

TROPICAL STORM JEANNE– SUPPORT TO THE HEALTH SECTOR



View of Gonaives Hospital, after the floods

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Background

Haiti is one of the Caribbean's most disaster-prone countries. For the past 10 years, it has endured almost 20 internationally recognized disaster events that have caused more than 4,200 deaths. Prior to the floods of September 2004, the most recent serious disaster in Haiti occurred some months before, during the night of 23 May 2004 when rain caused landslides and floods in the region of Belle Anse and Fonds-Verettes. Over 30,000 persons were affected and over 2,000 people died.

Due to its geography, Haiti is prone to natural hazards such as hurricanes, floods, earthquakes, landslides and drought. This vulnerability is combined with a context of recurrent political and institutional crises and extremely adverse socioeconomic and environmental conditions, making the country highly susceptible to frequent small and large disasters. Floods have by far the most widespread, prolonged and damaging effects.

The severe environmental degradation that took place in Haiti during the last decades has dramatically increased the country's vulnerability to natural hazards, exposing it to major risks for disasters. A direct result of the erosion of the natural resources and the degradation of highly sensitive ecosystems has led to an increased frequency of landslides and floods downstream with major physical and economic damage as a consequence.

Although the precipitations that fell over Fond-Verettes and Mapou, and more recently in Gonaives, were not abnormally high, massive flash floods were able to build up in a few hours because the catchment areas upstream were degraded and eroded as a result of intensive deforestation and inadequate agricultural practices.

Tropical Storm Jeanne, destroyed the most fertile areas of the department of l'Artibonite and flooded most severely Gonaives, a city of approximately 250,000. Damage was also extensive outside the urban area.

Today the general lack of awareness over the dramatic state of the environment in Haiti combined with weak institutions and a total absence of adequate policies and regulations is likely to continue to have tragic consequences if the situation is not reversed. The ability of national institutions



Aerial view of the city of Gonaives after the floods

to reduce risks by taking measures to reduce the vulnerability is extremely limited, and a significant long-term investment in terms of financial and human resources is needed.

Justification

PAHO's actions during and after the political crisis were focused on coordination, monitoring of the health situation in the country, collection, analysis and distribution of epidemiological information to all partners in the health sector and distribution of essential drugs and medical material through the Essential Drugs Program PROMESS¹.

The departure of President Aristide and the end of the political crisis did not, however, mean the end of Haiti's troubles. Heavy rain at the end of May caused severe flash floods and mudslides in the southeastern part of the country. Tens of thousands of people were affected by the disaster. Houses, livestock, food gardens, food supplies, water storage tanks and public buildings were washed away.

In September disaster struck again, this time in and around the city of Gonaives and the North West province. The combination of tropical storm Jeanne, the disastrous environmental situation and a weak and neglected infrastructure resulted in the loss of more than 2,000 lives, while 900 people are still missing and presumed dead.

The main health and water and sanitation issues after the storm were:

- *Risk of communicable diseases.* The flooding and resulting catastrophic deterioration of sanitation and the water supply could only increase the risk of common endemic diseases such as diarrhea and respiratory infections.
- *Disruption of the already poor health services.* Hospitals, medical centers and other health facilities were partially or totally destroyed. Medical supplies were lost. In addition the loss of income reduced access to health care even to population not directly affected by the flooding.

Beneficiaries

The most affected by the floods were the inhabitants of Gonaives, Port de Paix and Chansolme. Due to the severity of the floods, some towns were also virtually cut off

¹ PROMESS is the Central Procurement Agency for drugs and medical supplies managed by PAHO, founded in 1992 during the humanitarian crisis. PROMESS provides drugs at low cost to public health institutions, NGOs and non-profit organizations. PROMESS also stores and distributes drugs, vaccines, TB drugs, etc. related to the main priority programs which are subsidized by donor agencies.

from Port-au-Prince and Port de Paix (Gros Morne for example), causing shortages of fuel, food and drugs.

Special attention was given to assist the population of those areas which had about 300,000 people at severe health risk.

Objective

To minimize the primary and secondary impact on public health from Tropical Storm Jeanne.

Expected results and activities

Damage to the medical facilities was extensive. The main and only hospital in Gonaives, La Providence, was completely flooded and remained unfit for medical use for more than five months. Most of the equipment (from operating room to wards) was totally lost. The same applies to the departmental warehouse that had been recently provisioned by PROMESS. Those supplies had to be replaced and expanded considerably to meet new needs created by the storm. The waiver of charges for medical care also brought a higher number of patients to hospitals and health centers. Satisfying these health needs was essential, considering that the population lost all means of generating income.

The risk of water-borne disease transmission was high. The situation regarding communicable diseases in Haiti is dramatic under normal circumstances. The flooding and resulting catastrophic deterioration of sanitation and the water supply could only increase the risk of common endemic diseases such as diarrhea and respiratory infections.

Epidemiological surveillance was needed for an appropriate follow up of the situation, and to take measures if water-borne diseases were identified.

PAHO/WHO was also concerned with the risk of an increased transmission of malaria. A storm in 1964 caused a massive epidemic of malaria due to the proliferation of breeding sites in residual waters. The situation in Gonaives after the floods was quite similar, with the same explosive potential.

To avoid vector-borne outbreaks, it was necessary to purchase vector control equipment and deploy teams on the field for fumigation activities and treatment of breeding sites.

Huge problems occurred downtown around September 2004, with armed gangs threatening and sometimes killing people living in slums. "Bagdad Operation", started on September 30, 2004. For several months, some downtown areas were not accessible to UN agencies and NGOs. PAHO/WHO was very concerned by the

situation, and decided to support sanitation activities in Cite Soleil as soon as it was possible to work in those areas again.

Expected Result 1

Provision of medical supplies (essential drugs, disposables, surgical supplies) to the main hospitals and clinics in the affected areas.

Activities

The activities of PROMESS increased considerably during the emergency.

First, it was necessary to provide drugs in the affected areas, and mainly Gonaives. As the main hospital and the Ministry of Health warehouse were totally flooded by the storm, no drugs were available in Gonaives. Huge quantities were needed to meet the needs of the population, and replace flooded stocks.



Emergency Health Kits being shipped to Gonaives

Medical teams from the Ministry of Health (MSPP), Medecins Sans Frontiere, Medecins du Monde, and The Red Cross were deployed on the field to provide medical care.

PAHO managed to transport drugs from Port au Prince's PROMESS warehouse to Gonaives, mainly with MINUSTAH support. Nine emergency medical kits that were on stand by in PROMESS, ready to respond to emergencies, were provided to

partners present on the field (see table below), and used to provide medical care free of charge to affected populations.

LIST AND DATES OF MEDICAL KITS PROVIDED BY PAHO

| Date | Items provided | Quantities | Logistical support | Beneficiaries |
|-------------|-----------------------|-------------------|---------------------------|----------------------|
| 20-09-04 | Kit 10,000 | 1 | Helicopter (MINUSTAH) | MSPP/ICRC/HRC/MSF |
| 23-09-04 | Kit 10,000 | 1 | Helicopter (MINUSTAH) | SOS Enf. Gros Morne |
| 24-09-04 | Italian Surgical Kit | 1 | USAID / MSH | |
| 25-09-04 | Kit 10,000 | 1 | Helicopter (MINUSTAH) | MINUSTAH |
| 28-09-04 | Kit 10,000 | 1 | WFP Truck | MSPP |
| 28-09-04 | Kit 10,000 | 1 | WFP Truck | ONG ID / ProDeVa |

| | | | | |
|-----------|---------------------------|---|------------------|-------------------------|
| | IST kit / UNFPA | 2 | | Hopital Claire Heureuse |
| | Rape response kit / UNFPA | 2 | | |
| 8/10/2004 | Kit 10,000 | 1 | MSF-France Truck | Hôpital Port-de-Paix |
| | IST kit / UNFPA | 1 | | |
| | Rape response kit / UNFPA | 1 | | |
| 8/10/2004 | Kit 10,000 | 1 | MDM-Canada | MDM-Canada |
| | IST kit / UNFPA | 1 | | (Eben Ezer / Gonaives) |
| | Rape response kit / UNFPA | 1 | | |
| | Kit 10,000 | 1 | | MDM-France |
| | IST kit / UNFPA | 1 | | (Ennery) |
| | Rape response kit / UNFPA | 1 | | |
| | Kit 10,000 | 1 | | ONG / ID |
| | IST kit / UNFPA | 1 | | (Ennery) |
| | Rape response kit / UNFPA | 1 | | |

Even if emergency medical kits are very useful for the early days of the response, they cannot provide all drugs, medical supplies and sanitation items needed in any event. Complementary supplies were also provided by PROMESS to meet different kind of needs requested by different actors on the field.

LIST OF MAIN COMPLEMENTARY DRUGS, MEDICAL SUPPLIES AND SANITATION ITEMS PROVIDED BY PROMESS:

| ITEMS | Qt |
|---|---------|
| Ampicillin Pediatric oral suspension | 900 |
| Aquatabs Tablets/ 220 | 160 |
| 8 cms Bandages (units) | 100 |
| Single use (disposable) blouson (units) | 2200 |
| Brouettes | 25 |
| Boots cover | 1500 |
| Creoline disinfectant | 5 drums |
| Cubitainers 5 Gallons | 5188 |
| Dextrose 500 ml Solution F | 900 |
| Drums 30 Gallons Decontaminant | 2 |
| TB vaccine | 9100 |
| DTPer | 7450 |
| Plastic doses regulators | 1200 |
| Formol | 10 futs |
| SIBIR Fridge | 3 |
| Gallons chlorine | 90 |
| Latex examination gloves | 7000 |

| | |
|------------------------------------|---------|
| HTH | 10 futs |
| Portable nebulizer TIFA fog | 6 |
| Nebulizer TIFA 100E | 4 |
| Boots | 225 |
| Gloves for sanitation activities | 250 |
| Aspersion pomp | 3 |
| Pompes d'exhaure de 3 pouces diam. | 2 |
| Plastic reservoir 800 gallons | 15 |
| Potable water (bags) | 3000 |
| Anti-tetanus serum (Vial) | 1000 |
| Oral rehydration solution (units) | 2100 |
| Tetanus Serum | 1900 |
| MICROSOL vaporizator | 2 |

Due to the long period of time since purchase and reception of drugs in Haiti, when available, medicines were distributed from PROMESS' stock and restocked when shipments were received.

Expected Result 2

Implementation of emergency epidemiological surveillance for affected areas, and enforcement of the national system through reactivating sentinel sites.

Activities

1 - Emergency epidemiological surveillance for affected areas

A simplified epidemiological surveillance system was initiated, specifically orientated to monitor risks linked to the floods. Led by the Ministry of Public Health and Population, PAHO and CDC established an emergency epidemiologic surveillance system to monitor disease trends in emergency medical facilities.

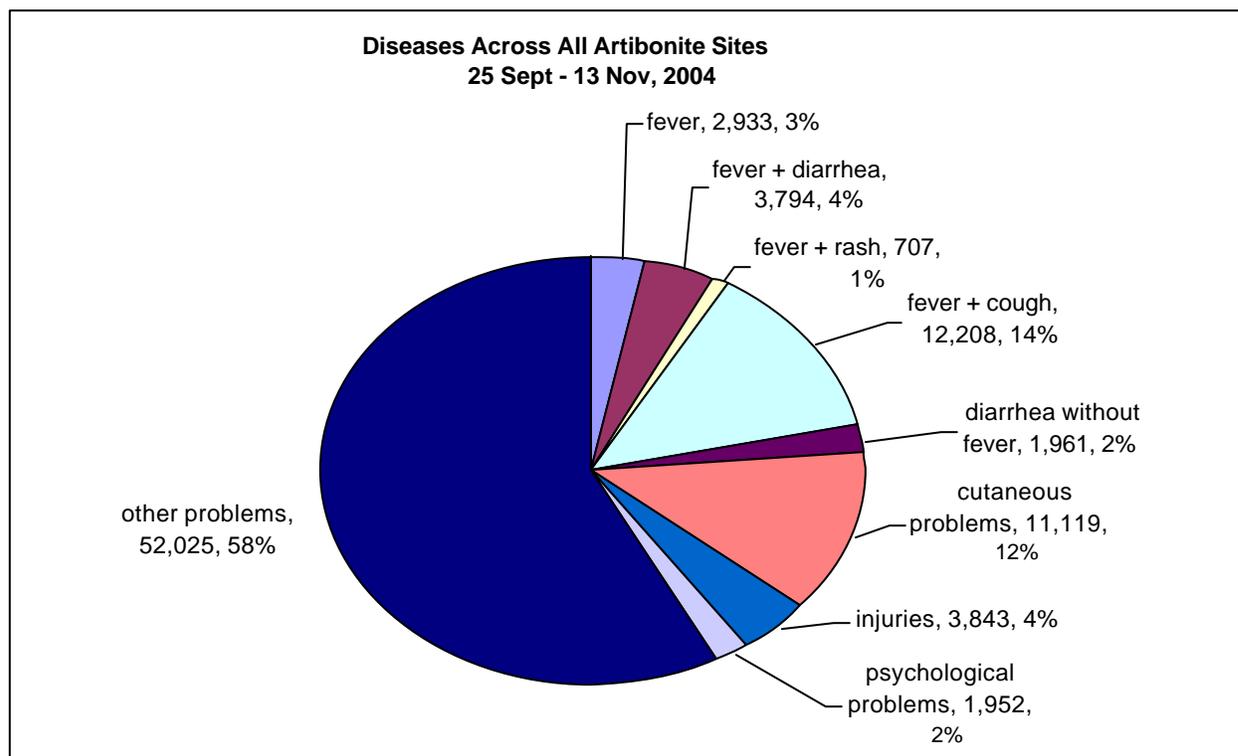
In close partnership between national authorities and PAHO, medical staff was trained to fulfill the forms used to monitor the epidemiological situation.

A comprehensive review of the first eight weeks of data from the emergency epidemiologic surveillance system revealed no major epidemic activity in the affected area. This finding was compatible with data from a number of other sources.



Emergency health kits were transported by trucks from PROMESS warehouse to MINUSTAH helicopter base or directly to the field

After this period, a formal evaluation of the surveillance system was made, and suggested some modifications, to better fit with the evolution of the situation. Modifications were made to the surveillance form, and epidemiologic training was provided to the Artibonite Health Department to address these issues.



Of the syndromes under surveillance, fever with cough and cutaneous problems have been the most commonly seen. Proportions of patients seen for each condition under surveillance have been fairly stable each week. The summary chart is similar to charts from every other week, with about 58% of patients seen for “other,” 12% cutaneous problems, 14% fever with cough, and all other syndromes each seen less than or equal to 4% of the time.

2 - Epidemiological surveillance at national level

Between June and December 2004, PAHO implemented, with ECHO’s support, an epidemiological surveillance system. The surveillance focused on sentinel sites (37) situated in 5 departments (West, Plateau Central, South, North and North West).

Five departments were not covered by ECHO’s project, and it was necessary to have sentinel sites all over the country, in each department.

With OFDA's support, it has been possible to extend this system in four other departments, and get weekly reports from about 50 sites in the country.

Selected sentinel sites and institutions trained by the project:

| Institution / Entity | Department |
|--------------------------------------|-------------|
| Trou du Nord | North East |
| Fort Liberte Hospital | North East |
| Ouanaminthe Hospital | North East |
| Departmental Direction – Nippes | Nippes |
| Petit Trou des Nippes | Nippes |
| Ste Therese Hospital Miragoane | Nippes |
| Corail | Grande Anse |
| Beaumont | Grande Anse |
| St Antoine Hospital | Grande Anse |
| Departmental Direction – Grande Anse | Grande Anse |
| Departmental Direction – South East | South East |
| Bainet | South East |
| Anse a Pitre | South East |
| Belle Anse | South East |

Except for the Artibonite Department, all sentinel sites were trained by a PAHO consultant and an epidemiologist responsible at high level in the MSPP.

The session of training in Artibonite Department has been canceled two times because of security reasons (staff not authorized to leave Port au Prince).

| Place of the training | Date of the training |
|---------------------------|----------------------------|
| Fort Liberte – North East | 8 and 9 of February 2005 |
| Jacmel – South East | 15 and 16 of February 2005 |
| Miragoane - Nippes | 18 and 19 of February 2005 |
| Jeremie – Grande Anse | 15 and 16 of March 2005 |

Expected Result 3

Control of diseases. Implementation of fumigation and breeding sites activities, in all flooded areas.

Activities

Generally, floods modify the environment and increase the number of breeding sites.

In the aftermath of the floods, we observed a proliferation of vector population (including *anophele albimanus*, *culex quinquefasciatus*, *aedes aegypti*). This population has the potential to transfer vector diseases like malaria, lymphatic filariasis and dengue fever.

Lack of sanitation, poor hygienic conditions and presence of waste were key factors that facilitated the proliferation of flies and other insects.

With OFDA resources and MSPP technician's collaboration, appropriate measures were taken to decrease the vector population and prevent vector communicable diseases.



Vector control activities in Gonaives

Activities conducted by PAHO:

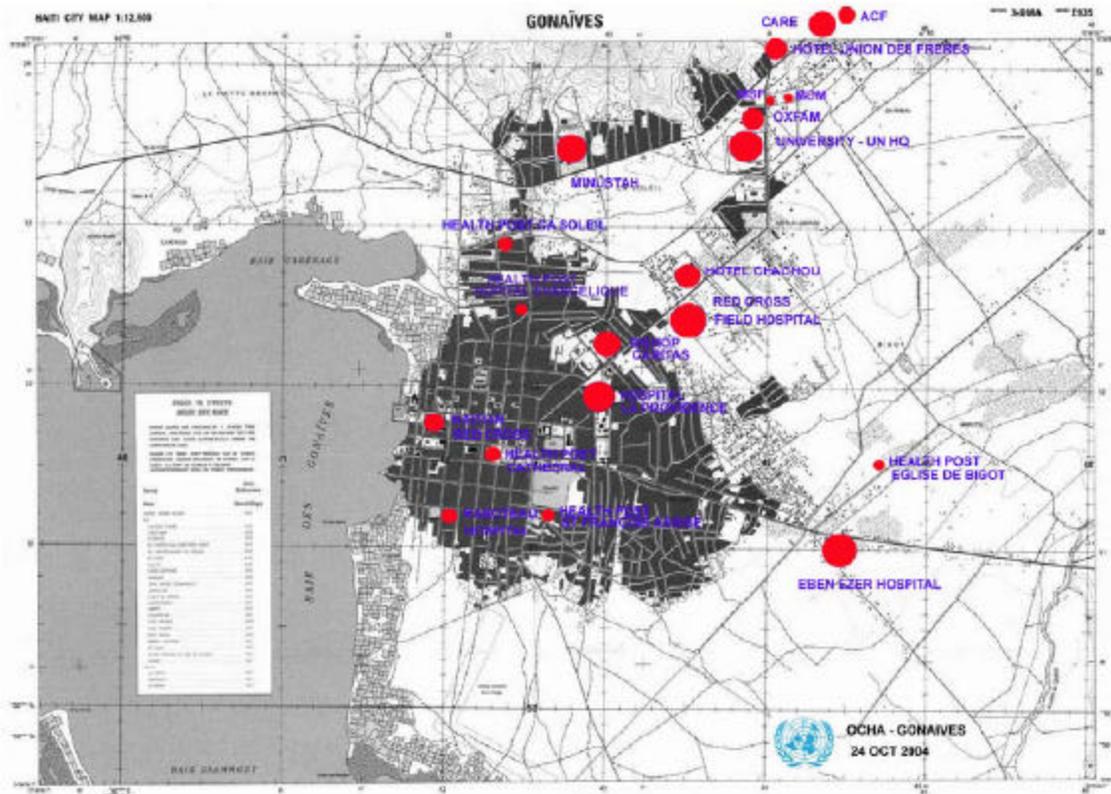
- Purchase of 4 fumigation machines with Ultra Low Volume (TIFA 100-E model) to be equipped on vehicles.
- Purchase of 4 portable fumigators.
- Purchase of 2 sprayers (Microsol Type).
- Purchase of insecticides of different types (phosphor organic liquid (Malathion type), Abate, Bactimos, BTI for treatment of breeding sites).
- Protection items (gloves, boots etc.).
- Fuel to conduct activities.
- Rental cars (2).
- Logistical and technical support

Activities took place in all flooded areas, mainly in Gonaives since it was the most affected area, but also in Chansolme, Aubert and the city of Port de Paix.

The city of Gonaives was divided in three different areas to ensure a whole coverage of flooded areas. In each area, the following activities were conducted:

- Classification of breeding sites.
- Control of breeding density.
- Treatment of breeding sites.
- Spraying, using cars or not, depending on accessibility: this activity spread out for two weeks in each round, and has been done in the city and its surroundings. The population and the Health Department were very satisfied with this activity since it drastically reduced the mosquito and flies density.

The first round took place between 15 November and 8 December.
 The second round took place between 17 January and 14 February.
 The third and last one took place between 8 March and 1 April.



A follow up on this activity had to be implemented, after the end of the grant. More than six months after the floods, here are still stagnant waters in Gonaïves, and there is a need to continue with vector control activities to prevent outbreaks, especially malaria.

These activities have been carried out with PAHO regular funds, in partnership with an international NGO. Treatment of breeding sites will continue in the city of Gonaïves, through ACTED regular beneficiaries, mainly disadvantaged women.

Conclusion

Despite the efforts of UN agencies, the transitional government, international NGOs and other actors, a large majority of the Haitian population remains extremely vulnerable. Security conditions dramatically decreased over the last 12 months, and socio economic conditions are worst for the poorest.

From a health point of view, the main threat to people's lives and well being are (a) infectious diseases, (b) lack of access to emergency health care and (c) shortage of treatment and essential medicines for people with chronic conditions.

Restoration of access to affordable health care, including drugs and the services of well trained doctors and nurses, has been delayed by staff shortages, structural problems and a continuing unstable security situation. The people's health is, however, a critical element of the nation's transition to a more stable future and intensified action to address Haiti's structural problems in the health sector is therefore needed.