

CHOLERA OUTBREAK RESPONSE



Global Task Force on Cholera Control



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1. OUTBREAK DETECTION

1. How were the first cases notified to health authorities ?

Surveillance system

Media Radio

Journalists Hot line

2. What alerted people to the possibility of an outbreak ?

Sudden occurrence of the disease

Persistent/ sudden increase of cases

Abnormal number of deaths

3. On what basis was it decided that this was an outbreak ?

Single/ cluster of cases

Case incidence greater than expected

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4. How long did the information take to reach decision-making level from the area where the outbreak occurred ?

5. What were the first actions ?

Send a multidisciplinary team to confirm the outbreak and to take the first measures for controlling the spread



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6. How to differ rumours from real outbreaks ?

Avoid rumours:

- Maintaining a very open flow of information
- Rumours spread easily when information is incomplete or delayed
- Rapidly clarify rumours (by rumour forms)

7. Investigation of the cause of the outbreak ?

Potential vehicles of transmission:



Drinking Water



Vegetables



Fruits



Ice cubs



Seafood



Cooked/ moist Food

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2. OUTBREAK CONFIRMATION

1. How was the diagnosis confirmed ?

Clinical case definition

Laboratory confirmation

Epidemiological suspicion

2. What case definition was used to collect further information on cases and deaths ?

Case definition:

- In an area where the disease is unknown to be present, a patient aged ≥ 5 years develops severe dehydration or dies from watery diarrhoea.
- In an area where there is a cholera epidemic, a patient aged ≥ 5 years develops acute watery diarrhoea, with or without vomiting.
- A case of cholera is confirmed when *Vibrio cholerae* O1 or O139 is isolated

(In children under 5 years of age, a number of pathogens can produce symptoms similar to those of cholera, such as rice-water diarrhoea; therefore children < 5 years are not included in the case definition.)

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3. Role of the laboratory ?

Confirmation of the first cases

Serogroup (O1/ O139)

Antimicrobial sensitivity

DO NOT WAIT FOR LAB CONFIRMATION TO TREAT PATIENTS !!!!



TRANSPORT OF STOOL: RECTAL SWABS AND CARY BLAIRE !!!!
(Adequate collection/ Transportation)



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4. How was the sample collection ? How many samples were taken ? How many were positive ?

Sample collection:

- Take stool samples *before giving antibiotics*
- *Fresh stool* (reach lab within 2 hours) or use *Transport medium* like Cary-Blair or Peptone Water (reach lab within 7 days)
- Strips of *blotting paper or filter paper* soaked with liquid stool, placed in plastic bag with 2-3 drops of normal saline (specimen remains wet)

Number of samples required:

- *Laboratory confirmation of the first 10-20 cases* is essential to ascertain a cholera outbreak
- Take a few samples randomly *during* the outbreak to ensure that the *antimicrobial sensitivity pattern* has not changed
- Collect *20 stool samples* to confirm the *end of the outbreak*

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3. ORGANIZATION OF THE RESPONSE

1. Was there a cholera task force or a multisectoral cholera coordination committee to follow up the outbreak and take decisions ?

cholera coordination committee:

- Meet frequently (once a week) during the outbreak period for information sharing and coordination across sectors
- Assign roles and responsibilities
- Collecting and reporting of cholera cases and deaths
- Allocate necessary funds
- Similar committees may be created at 3 levels (national, province, district)
- Regional or international collaboration
- Organization of any relevant training
- Implementation, supervision, monitoring, evaluation of control activities

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2. What measures have been taken to control the outbreak ?

First steps to control a cholera outbreak:

- Confirm the outbreak
- Convene the coordination committee
- Inventory of available essential supplies
- Inform the public, neighbouring districts and media
- Training for health staff (surveillance, case management)
- Health education campaigns
- Temporary treatment centres, emergency supplies
- Collect/ report/ and analyse data on cases/deaths/ control activities
- Document the epidemic, provide feedback, adapt interventions
- Ask for additional help if needed
- Monitor and evaluate control measures

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3. How was the response monitored ?

4. Was a cholera emergency plan of action available ?

Emergency plan for:

- Logistics
- Staff responsibilities
- Availability of financial support for preparedness and response
- Implementation of the control measures (what should be done, when/ who should do it, where)
- Providing safe water/ disposal of excreta
- Health education

5. Was there an easy information flow from the affected areas to the control level and vice versa ?

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4. MANAGEMENT OF INFORMATION

1. Was there a strategy to disseminate accurate information promptly ?

AVOID RUMOURS !!! (by maintaining open information)

2. Did the involvement of the media contribute constructively to control the outbreak ?

Evaluation of media involvement:

- Provide information to people within and outside the affected area
- Use of appropriate language
- Through the appropriate channel
- The right type of information with the right frequency



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3. Was a spokesperson in the ministry of health designated ?

Spokesperson:

A single spokesperson who will be the focal point for dealing with the media, plan regular press releases and conferences.

4. Was there a good balance between public service announcements and news ?

Balance between public announcement and news:

Levels of the media – local, national, international

- **Public health authorities:**
Provide information on preventive and control measures
- **Journalists:**
Focus on spreading news

5. Was there any procedure for assessing the impact and spread of information ?

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5. CASE MANAGEMENT: TREATMENT

1. Were flowcharts prepared ?

Flowcharts:

- Illustrating proper management of cholera cases
- Available to health care workers
- Clear information on how to assess dehydration stage
- Clear information on the treatment protocol to apply according to the status of the patient

2. Antibiotics ?

Antibiotics:

- Only in severe cases (mass chemoprophylaxis is not effective)
- Antimicrobial resistance is increasing (Cotrimoxazole, Tetracycline)
- Selective chemoprophylaxis for members of a household who share food and shelter with a cholera patient

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3. Rehydration ?

Intravenous therapy for severe cases only:

- Ringer's lactate or normal 0.9% saline or half-normal saline with 5% glucose
- ORS must be given at the same time to replace the missing electrolytes
- When rehydration is not possible and the patient cannot drink, ORS solution can be given by nasogastric tube (not for unconscious patients)



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Dehydration stage	Signs	Treatment
Severe dehydration	<ul style="list-style-type: none"> •lethargic, unconscious, floppy •very sunken eyes •drinks poorly, unable to drink •mouth very dry •skin pinch goes back very slowly •no tears (only for children) 	IV therapy + Antibiotics + ORS
Mild dehydration	<ul style="list-style-type: none"> •restless and irritable •sunken eyes •dry mouth •thirsty, drinks eagerly •skin pinch goes back slowly •no tears (only for children) 	ORS + very close surveillance
No dehydration	none of the above signs	ORS at home

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Severe dehydration



skin pinch goes back very slowly



mouth is very dry



very sunken eyes



lethargic and floppy



drinks poorly or unable to drink

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Preparation of Oral Rehydration Solution (ORS)


⇒ 80% of cases can be treated using only ORS
⇒ should be used during and after IV therapy (electrolytes)







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3. Health education ?

Health education

- Were patients and their families informed of the preventive measures to take at household level ?
 - ⇒ wash your hands after taking care of patients – touching them, their stools, their vomits, or their clothes
 - ⇒ beware of contaminating the water source by washing patient's clothes in the water
- Were the cholera patients isolated from other patients (with special latrines) ?
- Were the health care workers aware of the hygienic measures necessary to avoid contamination (hand-washing, isolation ward) ?

Health care workers:


- Are there emergency stocks of basic supplies ?
- Training of health workers is an essential element for preparedness especially in high-risk-areas

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6. REDUCTION OF MORTALITY

1. How was the Case-Fatality-Rate (CFR) calculated ?
Was there any risk of bias ?
2. Was the CFR over 1% ? Was there any obvious reason to explain this CFR ?

- Underestimation of number of cases
 - Underlying factors such as malnutrition
 - Inadequate case management
 - Low accessibility to health care facilities or cholera camps
 - Long distance to reach health care facilities or cholera camps
3. Have professionals been trained to manage patients with cholera ?

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4. Have special Cholera Treatment Units (CTUs) been set up ?

Cholera Treatment Units:

- To provide quick treatment to cholera patients
- To treat patients in an emergency situation
- To avoid overburdening of other hospital wards
- During an outbreak, cholera treatment units must be accessible (no geographical, cultural, linguistic or economic limitations) and functional 24 hours a day, enough personnel must be there



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5. Oral Rehydration Treatment (ORT) ?

- Where health care facilities are less accessible, ORT corners should be established throughout the affected area for low and moderate dehydration ?
- People should be informed about the CTU to which cases of severe cholera can be referred:

Urban settings: - clearly identified for severe cases
- available and accessible to the population for mild cases
- case records are important in both CTUs and ORT corners

**Semi-urban/
rural settings:** - decentralize the CTU (access is a problem)
- active case-finding in communities (locate new outbreaks as soon as possible)
- select location of the treatment units (CTUs and ORT) according to

attack rate

- preposition supplies and drugs in isolated health care facilities to treat the first 20-30 patients

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6. Was there adequate surveillance of patients with severe cholera (appropriate IV fluids, ORS and Antibiotics) ?

Surveillance (severe cholera):

- pulse, state of consciousness
- temperature (usually hypothermia)
- dehydration symptoms
- respiration rhythm
- number and appearance of stools
- urine (present or not)



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7. HYGIENE MEASURES IN HEALTH CARE FACILITIES

1. Were the cholera treatment units located close to the most affected communities ?
2. Were there hand-washing facilities in the cholera treatment centre ?
Were the patients' relatives washing their hands every time they leave the centre ?
3. Were the cholera treatment units organized in four areas :
selection and observation, hospitalization, convalescent room for ORS treatment, neutral area (for kitchen, stocks of material)?

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4. Were measures in place for the safe disposal of excreta and vomit ?
Were there special latrines for cholera patients, separated from latrines used by the rest of the patients ?

5. Was there enough water to cover the daily needs of patients (50 litres/ person) ?

6. Were gloves, buckets, latrines, clothes, and bedding properly disinfected ?

7. Were cholera cots available ?



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2. Functions to be ensured in health care facilities

Records/ Classification:

- Register patients
- Assess the dehydration status (A, B, C)

Treatment:

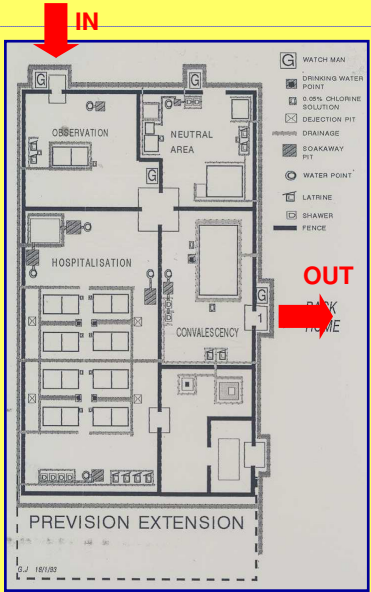
- Treatment wards (observation, hospitalization, convalescent room)
- Pharmacy and store
- ORS preparation area

Patient care:

- Rehydration
- Hygiene
- Feeding

Prevention and hygiene:

- Kitchen for food preparation
- Water treatment
- Preparation of chlorine solution
- Clothes washing facilities, laundry



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Health education:

- Inside the CTU and at patient's home by community workers
- Active-case-finding in the refugee camp/ villages

Waste and environment:

- Safe waste disposal (dustbins)
- Cleaning and disinfection of the CTU
- Morgue

Security:

- Fences
- Watchman for information and patient flow control
- Protection of stocks (food, drugs, supplies)

Disinfection of patient's bedding and clothing:

- By stirring them for 5 minutes in boiling water
- Mattresses by drying in the sun

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8. INVOLVEMENT OF THE COMMUNITY TO LIMIT THE SPREAD OF DISEASE

1. Was health education an important part of the outbreak response ?



2. Were the messages spread illustrated by practical demonstrations (e.g. Chlorination of water, preparation of ORS) ?


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3. Were the messages elaborated with the community ?

4. Were the messages disseminated through community or religious leaders or through any channel that reaches the maximum of people with greatest impact on their behaviours ?



5. Were the messages adapted to local cultural beliefs about the disease and to the capacity for implementation control measures in the community (e.g. if soap is unavailable, have ashes been recommended for washing hands) ?

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6. Have efforts been made to encourage the use of latrines ?



7. Was there active case-finding in the community ?

- Detection of cholera patients at an early stage of the disease
- Advice to be given to family members and the community about protecting themselves from contamination

8. Were education messages given to the patients and their relatives in health care facilities ?

9. Were health care workers able to disseminate the appropriate messages ?

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KEY MESSAGES !!!!!!!!!!!!!

Come to the health facility as soon as possible in case of acute watery diarrhoea

Wash your hands before cooking, before eating, and after using the toilet

Cook food and drink safe water

Start drinking ORS at home and during travel to the health care facility

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Health education should continue throughout the whole year and should be intensified before cholera season !!!!



- **Select the best way to disseminate messages to the community (the public must understand how to help to limit the spread – cholera epidemic can be more quickly controlled)**
- **Communication through radio, posters, talks in the local language, illustrate the messages by practical demonstrations (give clear information-but not too many messages, reach the maximum of people)**

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- Adapt messages to the social, cultural and economic circumstances of the community and to its ability to cope with a change of behaviour (e.g. chlorine or soap may not be affordable in poor communities)
- Organize talks in places where people are usually waiting (health care facilities, hairdressers, etc.)



- Implementing control measures in the community (using of soap and chemicals, washing hands, encourage for the use of latrines)

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9. CONTROL OF THE ENVIRONMENT: SAFE WATER

1. Have the different sources of contaminated water been identified? Has the community been informed about how to prevent water contamination?

- Hands and body of people who have cholera may have no symptoms
- Contaminated articles such as buckets, cups, clothes
- Faecal material (e.g. by infiltration into wells when the latrines are situated less than 30 metres away from the water-source)



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2. What measures were recommended to avoid contamination of water ?

- A narrow-mouthed vessel with a protected dispenser is much safer than storage in a wide-mouthed vessel
- Clean covered pot or bucket
- It is better to pour the water from the container than to use a potential contaminated article (e.g. cup without handle) to retrieve the water



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3. Have these sources been disinfected during the outbreak ?

4. If wells were chlorinated, was there regular monitoring of residual chlorine ?

5. Where chlorination of a water source was not possible, was there any program to ensure safe drinking-water at household level ?

Treatment of water:

- boiling
 - chlorinating (turbid water should be filtered before)
- Emergency provisions: extra stocks of chemicals
- storage in improved vessels
 - solar disinfection with UV + heat , UV disinfection with lamps
 - Chemical coagulation-filtration + chlorine disinfection

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6. Were chemicals for water disinfection (chlorine compounds) available in the local market at affordable prices ?
7. Was there any system for providing safe water to high-risk communities, during the outbreak ?
8. Did the population receive a supply of at least 20 litres of safe water per day per person ?
9. Were health workers properly trained to teach local people about hygiene and disinfection techniques ?



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10. CONTROL OF THE ENVIRONMENT: SAFE FOOD

1. Was the supply of water adequate for street food vendors; acceptable quality and sufficient quantities for drinking, washing food and hands, cleaning utensils ?
2. Was there any regulation to ensure that minimum standards of hygiene were observed by food handlers during the outbreak ?
Was the inspection of food handling practices effective ?



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3. Were street sales stopped during the outbreak ?
Have restaurants been closed ?
4. Is there any regulation to ensure minimum levels of hygiene for food products in the marketplace ?
5. Are any local dishes made with raw seafood (particularly crustaceans and other shellfish) or raw fruit or vegetables ?

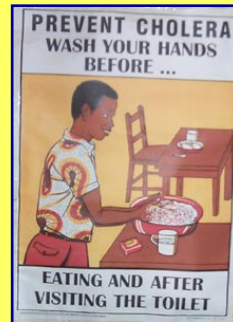


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6. Are food handlers who sell raw or partially processed animal products for immediate consumption required to display a sign that informs the public of the increased health risk associated with consuming such food ?
7. Are latrines and hand-washing facilities available in marketplaces ?



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Sources of infection:

- Ice made from contaminated water
- Cooking utensils washed in contaminated water
- Drinking-water that has been contaminated at its source, during transport and/ or supply, or during storage
- Food contaminated during or after preparation (remaining at room temperature – an excellent environment for the growth of *V. cholerae*)
- Eaten raw seafood, particularly crustaceans and other shellfish, taken from contaminated water and eaten raw)
- Fruit and vegetables grown at or near ground level and fertilized with night soil, irrigated with water containing human waste, or freshened with contaminated water, and then eaten raw

Alternatives: Acidifying foods !!!!!!!!!



Lime Juice



Tomatoes



Jogurt

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11. CONTROL OF THE ENVIRONMENT: SANITATION

1. What percentage of the population was served with improved sanitation facilities ?
2. Was there a good system in place for excreta management and disposal during the outbreak ?
3. Were the sanitation facilities vulnerable to flooding or other natural disasters ?

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4. Could the sanitation facilities potentially contaminate any drinking-water sources ?
5. Was consideration given to providing sanitation services for high-risk communities during the outbreak ?
6. Were health workers properly trained to teach local people about good hygiene behaviours ?

Sanitation practices:

- Hand washing with soap
- Safe disposal of children's faeces
- Use of sanitary facilities for defecation (public sewer, connection to a septic tank, pour-flush latrine, simple pit latrine, ventilated latrine)

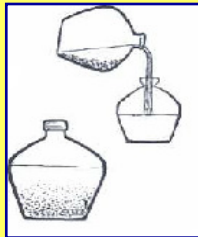


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Settling water
3 pot method



Using plants: Moringa seeds (East Africa)
Malunggay (Philippines)
Horseradish/ drumstick tree (India)
Benzolive tree (Haiti)



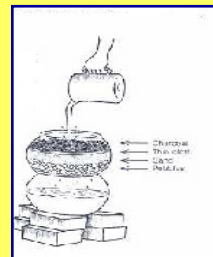
Sewage plant



Cloth filter



Charcoal filter



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12. FUNERAL PRACTICES

1. Were there any official recommendations with regard to funeral practices, such as funeral gatherings, ritual washing of the dead, or funeral feasts ?
How was information on this been disseminated ?
2. Were funeral organizers aware of the risk and of the control measures ?
3. Were communities aware of what to do with cholera camps, well trained in handling corpses ?

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4. Were health care workers, especially in cholera camps, well trained in handling corpses ?

Handling corpses:

- Meticulous hand-washing with soap and clean water is essential before food is prepared and handled
- Disinfection of corpses with 0.5% chlorine solution
- Wear gloves for transporting, corpses should be carefully wrapped
- Prevent physical contact, wear gloves, apron and mask
- Bandage the head to maintain the mouth shut
- Not empty the intestines
- Wash hands with soap after touching the corpse
- Fill the mouth and anus of the body with cotton wool soaked with chlorine solution
- Avoid putting hands in the mouth after touching the corpse
- Disinfect the dead person's clothing and bedding by stirring in boiling water for 5 minutes or by drying them thoroughly in the sun before and after normal washing

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13. SURVEILLANCE

1. Were data from previous outbreaks available and used to provide better understanding of the current outbreak ?
2. Was there a good analysis of data by time, area, and high-risk group during the outbreak ?
3. Was the information collected and analysed promptly enough to be used in monitoring the outbreak ?
4. Did health care workers understand the purpose of collecting information ?

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5. Did the patient file contain the essential basic information ?

Patient's basic information:

- Name
- Address
- Age and sex
- Date of onset of symptoms
- Initial clinical assessment
- Evolution of illness
- Treatment received

6. Was the information available and easily understandable to decision-makers (e.g. Members of the cholera coordination committee) ?

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Epidemiological investigation:

- Has an epidemiological investigation of the outbreak been undertaken ?
- Data analysis:
 - number of cases and deaths by area, time period and by population sub-groups
 - calculation of attack and case-fatality rates

Case-fatality-rate:

(number of deaths/ number of cases x 100) in a given period of time

Attack-rate:

(number of cases/ population at risk) in a given period of time

- Have high-risk channels of transmission been identified (water, food)
- Have the results of the investigation influenced the outbreak response
- What kind of difficulties arose during the investigation (logistic, contact with media, delay in organizing the investigation)

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14. INVOLVEMENT OF INTERNATIONAL PARTNERS

1. What mechanisms were established to involve international partners in the outbreak response in addition to health authorities ?

Partners:

UN agencies, NGOs, international donors, private sector

2. Has a list of needs that might be supported by international partners been established ?

- Training and supervision of teams in the field
- Supplies
- Personnel (medical personnel, sanitarians or health educators)
- Support for epidemiological studies
- Support for laboratory examinations
- Support for ensure good coordination

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3. Was there any formal mechanism for raising funds to support the outbreak response ?
Was a project proposal developed ?
4. Which organization was coordinating the various partners involved in the outbreak response ?
5. Was there any strategic plan for the response, with specific tasks assigned to each partner ?
6. What was the role of WHO in the outbreak response (coordination, financial support, technical support) ?
At what levels was WHO involved (HQ, regional level, country level)?

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Good relationship with donors:

- Recording details of responsibilities in embassies or UN representations
- Regular information on the epidemiological situation and effectiveness of the outbreak response

Give a concise information to persuade international partners to support the outbreak response:

- Magnitude, geographical extent, severity (CFR), evolution (epidemiological graphs)
- Specificity of the outbreak (high attack rate, CFR, other problems)
- Needs for personnel and supplies, updated inventory of staff and materials currently available
- Control activities undertaken and planned

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