



MINISTRY OF HEALTH



FLOOD REPORT

October 22, 2008

- I. Chronologic summary of events**
- II. Objectives of the Report**
- III. Impact**
 - a. Population Affected**
 - b. Infrastructure**
 - c. Morbidity and Mortality**
 - d. Environmental Health**
 - e. Emergency Supplies**
- IV. Actions taken**
- V. Follow up activities**

I. Chronologic summary of events

EVENT: Tropical Depression Sixteen and subsequent flooding events

TIME PERIOD: October 14th to 22nd 2008

October 14th 2008

- TD Sixteen located at 15.6 North and 83.2 West NEMO advices: Tropical Storm Watch for the coast of Belize from Belize City to Punta Gorda.
- Rain Forecast: 4 to 8 inches and up to 15 inches of accumulated rainfall over the hills.

October 15th 2008 8 a.m.

- TD Sixteen located at 16 North and 84 West NEMO advices: Tropical Storm Warning for the entire coast / country of Belize. Preliminary Phase.
- Areas of Concern: Kendal / Jordan
- Supplies pre-positioned at Fair-weather Camp in Punta Gorda.
- National Medical Care and Public Health Committee meeting held to inform the members and check on the status of preparedness.

October 15th 2008 4:20 p.m.

- TD Sixteen located at 15.8 North and 85.4 West weakening. NEMO advices: Discontinue TS Warning and Preliminary Phase but continue FLOOD WATCH.
- **TD Sixteen officially ended.**

October 16th 2008 9:10 a.m.

- Kendal reported to be 7 feet under water. Flooded areas reported also in the North: Sarteneja, San Antonio, San Roman and Douglas.
- In the South: Hope Creek.
- Seven families moved to Shelter (Temporary Facilities)
- More rain forecasted for the days to come.

October 17th 2008 8:25 a.m.

- NEMO taking actions in response to flooding
- Flooding reported in Riverdale, Cowpen, Red Bank and Bella Vista.
- Kendal continues under water; team from Punta Gorda to assess the situation all the way up to Red Bank.

October 18th 2008 10:00 a.m.

- Rain and flooding conditions continue to worsen the situation in the 11th Hydrology Region and indications were that Sibun River was rising near Gracie Rock with no evidence of the situation going to improve during the following 24 to 48 hrs.
- Designated Shelter for Mental Health Hospital patients in Belmopan assessed by Dr. Cayetano and Dr. Marenco finding it: NOT SUITABLE FOR SHELTERING MENTAL HEALTH PATIENTS.

- Decision is then made in order to avoid having to evacuate Rock View during the night and the imminent threat of flooding to utilize the Half way House building located in Maya Mopan.
- 3 pm key for the Half Way House building handed to Dr. Marenco by Mrs. Karen Jones and passed on to Dr. Cayetano.
- 8 pm Patients arrive to Half Way House
- 11 p.m. Visited the site and found all patients basically settled.

October 19th to 22nd 2008

- Flood watch and warning continue for the Western Region as the Macal and Mopan River continue to raise causing flooding in Bullet Tree, Cristo Rey road, Benque, Santa Familia, Succotz and San Ignacio Town.
- Flooding conditions remained in the Cayo District and gradually started to clear as the water reseeded continuing it way downwards the Belize River Valley and Belize District to end at the Caribbean Sea.
- By October 22nd flooding begun to affect areas in the Belize District: Belize City, May Pen is almost completely covered by water and there will be a need to evacuate people and cattle. Other villages affected by the flooding include Lemonal, Rancho Dolores, May Pen, Freetown Sibun, Bomba.
- Also it was reported the raising and flooding again of the temporary crossway at Kendal bridge.
- Report late tonight is that a boat crossing people in the area was turn over by the strong current and two persons are reported missing after the incident.

II. Objectives of the Report

1. To document the preliminary assessment conducted of the effects of the Flooding events following TD Sixteen
2. To document the effects on population in the affected areas of the country
3. To determine potential environmental risk factors for health conditions that may pose a threat to the affected communities.
4. To document actions taken by the Public Health Department to prevent outbreaks
5. To point out immediate actions in the process of implementation.

III. Impact

Population Affected

Approximately 40,000 persons living in the affected areas have been directly impacted by the effects of this flooding in the South and Western Regions. Villages in the Southern Belize include Jordan, Bella Vista, Cowpen, Red Bank, Sittee River, Benque Viejo, Bullet Tree, Santa Familia, Calla Creek, Spanish Look out, San Ignacio Town, Cristo Rey and San Antonio. Only the Western Health Region reported having shelters opened. These shelters were Bullet Tree and San Ignacio Town.

The ITVET Center was opened on Friday October 17th, 2008, in Stann Creek but was closed at 4:00pm that same day.

The table below summarizes the activity in the shelters that have been opened in the Cayo district from October 18th to present. As of the writing of this report, the only shelter that is still open is CET in San Ignacio Town, in which there were a total 39 males and 58 females housed as of October 22, 2008. Water supply in this shelter was reported to be available from the public water system. The method of water treatment was chlorination and water storage was available. Sanitary conditions were adequate, with six functional toilets in this shelter. There were also adequate facilities available for solid waste collection and removal.

Shelter	Community	Male <5	Female < 5	Male ≥ 5	Female ≥ 5	Report Date
Community Center	Bullet Tree	0	0	11	9	18/10/08
Immaculate Conception School	Bullet Tree	0	0	2	4	18/10/08
Sacred Heart (Infant)	San Ignacio	2	2	10	14	18/10/08
Sacred Heart (Class #2)	San Ignacio	2	1	8	12	19/10/08
Sacred Heart (Room #3)	San Ignacio	2	3	4	19	19/10/08
Sacred Heart (Room #1)	San Ignacio	1	0	12	9	19/10/08
CET	San Ignacio	4	3	32	50	20/10/08
CET	San Ignacio	6	5	33	53	21/10/08
CET	San Ignacio	6	5	33	53	22/10/08

Although these shelters have been closed, on October 18th, 2008, both shelters in bullet tree were reported to have no clean water supply. Water pumps were under water due to the flooding of the river. Also, toilets in both Bullet Tree shelters were reported as non-functional. For future reference, these conditions will need to be fixed if these facilities are to remain as hurricane shelters.

There has been severe flooding of houses, septic tanks and pit latrines in Bullet Tree. In Bullet Tree approximately 25 houses, 10 pit latrines, and some septic tanks were under water as well as the burial ground, and the water system was down due to being submerged.

Although no shelters were opened in Santa Familia, the PHI's report flooding in this community as well. However, water was currently being supplied by the Santa Familia Chairman with water sent from Spanish Lookout.

In San Ignacio, approximately 15 businesses were reported to be flooded by PHI's. PHI's report that chlorine residuals were taken from San Ignacio and Santa Elena. However, results have yet to be reported.

Corozal District Surveillance Team visited Caledonia, Buena Vista, San Victor, San Narciso, Santa Clara, San Roman, Concepcion, Libertad, Estrella and Santa Cruz. Due to flooding conditions a Shelter has been opened in Concepción Village under Mr. Cunil (Shelter Manager) with a total of 10 persons (2 men, 5 women and 3 children). Flooding is also reported in Consejo Road, Santa Elena, Corozal Free Zone entrance and several areas of Corozal Town.

Infrastructure

Up to the moment of the writing of this report, there has been no report on damage to the public health network of clinics and hospitals. As the flooding affects now the Belize District, the monitoring continues and proactive evacuation of staff members takes priority, followed by securing Government assets.

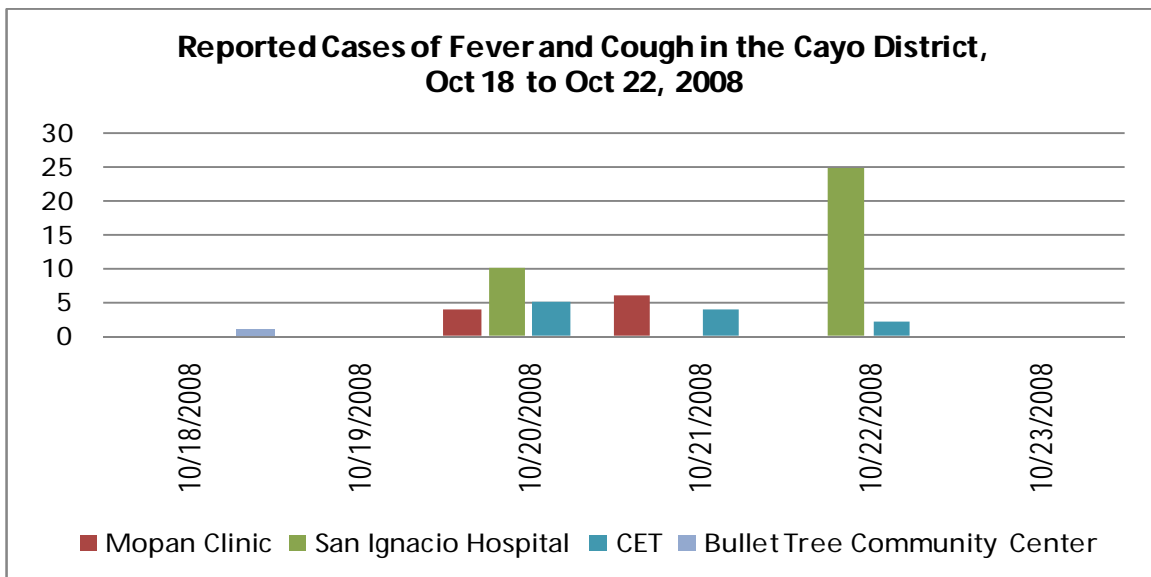
Morbidity and Mortality

On Monday October 20th, 2008, Regional Health Managers, Deputy Regional Health Managers, and Senior Public Health Inspectors in the affected areas were contacted and instructed to begin daily health facility and shelter surveillance utilizing the National Post Disaster Surveillance Guidelines.

Between October 18 and 22nd, there have been 149 cases of priority post disaster surveillance health conditions reported to the Ministry of Health from the Cayo District. Of the total 149 cases reported, 38.2% of these have been cases of fever and cough, followed by fever cases (14.8% of total), minor and mild injuries (13.4% of total), skin infections (10.1% of total), fever and rash (7.4% of total), watery diarrhea (6.7% of total), fever, vomiting and abdominal pain (5.4%), bloody diarrhea (2 cases), pink eye (3 cases) and 1 snake bite.

	Daily Trend						Total
	10/18/2008	10/19/2008	10/20/2008	10/21/2008	10/22/2008	10/23/2008	
Fever (100°F or 38°C)	0	0	13	2	7	0	22
Fever, Vomiting and Abdominal Pain	0	2	3	0	3	0	8
Fever and Cough	1	0	19	10	27	0	57
Fever and Rash	0	0	2	2	7	0	11
Jaundice	0	0	0	0	0	0	0
Watery Diarrhea	0	0	4	4	2	0	10
Bloody Diarrhea	0	0	2	0	0	0	2
Conjunctivitis (Pink Eye)	0	0	2	1	0	0	3
Skin Infections	0	1	6	5	3	0	15
STFS	0	0	0	0	0	0	0
Injuries	0	3	9	2	6	0	20
Dog Bite	0	0	0	0	0	0	0
Snake Bite	0	0	0	1	0	0	1
Rat Bite	0	0	0	0	0	0	0
Domestic Violence	0	0	0	0	0	0	0

The only condition that has shown a significant increase in the number of cases reported was fever and cough, which increased from one reported case on Oct 18th to 27 cases on Oct 22, 2008. Of the 57 total cases reported to date, 80.7% were reported from the San Ignacio Hospital and CET, both of which are in San Ignacio Town. The remaining were reported from the Mopan Health Center in Benque Viejo Town (10 cases), and the Bullet Tree Community Center (1). Although this may be a random increase in the number of cases seen, and may be unrelated to the flooding, it suggests the possibility of an outbreak of fever and cough in the San Ignacio Town. Public Health Inspectors will be notified to verify whether this is indeed an outbreak.



In addition, a handful of chronic non-communicable diseases such as hypertension and diabetes have been reported, but these were few in number.

The total number of reporting sites in Central Health Region (CHR) are 13 sites whereby five (5) are urban and eight (8) are rural.

Urban

1. Cleopatra White Polyclinic II
2. Matron Roberts Polyclinic II
3. Port Loyola Health Centre (HC)
4. Queens Square HC
5. San Pedro Polyclinic II

Rural

1. Crooked Tree HC
2. Maskall HC
3. Burrell Boom HC
4. Ladyville HC
5. Hattieville HC
6. Double Head Cabbage HC
7. Caye Caulker HC
8. Gales Point HC

Date	Complaint	Total		Total
		Urban	Rural	
21/10/08	Fever & Cough	10	1	11
	Skin Infection	1	1	2
	Fever	0	5	5
	Watery Diarrhea	0	3	3
	Fever, cough, abd. Pain	0	1	1
	Injury (mild)	0	1	1
22/10/08	Fever & Cough	14	2	16
	Skin Infection	0	6	6
	Fever	0	0	0
	Watery Diarrhea	0	1	1
	Mild Injury	1	0	1

No deaths directly related to the flooding events have been reported to date to the Ministry of Health.

Environmental Health

Environmental Health Officers from the Ministry of Health have centered their activities primarily in the following:

1. Monitoring Water Quality
2. Fecal Contamination of flood water
3. Monitoring potential chemical / pesticides contamination caused by floods
4. Safe disposal of dead animals and human corps

All Environmental Health activities carry on heavy component of Health Information, Education and behavioral change hence the reason for HECOPAB Coordinators and Community Health Workers to be key elements in the response to events of this nature. Activities in the Southern Health Region in response to the flooding were geared to prevent diarrhea and skin diseases but in the Western Region there were also deeply concern with the potential for chemical (pesticides) contamination.

Emergency Supplies

The request for emergency supplies from the Southern Districts was limited to chlorine tablets; the Western Region requested K-otrin and Chlorine tabs as well and so far neither Northern Region nor Central Regions have made additional request for emergency supplies.

1. Abate, Deltametrin, Malathion and supplies for active fever case surveillance are ready at CMS.
2. Over 100,000 chlorine tabs (167 mgs) remain at the CMS after 10,000 were issued to the Western Region ready to be facilitated to any region in need.
3. It is expected that some chlorine tabs are still available in each District from the recent threats.
4. Spraying equipment (new ones) were distributed to the Districts (each District) earlier this year, including some Thermal Foggers.
5. Oral Re-hydration Salts are also available both at the District level and CMS
6. Impregnated bed nets ordered after Arthur are about to arrive in the country and will be delivered/issued to Districts with high incidence of Malaria with a comprehensive educational package.

IV. Actions taken

- **Health Education messages**

The content of the messages has been centered around avoid exposure to contaminated waters in order to prevent skin diseases, gastro-intestinal infections and exposure to poisonous snakes bites.

The messages have been aired by local and national TV, Radio Stations and with the support of Red Cross, PAHO, Ministry of Health and as community service of the different Radio Stations.

- **Water purification tablets provided to:**

- **Western Region**

Chlorine 167 mgs. 10,000 tabs

Chlorine (tabs for larger water reservoir) 200 tabs.

- **Surveillance of Communicable Diseases:**

- **Western Region**

- Loma Luz Hospital
- Mopan HC
- San Ignacio Hospital
- St. Gabriel Medical Centre
- CET (Shelter)

- **Central Region**

- Cleopatra White Polyclinic II
- Matron Roberts Polyclinic II
- Port Loyola Health Centre (HC)
- Queens Square HC
- San Pedro Polyclinic II
- Crooked Tree HC
- Maskall HC
- Burrell Boom HC
- Ladyville HC
- Hattieville HC
- Double Head Cabbage HC
- Caye Caulker HC
- Gales Point HC

- **Emergency medical/surgical services**

Three General Practitioners (one from WRH and two from NRH) were deployed to San Ignacio Hospital to strengthen the emergency medical care provided specially due to the blockage of road communication by flood water.

- **Vector Control**

Preparations for ULV Spraying are underway both in the Southern Region and Western Region to control the vector for the transmission of Dengue and Malaria. K-otrin (Deltametrin) has been sent to Vector Control Western Region to initiate spraying as soon as technically recommended and weather permits.

V. Follow up activities

With the imminent threat for flooding now for communities in the Belize District, the following are the actions to be taken:

1. Deploy three teams to the following areas:

TEAM MEMBERS	COMMUNITIES TO BE VISITED
---------------------	----------------------------------

<p>1. Dr. Vilma Torres, Nurse Espinosa, Nurse Quiros, PHI Bradley, N. Samuels, Dr. Edwards, Driver Middleton</p>	<p>St. Pauls, Rancho Dolores, Lemonal*, Double Head Cabbage, Flowers Bank, Burrell Boom</p>
<p>2. Dr. Gonzales, Nurse Moh, Nurse Murray, PHI Cain, Driver and Vector Control Marshall</p>	<p>Gardenia, Biscayne, Sandhill, Maskall</p>
<p>3. Dr. Rizzo, Nurse Burgess, PHI Bey, Dr. Andrewin, Driver and Vector Control Myles</p>	<p>Mile 8 Community, Sunset Park, Hattievilla, Gracie Rock, Freetown Sibun, La Democracia</p>

2. Provide medical services where needed in the areas visited (Medical supplies will be taken)
3. Take Shelter Surveillance and Health Facility Surveillance Forms and educate individuals about reporting utilizing the specific forms.
4. Distribute posters "Water Safety" and "Food Safety"
5. Distribute pamphlets
6. Take chlorination tablets and explain usage
7. Obtain water samples
8. Take oral re-hydration salts in the event of diarrhea cases
9. Conduct house to house surveillance and educate in relation to water and food safety
10. Obtain names of chairpersons and contact persons for shelters and their cell numbers for continued surveillance
11. Coast Guard will provide transportation for visit to flood areas not accessible by road
12. It was agreed that the next meeting will be held at the Sand hill Community Center on Friday 24th October 2008 to further assess the situation and to share information and to plan the way forward.

Up date: October 22, 2008 11:59 p.m.