Executive Summary

Torrential rains in Djibouti on 11-14 April 2004 resulted in flash floods in many areas, predominantly affecting the Ambouli River Oued (banks). It is estimated that approximately 300 people died; 600 houses were destroyed and another 100 inundated; 3,000 persons were made homeless; and the lives of a total of 100,000 persons were affected.

Search and rescue operations were carried out quickly. Main roads and rail tracks were cleared. The repair of key services (water, telephone and electricity) was initiated and services were partially resumed within a week. Sanitation problems continue, with many destroyed and clogged sewage pipes and water stagnating in “lakes”.

National and health sector coordination meetings are being held daily. Assessments highlight the need for urgent stocks of medicines and supplies to ensure resumption of health services in damaged centres and to be ready for possible outbreaks of cholera and malaria. Four health centres, serving the most affected population, had their equipment, medicine stocks and files washed away. It was imperative to re-establish services as soon as possible. An active surveillance system has been established and support to health centres with newly graduated nurses was provided to carry out surveillance activities and to support medical care.

A contingency plan for a possible outbreak of cholera has been initiated and additional stocks of medicines and medical supplies have been requested.

At this stage, the health sector's main concern is to prevent, detect as early as possible and respond quickly to any outbreak. The UN system is planning to review this experience and undertake a UN lessons learnt exercise. Discussions with the government disaster focal points have also underlined the importance of reviewing the national disaster management plan and the National Committee for Disaster Management. From a health perspective, besides evaluating the surveillance system and improving it, there is a need to discuss the preparedness and mitigation of the health sector, including the mitigation of the impact of natural disasters on health facilities.

Photo: Ambouli health centre, seen on the cover page, one week after the floods.
Main Issue

Nature of the emergency

The torrential rains that struck Djibouti in April 2004 occurred after a long dry period. The country faces yearly torrential rains and occasional (usually limited) flooding. The last important flood occurred in 1994 and left 100 people dead, displaced populations, and resulted in aggravated epidemics of cholera and malaria.

During the night of 13 April, more than 100 centimetres of water fell (half of the yearly average in a good year). Flooding occurred suddenly, while people were sleeping. The floods swept away children and/or their parents, trees, debris, and even rocks. Survivors climbed to the top of their houses. Rescue operations were immediately launched with the police and national, French and US army helicopters and teams.

The affected area

Djibouti is a country of 23,200 square meters divided into five districts: Ali Sabieh, Dikhil, Djibouti, Obock and Tadjoura. The population is estimated at 500,000 persons, of which more than two-thirds live in the capital Djibouti. The vegetation is arid and semi-desert, and there is little arable land. The riverbed and banks of the Ambouli River Oued provide fertile soil for farming and raising livestock. For this reason, many people live in the immediate vicinity of the river, and it is probable that they will return to living near the river in the aftermath of the floods.

Most districts have suffered from the torrential rains and—with the exception of the Ambouli and Djibouti town—damages have been limited to the destruction of roads in Ali sabieh and rail tracks between Jupto and Chebeili. In Holl Holl and Jupto, damages to rooftops were reported. In Ali adei, damages to farms and to the refugee camps in Ali adeih and Ar aoussa were reported.

In Ambouli, the roads were damaged and small streets immediately covered with more than three meters of water. The bridge over Ambouli River partly collapsed. Water covered most areas of the capital and inundated residential areas including Ambouli, Jebel, Cite Progres, Engueila, and Arhiba. Roads in the town were covered with water, mud and debris from trees and rocks. Many areas were not accessible except by helicopter. The train coming from Ethiopia with fruits and vegetables had to stop in Ali Sabieh with the collapse of a bridge close to Wea. The National 1 main road in Dikhil province was cut.
The affected population

In the immediate aftermath of the disaster, 56 bodies of mostly women and children were transported to the morgue of the only referral hospital, Peltier. Twenty-four wounded were admitted to the hospital. Thirty-six people were reported missing. The unofficial number of dead was cited as 300. The overall affected population by the flooding is 100,000 persons. The vulnerability of population living in the Ambouli River Oued area is heightened by the general conditions of economic hardship, unemployment and by drought.

Around 460 families were made homeless and 700 persons took shelter in the school Balbala 2. Other families went to stay with relatives and are now back to clean their houses. To allow resumption of the school activities, displaced persons in the school were subsequently asked to move to an area called PK12, twelve kilometres away from the town centre, based on the national authorities’ intention to provide each family with a land parcel to build new houses. It is important to highlight the situation in which these families were living in the first days after their arrival to PK12. Families were sheltered in 97 tents (donated by UNHCR) in a semi-arid area with limited access to water. The Desk Officer from WHO/HQ participated in an assessment mission with the Ministry of Health to the PK12 camp. There is one health centre nearby, manned by community health workers, and with very limited equipment and medicine supplies. The assessment mission found that water supply at this area is insufficient and latrines are absent.

This new area has also attracted those hoping to get a free land parcel but not necessarily affected by the recent floods. Aware of this difficult situation, the government asked the homeless to return to their original place, where food, shelter and other assistance will be directly provided.

Health Impact

The direct impact: reasons for alert

The direct impact of the flood on the health of the population has been limited until now. However, there are reasons for alert:

- Cholera and diarrhoeal diseases are endemic in Djibouti. The last cholera epidemic was in 2002; 1,828 cases were declared with 32 deaths.
- Tuberculosis is seeing a recrudescence and malaria is also endemic.
Over the past two-three weeks, respiratory infections were the most reported diagnosis.

An increasing number of patients with undefined fever are feared to have dengue; a medical source indicates that a significant proportion of some samples collected in one of the hospitals were positive by IGM testing.

Malnutrition is common in Djibouti, with 17.9% and 26.8% of children under five suffering from acute and chronic malnutrition respectively, rates having increased with the economic hardship.

Scabies seems to be also on the increase.

The suddenness of the event and the traumatic experiences lived by thousands have left many still in shock.

What is feared now is an outbreak of cholera. Several cases of diarrhoea have been reported but have not yet exceeded the threshold. A surveillance system exists that collects weekly information on the list of reportable diseases. However, there are many areas to be strengthened in the quality and completeness of the system. Laboratory capacity for cholera tests exists but does not cover all districts; it needs reinforcement.

**Indirect health impact (e.g., damage to water plants, other vital infrastructures or lifelines)**

Extensive damage to water pipes and sanitation system has occurred as a result of the floods. One week after the floods, water and electricity have been partially restored. The sewage system presents many problems with the accumulation of waste water, the clogging of pipes with debris and full pits. There are many pools of stagnant water in the city, and difficulties are experienced in pumping it. In this regard, the floods are an environmental disaster and pose environmental health risks to the affected population.

Most importantly, four Level II Community Health Centres (all in the capital Djibouti) were flooded and mud destroyed equipment, medicines, files, and furniture. These centres—Farahad, Ibrahim Balala, Ambouli and Arhiba—serve a population of 91,000. Their medicines and supplies were all washed away, as were the vaccine stocks and the cold chain equipment. Before the flood, the centres suffered from shortage of qualified staff. This situation was worsened when, in the immediate aftermath of the floods, many staff could not come to work as their homes had been affected by the floods.

![Photo: Mud in one of the health centres.](image)
Projected evolution of the health situation: main causes of concern in the coming months

The main cause for concern is the probability of an outbreak of cholera, especially given the damage to the water and sewage systems as well as poor hygiene awareness by the population. In addition, and since it is the malaria season, the many pools of stagnant water are potential breeding places for the anopheles mosquito.

Vital needs

Meeting the vital needs of the affected population in the immediate aftermath of the floods was done—above all else—through local mobilization and solidarity between the population and the private sector. It is worth highlighting that the first direct support to victims was sent by the private sector to the Union of Djiboutian Women (UNFD).

The current situation

- **Water:** The pre-flood system has been restored. Chlorination has been increased from 0.1 to 0.3. However, several reports mention it is still incomplete.

- **Excreta disposal:** Still inadequate; needs to be fully addressed.

- **Food:** Distribution of food is being carried out to 300 families, predominantly by civil society organizations, NGOs, and local suppliers.

- **Shelter and environment on site:** Initially two schools were used as shelter by only a small number of those rendered homeless by the flood. Many families hosted their relatives who had lost their houses and all of their belongings.

- **Others vital needs (e.g., clothing and blankets):** Items have been distributed to the displaced populations.
Critical constraints

*Transport and logistics:* During the first three days, roads were submerged by water and a layer of mud (80 centimetres thick in some areas). Moreover, trees, debris from vegetation, walls, tin roofs, etc., were blocking many roads.

*Human resources:* Human resources in health centres should be further supported.

*Medicines:* There are limited stock of medicines at the *Central* warehouse and on the private market. These factors make procurement from abroad the only choice.

Response

*National contingency plans, procedures, guidelines and special expertise*

The government bodies’ response was supported by the presence of the French and US army contingents and the equipment put at the disposal of the authorities for the search and rescue operations. The authorities had a plan—ORSEC (*Comité National de Crise*) for responding to emergencies—that was launched immediately. It is a national multi-sectoral crisis committee led by the *Commissaire* of Djibouti City. The committee is composed of representatives from the following entities: key ministries including the MOH; the main referral hospital; the national and French armies; the Red Crescent; and electricity, water and telecommunications agencies. The UNDP and other UN agencies were later included in this committee. Despite the fact that the ORSEC crisis committee was activated immediately after the flood, a National Committee for Disaster Management would need to be considered. A draft national contingency plan had been developed by the UN as of October 2003, but it was not yet finalized.

*Operational support*

Rescue operations were carried out by survivors and local inhabitants on the spot, assisted by the Djiboutian Army. Immediate external assistance came from the French and US army troops stationed in Djibouti, as well as from the UN agencies represented in Djibouti and the Red Crescent Society.

The representatives of the UN agencies met on 14 April and undertook an assessment mission to the affected areas and to the school where the displaced persons had settled. USAID, ECHO, French Cooperation, IFRC and OCHA contributed to the rapid assessment exercise.

*Health sector response*

The Ministry of Public Health took the lead on the health sector response activities. It has managed coordination and organized the support needed, mobilizing all programmes and units. The MOH strategy for response consisted of five main axes:

1) Assessing needs in the damaged health centres, reviewing stocks and estimating needs in terms of medicines, laboratory reagents, human resources and the current surveillance system.

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1 This plan does not include mitigation and preparedness measures.
2) Managing the immediate environmental situation: this consisted of an entomological examination, spraying and fogging, chlorinating water and undertaking water surveillance.

3) Mobilizing public opinion and raising awareness on the risk of diarrhoea and the importance of hygiene with TV spots, health communicators and by developing a plan for a national health education campaign with the help of a WHO consultant.

4) Re-establishing basic health care services in the damaged health centres by ensuring—as a priority—their cleaning, to be done with the help of the national and French armies. Additional actions include disinfecting and refurbishing centres, restocking them with medications, and fielding newly graduated nurses.

5) Activating a daily surveillance system to ensure early detection and the management of diarrhoea and/or malaria outbreaks. This is being done through the development of a cholera outbreak contingency plan, the distribution and daily collection of information on cases, the naming of focal points (graduated nurses) for surveillance, and the carrying out of a crash training course. Supplies and stocks for the management of possible outbreaks have been procured. In addition to the active surveillance system, a study on malaria resistance is going to be conducted and the biologist present is in charge of following up on surveillance for malaria.
A health coordination committee was set up under the chairmanship of the Minister of Health, with support from WHO and with the participation of UNICEF, French Cooperation, USAID and the Djiboutian and French Army medical services. The committee meets daily, reviewing the assessment of damages and outstanding needs, developing a list of priority needs, dividing responsibilities and following up on the implementation. It is worth noting that no appeal for international aid was launched.

WHO was tasked with contacting donors and coordinating external aid. In this regard, WHO was successful in the timely soliciting of a pledge from USAID to meet urgent health needs. WHO also provided surge capacity, which entailed backstopping from the WHO Regional Office for the Eastern Mediterranean and Headquarters, immediately releasing emergency funds, and sending field support. In addition, WHO was charged with providing technical and operational support, particularly in regards to:

- Conducting a health needs assessment;
- Serving in a liaison and coordination capacity and exchanging information with various bodies involved in health-related relief;
- Reviewing the contingency treatment plan for cholera and the treatment guidelines;
- Undertaking and advising on surveillance activities;
- Providing logistics support;
- Developing a plan for public education;
- Procuring medicines and necessary supplies for possible outbreaks;
- Managing the USAID emergency donation amounting to 300,000 USD.

UNDP, UNICEF, and WHO reprogrammed available funds and supported the immediate response activities. UNDP supported the response with supplies for cleaning and the burial of the dead. The Red Crescent provided tents and water reservoirs. UNICEF visited damaged health centres and assessed their needs for furniture and equipment. It subsequently provided support for the refurbishment of the four affected health centres, as well as provided water reservoirs and water suppressors. It has fixed the electricity supply to the centres, and replaced the cold chain and vaccines. In addition, UNICEF has arranged for the ordering of more than 100,000 Oral Rehydration Salt bags, which are scheduled to arrive on 28 April. USAID immediately pledged USD 300,000 in support of the procurement of emergency medications.

Health services in the school where displaced people settled were established. Inundated and mud-covered health facilities were cleaned. As of 24 April, three of these were functioning again. The health centre in Ambouli resumed work on 26 April.

**Operational coordination**

In the initial response phase, the WHO—as acting Resident Coordinator—mobilized UN agencies to undertake a rapid and joint assessment exercise. The national authorities had been meeting for the ORSEC (Comité National de Crise) plan without UN agencies in the beginning. UNDP Resident Coordinator took the initiative to participate in those daily meetings and to organize subsequent coordination meetings for the UN. A subcommittee for humanitarian assistance was established by ORSEC to advise on best ways that ensure direct assistance to the affected population. The Resident Coordinator was asked to facilitate the functioning of this subcommittee with concerned local authorities, the civil society and UN system. The UN agencies divided the responsibilities, addressing the most urgent needs in a complementary manner.

The MOH, supported by WHO, established a health coordination committee that meets daily. Transparent information sharing and joint planning are done through these meetings.
and also through joint follow-up missions to the neighbourhoods and to damaged health centres. The Minister of Health asked WHO to initiate contacts with donors and facilitate aid coordination. Support has been provided by the WHO Regional Office for the Eastern Mediterranean Region (EMRO) in advancing funds and coordination. WHO/HQ has assisted in ensuring surge capacity for emergency assessment coordination, as well as logistic support to WHO/Djibouti.

WHO locally procured essential material and equipment for disinfecting and hygiene in the centres and managed all drug and medical material procurement and delivery. The Italian government agreed to finance five New Emergency Health Kits as well as a number of diarrhea emergency kits. WHO has advanced the costs of transport from the Brindisi airport. WHO facilitated the procurement of the rest of the required drugs from USAID funding.

In consultation with WHO and the Health Emergency Coordination Committee, the French cooperation has committed 50,000 Euros in support of insecticide sprayers for malaria control. The French army mobilized all of its local capacity, trucks, water pumps and human resources, and has dedicated its action to water supply and environmental sanitation around affected clinics.

**Strategic coordination**

Relations between the government and the UN country team have been reinforced by the swift and effective support given for the response. There is a need for the presence of an effective national institution for disaster management.

**Conclusions**

While the initial acute humanitarian health needs are covered by the concerted action of partners and donors, the health vulnerability continues to present an absolute priority. The imminent risk of disease outbreak, especially of malaria, cholera, and dengue fever, should be avoided. The next step is to establish the disease surveillance system for dengue and cholera, and to strengthen the existing surveillance system for malaria. In addition to disease surveillance, a potent and effective response mechanism should be put in place to control any possible outbreak.

**Recommendations for immediate action**

Although the major damages to the public infrastructure have been repaired in Djibouti City, the living conditions of the population directly affected by the flood are still not fully attended to. On the other hand, the health emergency continues as vigilance against cholera and malaria needs to be reinforced and sustained in the next two months.

Surveillance for cholera and other diarrhoeal diseases needs to be strengthened. WHO is supporting surveillance activities and the implementation of the contingency plan with the procurement of kits and stocks. A system for ensuring immediate analysis and information sharing should be set in place. Laboratory confirmation of suspected cases of cholera, dysentery and malaria should be carried out. The Ministry of Health units should be supported to respond to any outbreak. This includes provision of chlorine, water testing kits, and training. Outbreak-specific supplies should be stockpiled in the country.

Refresher training for the health workers in the centres should be initiated and needs to be continued on a weekly basis. In addition, regular supervision and teaching support material
for health workers (such as posters with protocols, etc.) need to be provided. The public information and health education campaign needs to continue and should take place at the health centre level. Similar surveillance and outbreak preparedness measures should be undertaken for malaria and dengue fever. Donor support will be essential to tackle this priority.

There is a need to document the response and lessons learnt both from the health sector and national perspectives. The response to the floods highlighted areas to be strengthened in the preparedness of the country and specifically of the health sector: the very limited stock of essential medications and supplies in the country, in general, and in the MOH warehouses, in particular. Reviewing the management system, procurement and organisation of this important element is essential.

It is also necessary to further address the vulnerability of key facilities such as health centres to flooding. Addressing this vulnerability and undertaking simple mitigation and preparedness activities should be the focus of the next phase.

National disaster plans and response mechanisms should be reviewed and updated. UN contingency plan and disaster response plans should be reviewed and updated.

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Photo: Arrival on 25 April of the first batch of emergency medicines and cholera supplies.