,05 - 0,10
600 mg tablets (contain flocculating agents)	1 tab. per liter of water	

* Avoid requesting water, stocks, and supplies without having first made a serious and responsible assessment of the state of local water systems. Avoid installing technologies without prior training. Quality should be assessed by water and sanitation technicians.

Annex 8

Water and sanitation in emergencies

2. Disposal of excreta

		What to do*
Recommendations	Disposal	- Try to have one toilet for every 20 people. - Analyze possible solutions, according to the location of the shelter; ensure hygiene and cleaning supplies for hand washing and cleaning of toilets after use. - Situate the facilities at a minimum distance of 50 meters from the house. - Protect surface and groundwater sources by situating latrines or sanitary facilities at a minimum distance of 100 meters from any water supply source. - Always consider gender differences, take into account minors and people with special needs. - Ensure the provision of toilet cleaning supplies and safety equipment.
	Treatment	(*) Request and promote the proactive participation of civil and community authorities in organizing the collection, transportation, and final disposal of waste.

* Avoid requesting water, supplies, and supplies without having first made a serious and responsible assessment of the state of local water systems. Avoid installing technologies without prior training. Quality should be assessed by water and sanitation technicians.

Annex 9

Minimum requirements for water, sanitation, and nutrition

Water(*)[1]:		
Quantity	20 liters/person/day 250 people per intake point	
Distance	No more than 100 meters from the dwelling	
Distance between latrines and water points	Minimum of 100 meters	
Sanitation:		
Latrine	1 per 20 people	
Distance	No more than 30 meters from the dwelling	
Garbage disposal	1 point/ 500 people (2 m. x 5 m. x 2 m.; 2.2 yd. x 5.5 yd. x 2.2 yd.)	
Soap	250 grams (8.8 oz) per person per month	
Nutrition:		
Energy	2100 kilocalories per person/day	
Kilocalorie calculation table:		
	Kilocalories/100 grams	**Ration/person/month**
Grains	350/100 grams (3.5 oz)	13.5 kg (7.7 lb)
Beans	335/100 grams (3.5 oz)	1.5 kg (3.3 lb)
Oil (vegetable)	885/100 grams (3.5 oz)	0.8 kg (1.8 lb)
Sugar	400/100 grams (3.5 oz)	0.6 kg (1.3 lb)
Nutritional values(*)[2]:		
Protein	10%-12% total energy (52-63 grams) < 15%	
Fat	17% total energy (40 grams)	
Vitamin A	1,666 IU (or 0.5 mg Retinol equivalent)	
Thiamine (B1)	0.9 mg (or 0.4 mg per 1,000 kcal intake)	
Riboflavin (B2)	1.4 mg (or 0.6 mg per 1,000 kcal intake)	
Niacin (B3)	12.0 mg (or 6.6 mg per 1,000 kcal intake)	
Vitamin C	28.0 mg	
Vitamin D	3.2 - 3.8 µg	
Iron	22 mg (low bioavailability, i.e., 5% - 9%)	
Iodine	150 mg	

(1) Communicable disease control in emergencies. A field manual, edited by M.A. Connoley. WHO. 2005.
(2) Sphere Project Modified table: WHO (1997, draft) and WFP/UNHCR (December 1997).

GLOSSARY

Acceptable risk: The level of potential losses that a society or community considers acceptable, according to its existing social, economic, political, cultural, technical, and environmental conditions.

Alert: State generated by the formal declaration of an approaching or imminent disaster. Not only is the proximity of the disaster disclosed, but the actions to be taken by institutions and by the population are also determined.

Disaster risk: The potential losses that a disaster would cause in terms of lives, health conditions, livelihoods, goods, and services, and that could occur in a particular community or society in a specific period of time in the future.

Disaster: A serious disruption in the functioning of a community or society that causes a large number of deaths, as well as material, economic, and environmental losses and impacts that exceed the ability of the affected community or society to cope with, using its own resources.

Early recovery: Early recovery is a relatively new concept that fills a very important gap between humanitarian aid and long-term recovery, between dependency and self-sufficiency. Its goal is to enable a smooth transition to long-term recovery, to restore livelihoods, government capacities, and housing, and to offer hope to survivors of a crisis.

Habitat: Refers to housing needs, access to basic services, and minimal sanitation. It emphasizes that the environment is the key to understanding and solving the problems of poverty, inequality, social exclusion, violence, and vulnerability so that in cities there is "dignity, good health, security, happiness, and hope."

Health sector emergency operations center: The place where technicians and specialists perform operational monitoring of health-related actions and the progress of the event.

Health sector emergency operations committee: A team of high-level officials that meets to make decisions in the event of emergencies and disasters. Its members establish an action plan to counter the effects and damages of the ongoing event.

Mitigation: The reduction or limitation of the adverse impacts of threats and related disasters.

Preparedness: Set of measures and actions aimed at minimizing the loss of human life and damage in disasters. It includes activities such as the development of plans for the search, rescue, relief, and assistance of victims, as well as the development of contingency plans or procedures based on the nature of the risk and its degree of impact.

Prevention: The absolute avoidance of the adverse impacts of threats and related disasters.

Reconstruction: This is the process by which infrastructure is repaired, the production system is restored, and the pattern of life of the inhabitants is re-established. It is an opportunity to exceed the pre-disaster level of development with the incorporation and adoption of prevention and mitigation measures.

Recovery: The restoration and improvement, where necessary, of facilities, livelihoods, and living conditions in disaster-affected communities, including efforts to reduce disaster risk factors.

Rehabilitation: Includes the transition period that begins at the end of the response, in which essential basic services are restored in the short term.

Response: The provision of emergency services and public assistance during or immediately after a disaster, for the purpose of saving lives, reducing health impacts, ensuring public safety, and meeting the basic subsistence needs of the affected population.

Risk management: The systematic approach and practice of managing uncertainty to minimize potential damage and loss. This covers risk assessment and analysis, as well as the implementation of specific strategies and actions to control, reduce, and transfer risk. Risk management is a key issue for sectors such as water supply and energy, as well as for agricultural production, which is directly or indirectly affected by extreme weather and climate events.

Risk: The combination of the probability of an event and its negative consequences.

Situation room: The place where health information is received (epidemiological information, information on health care, access to services, and any other information related to the response and to public health). This is where technical staff process, map, and analyze information from the field. Once analyzed, it is transmitted to the health sector emergency operations committee.

Threat: A phenomenon, substance, human activity, or dangerous condition that may cause death, injury, or other impacts on health, as well as property damage, loss of livelihoods and services, social and economic disruption, and environmental damage.

Vulnerability: The characteristics and circumstances of a community, system, or good that make it susceptible to the damaging effects of a threat.

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Damage assessment and needs analysis (DANA) is a priority action to enable proper decision-making when responding to emergencies and disasters. For the health sector, DANA not only involves assessing the health conditions of the affected population, but also assessment and analysis of the health situation resulting from the event itself, the impact on health facilities and other basic services (water, sanitation, etc.), and projections for the future. This process makes it possible to determine the nature of the needs and establish health care priorities.

This guide updates and revises the guide published by PAHO/WHO in 2004. It establishes the general context in which decisions are made in the health sector for the management of emergencies and disasters, offers guidance for developing the assessment of damage and needs, and provides technical instructions and forms for data collection, which have been revised and validated in multiple emergency operations.

These recommendations should be useful and practical for response personnel in the health sector. They can be adapted or adjusted to national or local needs and to the realities of each event.

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www.paho.org/desastres

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