

**Preliminary Report
Post Hurricane Mitch Needs Assessment
American Red Cross International Services
Centers for Disease Control and Prevention
February 1999**

NICARAGUA

I. Background:

In late October and early November 1998, Hurricane Mitch, one of the strongest, most devastating hurricanes of this century, caused widespread destruction throughout Central America. Nicaragua was battered for several days by high winds and torrential rains that caused enormous losses of life, catastrophic damage to the infrastructure of this country, and hundreds of thousands left homeless. The American Red Cross International Services (ARC) was requested to address relief efforts related to health in the hurricane-affected areas of Central America and requested CDC to perform a needs assessment to assist in directing its efforts.

II. Methods and Materials:

We performed household surveys using a modified cluster-sampling method conducted the week of February 2, 1999. The most heavily damaged regions were identified by the in-country ARC delegates and were subsequently divided into clusters based on the distribution of an estimated 85,833 families affected by the hurricane. Using a random number generator we selected 30 clusters with probability proportional to the number of households within a cluster. One family member was interviewed from each of 7 randomly selected households within each cluster. Two hundred and five interviews were completed representing approximately 1511 people.

We administered a questionnaire in Spanish to address healthcare availability and healthcare needs, food and water availability, housing, and storm preparation. The interviewers were local Red Cross personnel and volunteers guided by the principal investigator.

Data was entered and analyzed in Epi Info 6.1. Frequencies of variables were calculated for the population as a whole and stratified by sub-populations of special interest, such as shelters and the Rio Coco area.

III. Results:

Demographics:

Of the surveyed households, 24% were living in their own homes, 69% were still remaining in shelters, and 5% were living with friends or family. Seventy-eight percent of households reported complete destruction of their homes, 14% reported sustaining damage that could be

repairable, and 2% reported no damages to their homes. The mean household size increased from 6.5 (range 1-20) people prior to the hurricane to 7.5 people (range 1-56) after the storm. Among non-shelter households, the mean household size remained relatively stable at 6.8 people (range 1-20). Among shelter households, the mean household size was 7.8 (range 2-56). Overall, 51% of households had children under the age of 2 years and 25% had household members 65 years or older. Homes prior to the hurricane were primarily constructed of wood (42%), cement block (14%), or brick (11%). At the time of the survey, 16% of households reported a pregnant member and 13% experienced a death of a member during the hurricane.

Health and Health care:

After the hurricane, 41% of households had access to health care compared to 45% before the storm. Households reported receiving health care from clinics (48%), health promoters (22%), or hospitals (17%). Eleven percent were relying on health services in a camp or shelter. After the hurricane, 13% of households had access to a pharmacy compared to 35% before the storm.

Health information was collected for conditions during the month prior to the survey and conditions present at the time of the survey. In the month prior to the survey, 14% of households reported having one or more members sustaining an injury (n=53) and 88% reported one or more household members with an illness (n=579). Households reported illnesses including gastrointestinal disease (32%), respiratory disease (64%), chronic disease (11%), stress related complaints (3%), and malaria (11%).

At the time of the survey, 88% of surveyed households, representing 453 people, reported needing medication (Figure 1). Seventy percent of households, representing 269 people, had one or more members in need of health care (Figure 3). The most common household illnesses (complaints) needing attention at the time of the survey were respiratory which included all respiratory complaints besides asthma (37%), fever which included malaria and fever (17%), and gastrointestinal which included vomiting, diarrhea, and gastritis (11%). A total of 53 people had sustained injuries in the past month for a total of 14% of households (Table 1).

Table 1 Injuries in the Past Month

Type of Injury	Number of Cases
Injuries overall	27/197 (14%)
Lacerations	7/197 (4%)
Puncture Wound	10/197 (5%)
Fracture	7/197 (4%)
Head Injury	3/197 (2%)
Other	2/197 (1%)

Food:

Before the hurricane, 52% of households reported having sufficient food to feed their family every day of the week. This decreased to 27% following the storm. The mean number of days a

week without sufficient food before the storm was 1.9 days (median = 0.0) and increased to 2.9 days (median = 3) after the storm. Twenty-three percent of households went with insufficient food 5 or more days of the week after the storm compared to 15% before the storm. Forty-six percent of households reported food to be their most important need.

Services:

At the time of the survey, households reported receiving services including electricity (18%), telephone (3%), transportation (43%), and waste removal (20%).

Water and Sanitation:

Running water was available to 29% of households at the time of the survey compared to 40% before the storm. Wells were in use by 36% of households after the storm and 50% before the storm. Seventy-seven percent of households treated their water prior to drinking by boiling (4%) or chlorinating (72%). Latrines or bathrooms were available to 44% of households.

Reported Needs:

At the time of the survey, households reported food (46%), housing (31%), and construction materials (10%) to be their greatest needs. For the second most important need, households reported medication (34%), food (33%), and housing (8%). A total of 62% households overall listed food as a need. If constructions materials and housing are considered together, 41% of households listed housing concerns as their highest priority, and 53% of households overall listed housing concerns as a priority.

Hurricane Warning and Information:

Only 41% of households had warning of the hurricane prior to its arrival. Overall, 63% had 24 hours or less warning. Of the households that received warning, 62% were warned by radio and 12% by neighbors.

Household Preparedness:

Although 41% of households received prior warning, only 7% took measures to prepare for the storm (Table 2).

Table 2 Household Storm Preparation

Preparation	Number of households
Securing Windows	1/205 (0.5%)
Securing Food and Water	14/191 (6.8%)
Sandbagging	1/205 (0.5%)
Evacuating*	107/205 (52.2%)

* evacuation numbers include those who fled their homes

Shelters:

Demographics:

Shelter households were similar to non-shelter households in the proportion of children under 2 years, persons 65 years or older, and in pregnancy in the household. Household size was larger among shelter households by 1 person per household at 7.8 people, compared to non-shelter households.

Health and Health care:

Forty-one percent of shelter households reported access to a pharmacy before the storm, compared to 16% after the storm. Among non-shelter households, 20% reported access prior to the hurricane compared to 8% after the storm. Forty-eight percent of shelter households had access to health care before the storm, compared to 45% after the storm. Thirty-eight percent of non-shelter households reported access to health care before the hurricane, compared to 21% after the storm. The need for health care among shelter and non-shelter households was similar at the time of the survey (~70%). Reported illness in the past month overall was highest in the non-shelter population (Table 3).

Table 3 Illness in the month prior to survey Shelter vs Non-shelter

Type of Illness	Shelter	Non-shelter
Illness overall	123/142 (87%)	56/61 (92%)
Gastrointestinal	48/142 (34%)	18/62 (29%)
Respiratory	93/142 (66%)	39/62 (63%)
Malaria	13/142 (9%)	10/62 (16%)
Stress	4/142 (3%)	1/62 (2%)
Chronic	14/142 (10%)	8/62 (13%)
Other	22/142 (25%)	19/62 (31%)

Food:

At the time of the survey, fifty-five percent of households residing in shelters reported having enough food to feed their family every day of the week before the hurricane compared to 32% after the storm. The proportion of non-shelter households reported having enough food to feed their family every day of the week before the storm (45%) decreased to 14% following the hurricane. Food was reported to be the most important need in 46% of households.

Water:

Forty-four percent of shelter households reported having access to running water (piped) before the storm, compared to 31% after the hurricane. Running water was available in 31% of non-shelter households before the storm and in 23% after the storm. Eighty-four percent of the shelter households reported treating their water prior to drinking compared to 61% in non-shelter households.

Rio Coco:**Demographics:**

In the Rio Coco area, the mean household size increased from 7.6 people before the storm to 10.3 people after the storm. Seventy-one percent of households had children under 2 years and 43% had members 65 years or older. Seventy-one percent of households reported complete destruction of their homes and 7% reported sustaining damage that they felt to be repairable. Twenty-nine percent of households reported a pregnant female. No hurricane-related deaths were reported.

Health and Health Care:

At the time of the survey, 29% of households reported an injury in the month prior to the survey and 86% reported one or more members affected by illness. Household member illnesses included gastrointestinal (86%), respiratory (64%), chronic illness (14%), malaria (21%), and other (79%) (Table 4). All households (100%) reported a member in need of medication. Access to a pharmacy had decreased from 43% to 7% after the storm. Access to health care decreased from 43% to 29% after the storm. Eighty-four percent of households reported a member in need of health care at the time of the survey.

Table 4 Self-reported Illness in the Past Month in Households within Rio Coco and Non-Rio Coco households

Type of Illness	Rio Coco	Other
Illness overall	12/14 (86%)	153/175 (87%)
Gastrointestinal	12/14 (86%)	52/176 (30%)
Respiratory	9/14 (64%)	116/176 (66%)
Malaria	3/14 (21%)	18/176 (10%)
Stress	0/14 (0%)	5/176 (3%)
Chronic	2/14 (14%)	15/176 (9%)
Other	11/14 (79%)	27/176 (15%)

Water and Sanitation:

Eight percent of households reported access to running water before the storm and none had access at the time of the survey. Eighty-five percent of households reported using water from a river or stream. Eight percent reported using well water after the hurricane, representing a decrease from 15% prior to the hurricane. Seventy-nine percent of households treated their water prior to drinking, 64% chlorinated, and 7% boiled their drinking water. Only 29% of households had access to latrines.

Food:

Before the hurricane, 93% of households had sufficient food for their families every day of the week. At the time of the survey, however, 100% of households did not have enough food to feed their families every day of the week since the hurricane. The mean number of days a week without sufficient food after the hurricane was 4.9 (median 4.5), compared to 0.2 days (median 0.0) before the hurricane.

IV. Conclusions:

The areas of highest need corresponded with difficulty in access to the area. In this assessment, non-shelter households, particularly those in Rio Coco and the focus for the ARC in Nicaragua, had the greatest needs for food and health care.

Shelters are receiving more help than those residing in homes at the time of the survey.

V. Recommendations:

1. The needs from in this assessment should be compared to relief and development programs and systems presently in place to identify needs that are not being addressed or populations that are not being served
2. Food programs should be initiated in Rio Coco as soon as possible. Given that this area has been isolated chronically and had adequate food supplies prior to the hurricane, emphasis should be placed on reestablishing pre-disaster conditions.
3. Health care access in general, is a chronic problem and emphasis should be placed on strengthening the underlying infrastructure.
4. Acute needs for access to medications should be addressed in the Rio Coco area and in non-shelter populations.
5. Evaluate the warning system with emphasis on the use of radio and providing guidance for preparations with warning message.
6. Further assessment and surveillance may be required in the Rio Coco area as sample size was small and information should be interpreted carefully. However, feeding programs should not be postponed awaiting further assessment