

Abstracts and Reports

DISASTER PREPAREDNESS AND RELIEF NURSING IN THE CARIBBEAN

by Grace Allman Burke¹

On Wednesday, 29 August 1979, Hurricane David struck the Island of Dominica in the Caribbean with 150 mile-per-hour winds, causing widespread devastation and many casualties. Eleven senior nurses from the region and four PAHO nursing advisers (including the author), who were present at the time to attend a regional nursing conference, rendered important assistance to hurricane victims. Their experience has stimulated disaster preparedness and training activities throughout the Caribbean for nursing and other health personnel.

Introduction

On Sunday, 26 August 1979, the Meteorological Office of Barbados warned that a hurricane was approaching and that some of the Windward Islands, including Dominica, might be affected. Reports of the hurricane's progress continued to be broadcast by national and regional radio stations over the next two days.

During that period, all reports indicated that Barbados would be the direct target of the hurricane. The storm was described as very dangerous, and was said to be travelling at a relatively slow rate of speed. On Tuesday, 28 August, the islands of Saint Lucia, Martinique, and Dominica were placed officially on a hurricane alert.

Early in the morning of 29 August, Dominica began receiving strong winds and heavy rains. Weather reports on Radio Dominica advised all people to remain indoors and to avoid trying to attend work unless absolute-

ly necessary. Dominican nurses advised delegates to the Regional Nursing Conference, then underway on the island capital of Roseau, that they would be unable to attend the sessions scheduled for that day at the hotel conference site because of these warnings.

By 9:00 A.M. weather conditions had started to become alarming. Conference delegates at the hotel sought advice from hotel staff members as to the safest place to wait out the storm. They were advised that the conference room would be the best place.

At 10:00 A.M. the full force of Hurricane David struck Dominica. Weather conditions were beyond control. The noise of the wind and the nearby sea was overwhelming. Galvanized metal sheets ripped from various parts of the hotel's roof sailed off and crashed to the ground. The radio station went off the air. The rain became extremely heavy. Trees in front of the hotel and within the hotel grounds were uprooted and felled. People could be seen running past the hotel, and some sought shelter inside. Fear and anxiety set in. Spiritual guidance was sought and prayers were offered.

¹Caribbean Area Nursing Adviser, Pan American Health Organization, P.O. Box 508, Bridgetown, Barbados.

At 11:00 A.M. the nurses began to realize that the conference room was unsafe and tried to seek shelter in a church across the street. But those reaching the church first discovered it was locked, and so they returned to the conference room. The glass doors and windows of the conference room began to break under the impact of the storm, and rain began to enter. The nurses realized that their lives were in danger.

At 1:00 P.M. the nurses were advised by the hotel manager that he had found a storeroom on the premises that had a concrete roof. He said he believed they would be quite safe inside. This assessment proved to be correct. The nurses found shelter in the storeroom until the storm ceased around 6:00 P.M., and they continued to use it as a shelter for the next several days until they left Dominica.

Thursday, 30 August, the day after the storm, was filled with emotion. The widespread devastation was shocking. Homes and office buildings were roofless; telephone and electric lines were down and lying everywhere. Broken glass, debris, and fallen trees blocked most streets and roads. Dominica's hospital, prison, schools, health centers, and other facilities were badly damaged.

All official means of communication—by telex, cablegram, telephone, and radio—were rendered impossible. However, a lone ham radio operator was able to make outside contact the night of the storm, providing information on the extent of the damage to neighboring countries. He was able to set up his equipment at the central police station in Roseau, the capital, and this became the official center for communications and for planning the overall disaster relief effort. Later on, communications were assisted by the H.M.S. Fife—a British warship that reached Dominica shortly after the storm had passed.

Government ministers and senior civil servants, under the direction of the Prime Minister, were the top administrators of the disaster relief effort. Initially, major emphasis was placed on assessing the extent of the damage done to the island and on mobilizing

the massive international aid required. Several senior representatives from other governments, international agencies, regional institutions, and religious organizations arrived at Dominica shortly after the hurricane in response to the island's call for assistance.

Outside technical personnel on the island during this period became acutely aware of the need for an overall development plan and for specific detailed plans for all sectors, particularly the health sector. Specifically, in addition to securing monetary assistance, it was necessary to provide short, medium, and long-range planning for overall development of the infrastructure of the health services. This was accomplished through the combined efforts of many international agencies.

The Immediate Impact

The fury with which Hurricane David struck Dominica was terrifying to all present, but it was especially devastating to those who lost their homes and possessions. In the aftermath of the storm, lack of food and water combined with public uncertainty triggered widespread looting and pilfering of stores and shops, and even of relief supplies that came to the island. The private business sector was virtually destroyed, either by hurricane damage or by looting.

At the same time, an understandable atmosphere of gloom and hopelessness seemed to settle over the island. In general, people appeared to be demoralized and inactive for several days after the event. This was demonstrated by the fact that, during the immediate post-hurricane period, expatriates were far more evident participants in the restorative process than were local residents.

Health Sector Activities

Although the delegates to the Regional Nursing Conference did not anticipate that Hurricane David would strike Dominica, they were able to play an immediate part in im-

plementing the emergency measures required. These measures included:

- Triage of injuries
- Organizing the three main first-aid stations
 - Cleansing, dressing, and suturing wounds
 - Evaluating and monitoring obstetric patients in labor
 - Administering medications—including tetanus toxoid, local anesthetics to wound sites, analgesics, etc.
 - Providing bedside care for patients being kept under observation
 - Providing emotional support for patients and their families.

Approximately 1,800 persons presented themselves for treatment of wounds and injuries in the immediate post-hurricane period. Triage of casualties was accomplished at the central fire station. People with minor injuries were treated and released. Those in need of observation were sent to health facilities set up at the Dominican National Bank. This building was also used to house patients transferred from the hospital, which had been badly damaged. People with more serious injuries—such as fractures, deep lacerations, and puncture wounds—were sent to the hospital. The roof over the main corridor of the hospital had not been destroyed, so four rooms in this area could be used to treat casualties.

Five physicians, 21 nurses (both local and regional), the island's chief pharmacist, and a few lay persons constituted the health team for the first three days of the relief effort. The team was small because many local health personnel had lost their homes, were unable to reach Roseau on impassable roads, or were in a state of psychological shock after the hurricane. All these circumstances reduced the number of personnel available to provide initial assistance.

Many health centers were damaged and several rural villages were unreachable for a few days because the roads leading to them

were blocked by debris or landslides. Therefore, beginning on the second post-hurricane day, medical supplies and personnel were airlifted to such villages by helicopter. This airlift continued for several days. Subsequently, health personnel from neighboring islands and larger countries arrived at Dominica to provide assistance. Very seriously ill patients were flown to other islands. Local health personnel repeatedly expressed gratitude for the health assistance provided by the regional nurses.

A major effect of the hurricane was disruption of all the island's water and electrical supplies. Additionally, in some cases rivers became polluted with debris, excreta, and dead bodies. Proper sewage disposal was impossible. Fears of a communicable disease epidemic, particularly an epidemic of typhoid (which is endemic on Dominica) were widespread.

A vehicle with a loudspeaker broadcast health messages throughout Roseau. In this way the public was advised not to use the water from rivers and to boil whatever water was available before use.

Lack of electricity led to much food spoilage as well as to minor injuries during hours of darkness (from lack of light). An emergency generator and lighting system were set up at the hospital by the staff of the H.M.S. Fife. The ship also provided fresh water for use at the hospital.

By the third post-hurricane day the major first-aid effort was completed. On the fifth day the regional nurses obtained passage out of Dominica by cargo vessel. Later assistance by PAHO nursing advisers consisted of technical collaboration in the reorganization of the health services, particularly the hospital and community nursing services, and other health care institutions.

Nursing Activities in Perspective and Follow-up Action

This experience made it clear that nursing personnel in the Caribbean area needed better

educational preparation if they were to adequately carry out disaster relief functions. Therefore, the regional nurses made an urgent request, through their governments, asking that PAHO convene a regional workshop directed toward that end. It was further requested that if possible the regional nurses who were present in Dominica during the hurricane be invited as participants.

This regional workshop was held at Bridgetown, Barbados, on 12-16 May 1980. Its stated purpose was to produce a "multiplier" effect by:

- Stimulating the development of national multidisciplinary training programs in disaster preparedness and relief within the countries involved.
- Stimulating the development of disaster preparedness and relief planning activities in the field of nursing that would be tailored to the unique needs of individual countries.
- Producing regional nursing guidelines for disaster planning and relief activities to be utilized at the national level.

All of these aims were achieved.

During this workshop, which was attended by senior nurses from each Caribbean territory as well as by selected health educators and community development officers, the comprehensive role of the nurse during a disaster was defined as follows:

Professionally, nurses are responsible for leadership in planning, organizing, directing, and providing nursing services during a disaster. In addition to established nursing practices, the nurse must have special knowledge, skills, and certain attitudes to function effectively in a disaster.

Pre-Disaster Phase

The nurse should assume a direct responsibility and active role in the formulation of a disaster nursing plan of action. The nurse must facilitate the integration of this plan into the overall disaster plan of the country.

Immediate Post-Disaster Phase

The plan will be implemented within the framework of the national plan and under the direction of the nurse coordinator or supervisor. Several nursing

roles and functions are requisite for meeting the needs of the affected community. Among them are those of planner, nursing care provider, administrator, health educator, triage officer, and crisis intervenor.

Post-Disaster Restorative Phase

The nurse continuously assesses the situation, adapting nursing roles as necessary and gradually returning nursing services to the pre-disaster stage.

On a long-range basis, the nurse must evaluate the strengths and weaknesses of the disaster nursing plan and take corrective action where indicated.

Furthermore, the nurse should be aware of the necessity of follow-up assessments and counseling to identify delayed or deferred health problems in the community. Depending on the extent of the disaster, physical and socioeconomic dislocation could occur. In this restorative phase, the aim is to alleviate and reduce dislocation. Rehabilitation should commence as soon as possible.²

Eleven regional guidelines for disaster preparedness and relief nursing were also prepared during the regional workshop. These outlined activities of an administrative, clinical, and educational nature that would be required to deal with disaster situations. Nursing protocols to be used in the immediate aftermath of a disaster were also formulated; these are to be further developed at the national level.

Overall, the meeting stimulated senior nursing personnel to define and develop national nursing disaster plans that can be incorporated as integral components of overall disaster plans in their territories. In addition, several multidisciplinary training activities are currently taking place at the national level, using as a basis the information gained at the regional workshop. Another major action to be taken in the near future is the training of a body of Caribbean disaster relief nurses who can be mobilized immediately to serve any disaster-stricken territory in the region. Nurses who possess the necessary interest, skills, and other qualities are to be selected for participation in this program.

²Source: Pan American Health Organization, 1980 (3).

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A COMPARISON OF METHODS FOR DIAGNOSING BANCROFT'S FILARIASIS

The following has been abstracted from the article "Estudio comparativo de las técnicas de Knott y filtro nucleopore en el diagnóstico de filariasis bancrofti en dos barrios de Puerto Limón, Costa Rica" ("Comparative Study of the Knott and Nucleopore Filter Techniques for Diagnosis of Bancroft's Filariasis") by F. Paniagua, J. L. Garcés F., A. Zúñiga, and C. Granados. The complete article will be published in Spanish in the Boletín de la Oficina Sanitaria Panamericana.

Detection of *Filaria bancrofti* microfilariae can be difficult when few are present in the blood. Therefore, methods for concentrating the microfilariae present in a given blood specimen have greatly facilitated diagnosis of Bancroft's filariasis.

To compare an early concentration method, the Knott sedimentation method (1), with the relatively new nucleopore filtration method (2, 3) 2 ml blood samples were obtained from 1,657 subjects in the Cieneguita and Central districts of Puerto Limón, Costa Rica. The Knott method was used to process half of each sample, and the nucleopore filtration technique (employing a membrane with 5 μ m nucleopores) was used to process the other half.

The microfilariae encountered were identified (on Giemsa-stained thick smears) and were counted by means of the chamber technique described by Denham et al. (4). In terms of positive diagnoses the results revealed no significant differences between the Knott

and nucleopore methods. That is, 32 of 34 diagnosed cases were detected using the Knott method, and 31 of 34 were detected using the nucleopore method. This suggests that the choice between these two concentration methods should be based on other considerations. Specifically, the nucleopore membrane technique is considerably faster than the Knott method. On the other hand, the Knott method is less costly, and may therefore be the more appropriate for laboratories with limited resources.

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