

MEDICC Review

Health and Medical News of Cuba



In the Eye of the Storm: Disaster Management Lessons from Cuba



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MEDICC Review presents....

In the Eye of the Storm: Disaster Management

Lessons from Cuba

In the Eye of the Storm: Disaster Management Lessons from Cuba

In 2004-2005, *MEDICC Review* carried 24 articles featuring Cuban disaster preparedness and response. Unlike the disasters themselves, this was no accident. As international experts report, Cuba's management of disasters at home and disaster cooperation abroad merit attention. In this CD, we have compiled a selection of *MR*'s coverage, including Cuban public health studies, programs and research on the topic, as well as interviews, critical assessments and on-the-ground reporting from the disaster scene. Imposing itself as number one in our pages: the hurricane season.

Living to Tell the Tale

Katrina, Rita, Ivan, Dennis, Mitch and Michele: innocuous, even melodious, names for deadly hurricanes that have unleashed their fury across the Caribbean, Central America and the southern United States. In Haiti, thousands perished during Tropical Storm Jeanne in 2004. More recently, entire Guatemalan villages were buried under mud when Hurricane Stan dumped biblical amounts of rain on Central America.

And things are getting worse.

The 2005 hurricane season was the most active on record. The storms are also becoming more powerful: Hurricane Ivan (2004) was the fifth strongest to hit the Caribbean in recorded history, while Hurricane Wilma (2005), was the fastest intensifying one – going from a moderate tropical storm to a Category 5 monster in a few hours.

But neither claimed a single Cuban life.

Research from international agencies finds such minimal loss of life in Cuba - despite being a small nation of scant resources in the heart of 'hurricane alley' - is due to a time-tested disaster preparedness strategy aimed at protecting human life and particularly the most vulnerable. Political will played out in planning and organizing capability; early, accurate scientific forecasting; active public participation; and detailed post-disaster assessments of what went wrong: experts say this is Cuba's formula for success.

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'The Answer My Friend': Regional Cooperation

The International Red Cross, UN offices for Disaster Reduction Strategy and Humanitarian Affairs, as well as OXFAM, suggest Cuba's experience could be valuable to other countries,

North and South. In June, 2005, the UN Development Program and the Association of Caribbean States named Cuba as headquarters for their new regional disaster preparedness network.

Such regional and international cooperation makes both scientific and humanitarian sense, natural disasters scoffing at national boundaries and geopolitical alliances alike.



We hope that the constellation of materials provided in this CD will generate more ideas, proposals and opportunities for cooperation all around, and contribute to the growing momentum for effective, equity-inspired disaster preparedness and response.

The Editors



PAISAJE EN RIVO, CARLOS ENRIQUEZ, 1943

Cuba's Domestic Disaster Management



Hurricane Wilma: Living to Tell the Tale

By Conner Gorry

Hurricane Wilma was a record breaker and history maker, escalating from a tropical storm to a full-blown Category 5 hurricane in a matter of hours, making it the fastest intensification of any storm on record. By the time it sideswiped Cuba on October 23rd, lashing coastal regions with 20-foot waves that traveled almost a half mile inland, it had mellowed to Category 3 - still powerful enough to rip electrical posts from the ground, send roofs flying and flood some Havana neighborhoods beyond recognition.

Nevertheless, there was zero loss of life on the island, in contrast to other experiences in the region, with 12 dead

in Haiti, two in Jamaica, eight on the Yucatán Peninsula and five in Florida. Cuba's minimal loss of life from this and even stronger storms is by design: internationally recognized as efficient, effective and replicable, the disaster preparedness system in the hurricane-thrashed nation has proven that accurate information given early and often, combined with a series of coordinated measures, can save lives.

Forecasting, Cuban authorities have found, plays a critical role. A full 96 hours before a tropical storm or hurricane is expected to hit the island, the National Forecast Center issues an Early Advisory. This is followed by an Information Phase, 72 hours before, when all media begin special reports on the trajectory and progress of the storm.



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CONNER GORRY

In the Eye of the Storm: Disaster Management Lessons from Cuba

At this time, the public starts preparing for a possible hurricane strike, taking measures they've learned over the years - including storing potable water, stocking up on non-perishable food and securing doors and windows of their homes. At this stage, civil defense officials also begin reviewing and updating disaster plans.

Cuba is one of the few countries that use these Early Advisory and Information Phases as preludes to the Hurricane Watch (48 hours before a strike is expected) and Hurricane Warning (24 hours before). According to Dr. José Rubiera, Director of the National Forecast Center, "by the time we issue the Hurricane Warning, almost everything is in place."

As the storm rolls in, above-ground electricity is cut when winds reach about 40 miles an hour, preventing electrocution deaths caused by downed wires – a common cause of hurricane-related fatalities. Some Havana residents grumbled that their power was cut too early in slow-moving Wilma's trajectory, leaving them without electricity for hours before the fiercest winds hit. Nevertheless, they called the precaution itself necessary.

Evacuate....Or Not

Cuba's evacuation procedures prioritize vulnerable populations, from pregnant women and the elderly to residents in low-lying villages; and importantly, transportation is provided for all those evacuated. During Wilma for instance, the entire seaside community of Playa Rosario on the southern coast of Havana Province had to be moved to safer ground, so scores of buses were brought in to evacuate the townspeople. Once the storm had blown through, only three of 113 homes were left standing, but no injuries or loss of life were reported.

In a country heavily dependent on revenue from foreign visitors, evacuation of tourists - during Wilma, over 1,000 were moved inland from seaside hotels and resorts - is also a major component of Cuba's disaster preparedness plan. *MEDICC Review* staff witnessed evacuation from one



CONNER GORRY

Evacuations from flooded areas of the Vedado neighborhood were carried out by specialist teams in small boats.

By the Numbers: Hurricane Wilma

- People evacuated: 607,542
(over 537,200 with friends or family, the rest in shelters)
- Number of shelters: 1,325
- Animals moved to higher ground: 413,850
- Volunteers mobilized: 103,000
- Greatest wind gusts: 86 mph
- Greatest sustained winds: 67 mph



CONNER GORRY

A mother and daughter move to higher ground in Havana's Vedado district during Hurricane Wilma.

Havana hotel, where evacuees were ushered out and briefed in English and Spanish where they were going and what to expect. Tourism officials estimated that installations affected by the storm would be up and running within a month.

Yet, evacuation ahead of impending disaster is a tricky equation, as no one wants to abandon their home to nature or potential thievery. Like elsewhere, evacuation in Cuba is voluntary. Still, the government provides some innovative services to make it more palatable and practical, including setting aside warehouse space for household valuables like TVs and appliances and guaranteeing safe evacuation and shelter space for pets. Medical attention, food and water are also guaranteed at evacuation shelters. Yet, some don't heed the warnings, and simply stay behind - to be evacuated after the storm hits and under more precarious circumstances.

Although no lives were lost during Wilma's wrath, many homes were not as fortunate. Calamitous flooding in coastal areas in Western Cuba brought severe damage, with interminable ocean swells pouring seawater over Havana's Malecón seaside drive, pounding parts of the Playa, Centro Habana, Habana Vieja and Vedado neighborhoods. When October 24th dawned on the city, the streets ran with knee-high and even shoulder-high water in some places, sparking the evacuation of 31,000 more residents from those areas, many who had to leave their belongings behind, floating in flooded homes.

Many said despite warnings, they were caught by surprise since flooding like this hadn't been seen in Havana since the 1993 "Storm of the Century." A resident of 5th and E Streets in Vedado was frantically moving his valuables to his neighbor's house on the second floor when a boat came to evacuate him with his wife. "The water came up so fast as we were stowing our things with our neighbor," he told *MEDICC Review* shortly after wading to dry ground. "Our three kids are already at a friend's house, and that's where we're headed now. We'll go back and see the damage when the water recedes," he said.



CONNER GORRY

A neighbor from 5th and E Streets is evacuated by boat with his wife and a few belongings. "We'll go back and see the damage when the water recedes."

One immediate concern for authorities was contaminated drinking water, as result of saltwater-flooded cisterns. Trucks pumping potable water into homes could be seen around Havana the day after the storm, while public health workers emptied saltwater from the compromised cisterns, flushed them with fresh water and treated them with chlorine. Several days later, public health teams returned to test cistern water for contamination.

Looking a little like Venice - with rescue teams in Zodiacs instead of men paddling gondolas - the streets-turned-canals were cordoned off by police, while authorities coordinated rescue missions. "Some members of our congregation - including old folks - are still in there," said Pastor Estela Hernández of the William Carey Baptist Church, pointing to the flooded neighborhood beyond the corner of Línea and K Streets where she stood. Pastor Hernández was waiting to see them to safety, and if need be, to the shelter of her Vedado church with other evacuees.



EDUARDO GUERRA

In some cases, doctors were shuttled into the flooded areas by boat, and the Cuban Red Cross erected a mobile hospital at the intersection of Paseo and Línea Streets. People suffering from asthma stranded in their homes were of particular concern. Doctors on duty at the Camilo Cienfuegos Hospital emergency room in the heart of the flooded neighborhood told *MEDICC Review* they had seen several asthmatic patients, but few injuries.

For those returning home, the wreckage was heartrending. "This is very, very hard," said Enrique Álvarez of the Colón section of Centro Habana, looking upon his apartment, flooded knee-high with flotsam and saltwater. "No one thought the water would come up this far. My neighbor came in and saved some of my things and I'll salvage what I can," the filmmaker told *MEDICC Review*. The full extent of the damage to the city's buildings will reveal itself over time, since the combination of voluminous water and salt will undermine structures already in disrepair, according to experts.

Storm Lessons

Once the floodwaters receded, the Recovery Phase - dubbed Operation Aurora - of the Cuban disaster management plan was nearing completion, and the cleanup task ahead loomed large. Massive volunteer efforts in the effected areas eased that task, and flood zone residents received boosts with food disbursements, new mattresses, televisions and fans from the government. Doctors and nurse teams meanwhile, went house to house, conducting health assessments. The work is far from over for disaster planners and health and state authorities, as post-hurricane is the time to analyze storm-provided lessons and fold that knowledge into the overall strategy, to be better prepared next time.

A recent evaluation looked at Hurricane Dennis that hit eastern Cuba last August – taking the lives of 16 people, the number of combined hurricane deaths from 1996-2002 throughout Cuba. The tough assessment revealed too much of an improvised approach by some Civil Defense coordinators; too little evacuation from vulnerable areas; the use of inadequate buildings for some shelters; and poor provisioning in others.

Undoubtedly, lessons from Hurricane Wilma will focus on the effects of intense flooding; early, efficient evacuation of littoral zones; and different risk management approaches for very slow-moving hurricanes like this one. One lesson, though, has always dictated disaster preparedness strategy in Cuba: the protection of human life is the highest priority.

To learn more about Cuba's strategy, see *MEDICC Review* online "Disaster Management in Cuba: Reducing the Risks," Vol. VI, No. 3, 2004.

From *MEDICC Review*, Vol. VII, No. 9 November/December 2005.

UN Lauds Cuba as Model Of Hurricane Preparedness

By Conner Gorry

Staccato bursts of hammer fall punctuated the air, every available jug, bucket and bottle was filled with potable water and radios and televisions beamed the latest from the Cuban Institute of Meteorology into homes and workplaces countrywide. Mean while, evacuation centers were readied to receive tens of thousands, roofs were cleared of debris, farm animals were transferred to safe areas and citrus was picked at lightening speed.

So went the several days of preparation for Hurricane Ivan, the most powerful hurricane to hit Cuba in 50 years and the fifth most powerful to ever strike the Caribbean. Despite sustained winds of over 124mph and nearly 2 million people evacuated, there was zero loss of life and no injuries, leading the United Nations to praise Cuba as a model for the world in disaster preparedness.

According to Salvano Briceño, Director of the UN International Strategy for Disaster Reduction, “the Cuban way could easily be applied to other countries with similar economic conditions, and even in countries with greater resources that do not manage to protect their population as well as Cuba does.”

Reports indicate that 52 people died in the United States and at least 70 in the Caribbean during Hurricane Ivan.

Practice Makes Almost Perfect

Coming just a month after Hurricane Charley ripped through Havana, killing four and causing more than US\$1 billion worth of damage to property and crops, Ivan, a category 5 hurricane, was met with a monumental preparation program that could serve as a global model. Experts point to several facets of the comprehensive Cuban strategy that allowed the



CONNER GORRY

small, developing country to limit damage and weather the storm with no loss of human life.

Foremost is the political will of the Cuban government to prioritize disaster preparedness and work together with citizens to design and implement a comprehensive risk reduction program. This includes emergency plans for the national, provincial, municipal and local levels, updated annually. Shaping and implementing these plans falls largely to a net work of Civil Defense units which divide disaster preparedness into four specific phases: informative, alert, alarm and recovery.

The commitment to saving human lives is first priority in the Cuban strategy. Primarily, this is achieved through education from an early age about the dangers associated with hurricanes and how to prepare and act in the event of

The Numbers Game

Statistics, especially the grand, hard-to-fathom kind, have a tendency to numb, becoming just another string of numbers. Some of the statistics related to Cuba's hurricane preparedness and response strategy however, are truly dazzling and speak for themselves, including these from Hurricane Ivan:

- Sustained winds were clocked at 124 mph; gusts reached over 161 mph
- In just 24 hours, 6 inches of rain fell in the town of Isabel Rubio; the 24-hour record for this hurricane
- In the aftermath, 5,296,500 cubic feet of solid waste filled Havana's streets; garbage brigades were collecting up to 1,059,300 cubic feet daily
- Early evacuation plan allows 100,000 people to be evacuated safely in less than 3 hours
- 2492 evacuation centers were set up
- 1,898,396 people were evacuated (that's more than 15% of the total population)
- Of those evacuated, fully 78% or 1,471,058 people, were sheltered in the homes of family, friends or neighbors.
- 8,026 tourists were transferred to safe areas
- 359,644 boarding school students were transferred to their homes
- 1,898,160 farm animals in vulnerable areas were moved to safer ground

one; a reliable early warning system that disseminates information leading up to a hurricane, but also during and after; and early evacuation. This last is critical, as hazard assessment specialists point to the refusal to evacuate as a major cause of death in hurricane situations. Indeed, refusal to evacuate partly explains why Florida suffered more loss of life than Cuba in recent hurricanes, including Charley, when four people died in Cuba, while 27 perished in Florida. According to Oxfam America's exhaustive report entitled *Weathering the Storm: Lessons in Risk Reduction in Cuba*, "Cuba's success in saving lives through timely evacuation when a hurricane strikes is a model of effective, government-driven disaster preparedness."

It is worth noting that many of these are self-evacuations, carried out in a judicious and conscientious

manner by people with generations of accumulated hurricane experience. Fully 78% of the total number of people evacuated were housed in the homes of friends or family; in Pinar del Río, the province hit the hardest during Hurricane Ivan, that figure is a staggering 90%. Contrary to what some have reported in the international press, evacuations are not mandatory in Cuba, nor do they need to be: a category 3 or 4 hurricane harnesses its own power of persuasion as to the merits of evacuation.

Another pivotal aspect of the Cuban program is guaranteeing the health of the population during and after a hurricane. From securing the supply of potable water to accelerating garbage pick-up so as to prevent infestation, decades of extreme weather events in Cuba have honed the strategy. During Ivan, for example, 2,000 medical and sanitation teams were posted in the areas of greatest risk, in case a rapid hygiene and health response was needed, diesel generators were installed at pumping stations to guarantee drinking water, plus chlorine supplies were laid in to permit water purification. Furthermore, whenever evacuations are called for, the sick, elderly and pregnant women are given priority and doctors and nurses go with them to provide on-site medical attention.

Other steps that are de rigueur in Cuban hurricane preparedness include detailed instructions in print and broadcast media on how to secure your home and the safest place to be during a hurricane; accelerated harvesting to ensure foodstuffs; safeguarding and securing schools, clinics and hospitals; the preparation of short-cycle crops to be planted during the recovery phase; and clearing trees near telephone and electrical wires. In addition, when winds reach a certain velocity, the electric company simply cuts the power – saving countless lives that



The Cuban Meteorological Observatory in Casablanca, across Havana Harbor.

otherwise might be lost to electrocution. The solidarity of friends, family and neighbors to provide shelter for others, help hurricane-proof homes, feed the hungry and do whatever it takes to recover once a hurricane has blown through, is unshakable and another potent ingredient in Cuba's successful formula.

Solidarity in hurricane prediction and preparedness even extends across the Straits: despite the polarized politics that have defined relations between Washington and Cuba for decades, meteorologists and scientists from both countries have built a strong record of cooperation in their shared aim of saving lives and reducing risk.

Honing the Strategy

Still, there is always room for improvement and as threatening weather events occur with more frequency and ferocity, especially in the global south.

Several new initiatives marked the coming of Hurricane Ivan, particularly regarding evacuations. Leaving your home to be cast to the four winds is neither easy, nor pleasant. In Cuba, evacuation is made more tolerable by the possibility of bringing your pets (with veterinarians on-site at evacuation centers!) and, in some provinces, a service was provided allowing people to box their valuables and have them transported and stored in a safe, guarded place. In some localities, community residents even took it upon themselves to dismantle the roofs of schools and store them safely.

These are praiseworthy developments which should be repeated and replicated. On the flip side, better education on how to prune trees safely away from electrical and telephone wires is needed. The environmental massacre that happened in Havana before Ivan, with people chopping down trees indiscriminately, sometimes leaving only shoulder-height stumps should not recur. Havana, especially, needs more systematic garbage collection, including periodic 'big garbage' days, so all the junk people are clearing from their roofs don't litter the streets becoming potential projectiles the day before a category 4 storm hits.

Only when governments harness the political will and work together with their populace towards safer standards and practices in the face of disaster, will the tragedy witnessed in the rest of the Caribbean and the US be the exception, rather than the rule. Luckily, Cuba provides valuable lessons for successful disaster risk reduction, ones which other countries will hear about at the World Conference on Disaster Reduction, to be held in January 2005 in Japan.



Cuba at United Nations Conference on Disaster Reduction



By Conner Gorry

After a moment of silence honoring the more than 200,000 people who perished in the catastrophic December 26 Asian tsunami, Cuba joined 168 countries at the World Conference on Disaster Reduction to tackle tough issues of global import. Over 4000 participants, including Ramón Pardo, Chief of Staff of Cuba's Civil Defense, packed plenary sessions that addressed divisive themes like the link between climatic change and natural disasters and allocating disaster relief funds for reducing risk.

Throughout the timely conference, Cuba's model of disaster warning, preparedness and recovery was recognized as effective and replicable. Elements contributing to the model's success include the political will to reduce risk and manage disasters, inter-organizational cooperation, effective communication between those organizations and the populace and education regarding disaster preparedness and response (for full details on the Cuban model, see December's issue of MEDICC Review Disaster Management in Cuba: Reducing

the Risks). Both Cuba and Vietnam were singled out by UN Under Secretary for Humanitarian Affairs Jan Egeland as examples to follow during the proceedings.

An in-depth discussion of Cuba's hurricane preparedness was provided by José Llanes Guerra, Director of the National Disaster Office of Cuba's Civil Defense, who emphasized the participatory nature of the Cuban model at all levels of society.

Although consensus proved elusive on several issues, the final declaration committed to implementing a global early warning system for floods, droughts, typhoons and earthquakes in six months and the "Hyogo Framework for Action 2005-2015" (<http://www.unisdr.org/news/OUTCOME-FINAL-as-separate-non-official-document.pdf>) pledged to reduce risk and towards augmenting nations' resiliency to disasters.

First published in *MEDICC Review*, Vol VII, No 3 March 2005.

Interview: Dr. José Rubiera, National Forecast Center

MEDICC Review interviewed Dr. José Rubiera, Director of the National Forecast Center of the Cuban Meteorological Institute. As the primary weather forecaster for Televisión Cubana, Dr. Rubiera is responsible for communicating up-to-the minute details to the entire country in the event of a hurricane. He and his team at the Cuban Meteorological Institute make up the first "pillar" of the Cuban disaster preparedness program that has proven such a success in safeguarding the population during potentially life-threatening hurricanes.

Dr. Rubiera is also Vice President of the Hurricane Committee of the United Nation's World Meteorological Organization. He is scheduled to participate in the World Conference on Disaster Reduction in January 2005 in Kobe, Japan (for more information, see Announcements and <http://www.unisdr.org/eng/wcdr/wcdr-index.htm>).

MEDICC Review: What is the role of meteorology in the prevention of disasters, not only here in Cuba, but internationally?



Dr. Rubiera consults the latest satellite weather information in the Meteorological Institute's forecast center.

CONNER GORRY

José Rubiera: It seems to me the success of our work in safeguarding human life is based on three pillars. In the first place, you have to have good projections. A good projection is one arrived at scientifically, that is accurate and observable.

Second place, you need a universal civil defense system that works everywhere, prescribing prevention measures that can be taken in all places to safeguard human lives; [these are] not exaggerated measures in the case of a hurricane..... human life is in danger if people live in housing in poor condition or if they're in a very vulnerable location - near the ocean or along a river.

[The third pillar is communication]. The media has an important role in what I refer to as the triangle: we provide the meteorological information to the population through the media, above all through television. Furthermore, this country has a very wide television network, everyone has at least one television in their home, even the smallest house in the countryside has a television or access to one [at a neighbor's or in governmental television salons].

This is very effective. The radio is very effective as well. So this message reaches everyone, that the [hurricane] weather is intensifying, that there's a possible danger and people start gaining consciousness about it. Other means of communication come into play as well - informal communication channels - but via the information delivered on the television; people are talking, they're going to work and discussing the approach, they're preparing. So all of these factors help create an environment of protection during a hurricane...

MR: In terms of these pillars or triangle, one of the important parts is civil defense and how the entire government is dedicated to creating this environment, to protecting the population. Can you comment on that?

JR: That's what it is - entirely dedicated to protecting people. You saw during Hurricane Ivan when I was on television and all the questions, the very detailed questions, put to me by the President...he was asking for the entire country what everyone wanted to know...This is linked, very strongly to how we communicate information and it's an important factor. Furthermore, it demonstrates how the government cares about its people. And when Fidel goes to the hurricane zone and is in the streets with people, this has a great impact. For us, it's normal - we're accustomed to Fidel being there on the frontlines, but for foreigners, it's something out of the ordinary and they have great admiration.

MR: Perhaps you could expand on the relation between your team, the civil defense and CLAMED (Centro Latinoamericano de Medicina de Desastres; Latin American Center for Disaster Medicine; see CLAMED: Centro Latinoamericano de Medicina de Desastres).

JR: Our interaction with the civil defense is very strong because they deliver all the information based on the projections and are responsible for how to help, with involvement of the government. So there is a very tight relationship between the civil defense and us...

In relation to CLAMED, we work closely with them, but not just with them, but also with the World Health Organization, the Pan-American Health Organization and others. We are very involved because in terms of public health, there are two problems when there's a hurricane. The first is how to deliver and maintain public health services. Imagine in the middle of a hurricane you have to go the hospital and there are no health services. So there is a priority in the middle of all this that the hospitals and the health system continue to function in the case of a hurricane. And that it continues to function with quality...This is crucial. [Secondly] the health system has to be able to continue to work securely and safely because of what a hurricane can mean for the water supply, for illnesses and hygiene, and we have to work to prevent this. Like what happened in the case of Haiti, with 2,000 dead. For this reason, public health organizations have a very important role.

In the case of CLAMED, we share information, again in a timely and comprehensive manner, all the information that they need. But it's not only that. We have participated in courses and conferences in the National School of Public Health (Escuela Nacional de Salud Pública, ENSAP), that has involved people from all over Latin America.

MR: Several international organizations and studies (see Weathering the Storm: Lessons in Risk Reduction from Cuba, this issue and "UN Lauds Cuba as Model of Hurricane Preparedness," in the October issue) have recognized Cuba's disaster prevention plan as one of the world's most effective. How does the timing of the plan contribute to its effectiveness? When you say that the population has to be warned 'early' and in a 'timely' manner, what does that mean?

JR: We have several projection models - models that come from Europe, the United States, Canada, etc. Of course, when a hurricane is still very far away, the variations in the

projections are greater, but we use them as a reference. We can see that it's over there, still very far away, but we know we have one, like with Ivan...we knew, because of the conditions - the low pressure, the anti-hurricane system that was there, the way it was moving over several days - that we had a candidate. Now, when the hurricane was four or five days from Cuba and it looked like it could be a problem, we issued an

early advisory alert. This says that the hurricane is in such and such a place, we are tracking it and we have to keep watching it...And these are the advisories that we always give around 96 hours before. And after, when it is 72 hours from Cuba and is a threat to a certain part of the country, then we enter into the information stage. When it is 48 hours away, we enter the alert stage, and when it is 24 hours away, we enter the alarm stage.

The information stage is when we start observing it closely and information begins to be disseminated via radio and television and we start giving more specific information. At this time, the civil defense team starts discussing the disaster plan, and updating it with the latest information.

In the United States, this information stage doesn't exist: in the United States you have the hurricane watch 36 hours before, and then the hurricane warning 24 hours before. In the United States during this stage, it's much more difficult to move people. Because the movement of people is usually in areas that are densely populated, with a lot of industry, like on the gulf coast, the coast of Florida and the east coast of the US. Sometimes, people have trouble moving during this stage because everyone is on the only highway, driving to the hardware store to buy materials, or in their car - if they have one - trying to get to safer ground. So this information stage doesn't exist and there's less time for people to move...

In the Eye of the Storm: Disaster Management Lessons from Cuba

So then when it is 48 hours from Cuba, we enter into the alert stage. The US has this alert, the hurricane watch, but we issue this alert 48 hours before, not 36 hours. And everything is prepared - mentally, physically, logically - and things are synchronized. At the same time, we are increasing the frequency of our television transmissions. There's a psychological facet as well. For example, I'm normally in the television studio giving the weather information and people realize that there's nothing special going on. But when the cameras are here in the meteorological station in the hurricane tracking center, they know something is happening.

But when we enter the alarm stage, 24 hours before, almost everything is already all prepared. And after that is the recovery stage. That's the other thing. After the hurricane passes, and the damages are known, we begin to work to return things to normal. First, health facilities, services...

MR: It should be noted also that in Cuba people have the utmost respect for meteorologists, in contrast to the United States where the television weather report is often more about how the person looks than the information they're conveying. When you say there's a hurricane coming, everyone is all ears.

JR: What happened with Charley in Florida, for example. The projection was accurate. The meteorological projection was very good and the National Hurricane Center did a good job...The problem was with how the information was delivered...Their projection, which was very good, was not very clear because there was a line drawn through the middle. We don't put a line through the middle because when you put a line through the middle and say this is the trajectory of this hurricane, it's not true, because it's only an estimation and the line is not real. You can say, this area is going to be to be hit less severely, but you can't draw a definitive line like that. So what happened? The line went through Tampa and the television weather people are giving the information saying 'it's far away, going through Tampa; the danger is in Tampa...' So there was a small town, near Tampa, where there were a lot of mobile homes and they were in danger-there were 27 deaths.

What I mean is that the projection is as important as the civil defense program. But you can have the best hurricane projection in the world and stick it in a drawer and no one knows what is happening...without a civil defense plan the people don't know what is happening, they don't know about the danger, they don't have options - that's bad.

MR: Four lives were lost in Cuba during Hurricane Charley, the hurricane that ripped through Havana and the western part of the country earlier this year. What happened?

JR: What I can tell you is that in these hurricanes, there were very few lives lost. During Michelle [in 2001], a category 4 hurricane, we lost five lives and with Charley, a category 3 hurricane which came through the capital city, four lives were lost. But these lives were lost because those people didn't try to avoid the danger. That is, everything was already well prepared, but the individual actions of those people, they didn't try to evade problems, they endangered themselves, even though the danger was avoidable...

I remember the case of a woman in Colón [in Matanzas Province], during Hurricane Michelle who was evacuated to a relative's house. Why to a relative's house? Well, it's always preferable to be evacuated to a friend or relative's house, you feel better and more comfortable staying with someone you know. She was evacuated to her family's house, a house with good, safe conditions that was located near her own house which posed a danger of collapsing. In the middle of the hurricane, the poor woman - a smoker - realized she had no cigarettes. So she went home to get some cigarettes and the house fell on her.

We had another case in Havana during Hurricane Charley with another woman. Her house was fine, but there was a building under construction next door. The walls were up, but not much else, so that posed a danger. So the family - the woman and her husband and their 2 children - moved to an evacuation shelter. But when they got there, her husband remembered that he had a bottle of rum back at the house. So they went back, sat down on their front porch to watch the hurricane, drinking rum. But the walls under construction next door collapsed, burying and killing the woman.

So these people are not taking care, in the crucial moment, they are acting negligently. So in our case, when you have a prevention plan so perfect, you have to be very proactive in the education of the people. The message has to be clear: 'don't do things that can lead to loss of human life.'

MR: And I imagine this is a great challenge with tourists. People on vacation, who might not have experience with hurricanes and want to go out and take photos and such.

JR: The prevention plan is the same for tourists: they are transferred from areas that pose greater danger and put up in hotels of the same category, or better.

MR: Clearly education is very important in prevention and preparedness. When do Cuban children start learning about hurricanes?

JR: In school, in fifth and sixth grade, as they're studying geography and meteorology, they learn about hurricanes and prevention. And afterwards in high school too, there's more formal education about what a hurricane is and how they work. So from a very young age, they're conscious of what a hurricane is. Of course, this is all quite different from before, when there was no education at all. I remember when I was very little, there was a hurricane and we just shut the doors and windows and waited. And lives were lost because people didn't know how to prepare. But now there's a consciousness about hurricanes.

MR: Since Hurricanes Charley and Ivan, this consciousness has been on high alert here in Cuba. Are there any more hurricanes on our horizon this year?

JR: Thankfully, no. There are no hurricanes forming that pose a threat to Cuba.

CLAMED: Centro Latinoamericano de Medicina de Desastres

Compiled by MEDICC Review Editorial Staff

The Latin American Center for Disaster Medicine (CLAMED) was created in 1996 by the Ministry of Public Health of Cuba, at the request of the High Command of the National Civil Defense. It was founded within the framework of the United Nations' International Decade on Disaster Reduction, with the co-sponsorship of PAHO-WHO and the Medical Association of the Caribbean (AMECA). CLAMED is the reference center for Disaster Medicine in the Caribbean and Central America, approved by the representatives of 35 participating countries and international organizations in the region.

CLAMED is also a member of the Caribbean Regional Disaster Information Network (CARDIN), and as such liaisons and works with the Spanish-speaking countries of the area. CLAMED has also worked with PAHO and UNICEF in cooperation and exchanges with other countries in the region.

The Center is responsible for coordinating all aspects of Disaster Medicine in Cuba, including scientific information, undergraduate and postgraduate studies and courses, both at national and international levels, and the development of early warning systems for healthcare of the Cuban population, with a focus towards the Caribbean and Latin America.

Members of its Advisory Council come from the highest level scientific and technical institutions in the health sector, national institutes on medical research, the Institute of Legal Medicine, universities and medical schools, specialized and general hospitals and primary care centers at the national level.

CLAMED coordinates with the different areas of the Ministry of Public Health regarding Disaster Medicine for the development of plans in the health sector against disasters. Furthermore, it advises and exchanges experiences with the territories in the country regarding prevention, epidemiological vigilance and control, medical-surgical treatments and rehabilitation of patients in disaster situations due to natural, chemical, biological or radiological events, among others.

CLAMED has a direct and close interrelationship with the National Civil Defense, the Institute of Meteorology, the National Center for Seismologic Research, as well as other centers and institutes of scientific research. International agencies and organizations with which CLAMED works include the

International Committee of the Red Cross, Medical Association of the Caribbean (AMECA), PAHO-WHO, UNICEF, the Office of the Coordinator of United Nations for aid in the case of disasters, and other specialized institutions and NGO's.



Educational and training activities on Health and Disasters are carried out through the National School of Public Health. CLAMED has developed specialized courses at the undergraduate and postgraduate levels, both for Cuban medical students and professors of medical schools, as well as for the young people from many countries – including the US – that study at the Latin American School of Medical Sciences (ELACM).

Dr. Guillermo Mesa, director of CLAMED, and Dr. Cristina Reyes, in charge of education, informed MEDICC Review that the cooperation from the students at ELACM has been very fruitful, as they have contributed to the programs with their experiences regarding disasters in their countries of origin, having also participated with presentations at the 2003 Congress on Disaster Medicine in Havana.

During the 2003-2004 academic year, CLAMED has organized courses and workshops on Disaster Medicine research, among them:

- **Psychoemotional Factors in Situations of Emergencies and Disasters** and Prevention and Mitigation of Psychological Factors in Disaster Situations (both workshops sponsored by UNICEF and in coordination with the National Civil Defense).
- **Development of the Seismic Information and Reference Center**, workshop that took place in Santiago de Cuba, main area in Cuba affected by earthquakes.
- **Information Management During Disasters**, two courses for medical sciences information specialists at the municipal level.
- **Disaster Medicine**, course for medical schools professors at the national level.
- **Disaster Medicine**, course for professors of the Latin American School of Medical Sciences.
- **Psychological Preparedness for Emergencies and Disaster Situations**, national postgraduate course.

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- **Preparation of Municipal Emergency Plans**, two certification workshops at CLAMED offices (Havana) and Santiago de Cuba, sponsored by the Emergency and Disaster Program, PAHO/WHO Nicaragua.

CLAMED has also prepared short national courses in Disaster Medicine for Primary Care physicians. These courses will now be incorporated into the programs in the municipal teaching polyclinics, in accordance with their geographical situation and the possible risks to their particular communities. These courses may include: a general course on Disaster Medicine; Nutrition during Disasters; Chemical Disasters; Water Treatment; Sudden Disasters (earthquakes, land or aviation accidents); and Biosecurity. Professors for these courses may be specialists from the Seismology Center in Santiago de Cuba, National Center for Hygiene and Epidemiology, Institute of Meteorology, National Toxicology Center, Institute of Legal Medicine, the Pedro Kourí Tropical Medicine Institute, Ministry of Education, and Civil Defense.

In the Dominican Republic, CLAMED has also organized a workshop for the specialists of the Health Information Center of the Universidad Autónoma de Santo Domingo and the Red Cross, National Emergency Services, Civil Protection and others of that country, on Information for Preparedness of Vulnerable Groups. Also, CLAMED has given training to librarians of the Dominican Republic on Information, Virtual Library and Informatics.

CLAMED has prepared general and specific courses for Cuban health professionalsthat are going to do service abroad. They also have a daily disaster information service for the heads of the Cuban medical teams in other countries

on what is happening in Cuba, Latin America or Africa. They also prepare INFODES, a monthly digital information report on disaster medicine for directors and managers of the national health system.

Dra. Iraida Rodríguez, who directs the Information Center at CLAMED and is in charge of Community Education, explained to MEDICC Review that they have also developed a program for community preparedness of vulnerable groups (children, the elderly, pregnant women, mentally and physically handicapped persons), sponsored by CARDIN and UNICEF. In the case of children, not only was the educational booklet *Juntos Aprendemos* (Together we Learn) published, but a group of children from Havana and another from the mountainous region of Holguín participated in the 2003 Congress on Disaster Medicine.

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<http://www.sld.cu/sitios/desastres>

From *MEDICC Review*, Vol. VII, No 3, December 2004

Hurricanes in Havana: A Tale of One Province

By Gail A. Reed

Just after midnight on August 13 th this year*, Hurricane Charley plowed into southwestern Cuba, only the third summertime hurricane to hit the island in recorded history. One month to the day later, the eye of Hurricane Ivan - a monster category 5 storm - brushed the western tip of the island. Between the two, they left millions in material damages but only a handful dead. Quite a difference from their pass through other Caribbean territories and even the southeastern United States - a difference that earned Cuba kudos from the United Nations' disaster management team (see "UN Lauds Cuba as Model of Hurricane Prearedness in MR's October issue). Nevertheless, there were lessons to be learned from the back-to-back battering.

Pedro Saez, who heads the Cuban Communist Party in the City of Havana, is also the chief of disaster preparedness, mobilization and recuperation efforts. Interviewed for MEDICC Review, he told me the two hurricanes presented different challenges for the city. "Charley crossed the island in two hours, which was something of a blessing, since that's a rather fast clip for a hurricane," he said. But there were two circumstances that generated concern:



JOSÉ RUBIERA

Charley's powerful winds wreaked havoc in Havana Province.

first, he said, the fact that the storm entered the island as a category 2 hurricane, but its winds actually picked up speed as it crossed land, slipping away from Cuba's northern shore on the edge of the capital city as a category 3 hurricane, with sustained wind force at 108 mph (170 km/h) and gusts to 188 mph (250 km/h). This meant that



GAILA REED

Pedro Saez: One of the most dangerous spots in a Havana hurricane is the city's seaside drive.

the increasing intensity of the winds themselves were the main cause of damage and injury.

The second problem was timing: "While Charley developed during official hurricane season (June through November), it came very early. I can't remember another summer hurricane. August is traditionally vacation time in Cuba, which meant that we had to take special measures: for example, usually the teachers are on hand at the schools to board up the windows and safeguard special equipment. But this time, we had to find them first. Most Cuban families were either on vacation or involved in some kind of recreational program, and so there was even a relaxed psychological mood that we had to contend with."

The population of the city itself and the surrounding countryside of Havana Province totals nearly 3 million people. Inevitably, they receive first word of a major storm in the "Hurricane Watch" phase of Cuba's disaster management system, followed by "Hurricane Warning" and "Hurricane Alarm."

In the "Hurricane Watch" phase, says Saez, they check all the plans - ensuring adequate fuel, transportation, food, protection of housing, other buildings, livestock, ships, etc.; and above all, protection of human lives through regular civil defense bulletins, weather reporting, and determination of which areas should be evacuated. In the "Hurricane Warning" phase, the plans are rolled out, and this is when evacuations begin to take place.

"We evacuate students in boarding schools, for example," says Saez, "since the best place for any child is at home with their families. We also evacuate tourists who are in hotels along the waterfront, if we foresee any possibility of flooding." He reminded me that in previous storms, Havana's seaside drive has been awash with flood waters that have sometimes penetrated inland as far as 15 city blocks.

"Finally," he says, "we evacuate families who live in precarious housing, or in areas which might be flooded - 250,000 people were evacuated from Havana City for Hurricane Ivan alone."

Over time, the city and the country have experimented with different modalities of evacuation, combining what he calls "neighborhood solidarity" where families take in their

neighbors, with government-run shelters. "The Council of State buildings are even turned into shelters for the surrounding neighborhood of La Timba, which still has some precarious homes," Saez notes.

Is it hard to convince people to evacuate? Saez says that is a problem that has been resolved over time: "Anyone's first inclination is not to leave their home, but over the years, we have been able to convince people that their own safety comes first. We've also taken measures to safeguard their belongings - sometimes they take some things with them, or we post a watchman in larger buildings, and of course the police are stationed to discourage theft. We have really not had problems with this. The more experience they have, the more willing people are to evacuate."

In addition, he comments, the yearly disaster preparedness drills (called METEOR exercises), also prepare families for evacuation to specific places, whether a neighbor's house or a shelter, and so they become familiar with the idea.

When the "Hurricane Alarm" is issued, the storm's passage is imminent, classes and all but essential work are suspended, and that's when Saez says that public cooperation is most important for saving lives. "The four lives lost during Charley," he notes, "were essentially because of individual imprudence - which we always try to reduce to a minimum, with continued information and education."

What other measures save lives? Saez points to cutting power supplies as a major contributor: when the wind velocity reaches 50-60 km per hour, the electric company has standing orders to cut the power, thus saving people from electrocution due to felled or broken cables, which often hide in flood waters.

Charley: The Billion-Dollar Hurricane

While loss of human life was very low, Charley's high winds tore a path through western Cuba that left significant damages in Havana City (HC), Havana Province (HP), Pinar del Rio Province (PR) and the Isle of Youth (IY). Below are some of the most important examples. Unless otherwise indicated, totals are for all four regions:

- 28 steel high-tension electricity towers felled
- 1400 electrical posts downed (CH, PH)
- 128,000 homes without electricity (CH), affecting 500,000 people
- 1,300,000 people without water for four days (CH)
- 73,584 homes partially or totally destroyed (PH, CH)
- 6 sugar mills partially destroyed
- 105 irrigating systems destroyed (of 263 existing)
- 54,325 hectares of agricultural crops destroyed
- 21,785 cane-producing fields destroyed
- 66,881 tons of citrus lost
- 144,250 tons of plantain/bananas lost
- 588,151 poultry lost including 432,840 laying hens
- 2,766 hectares of natural forests and parks
- 798 schools partially or totally destroyed
- 312 health facilities partially or totally destroyed
- 60 sports facilities partially or totally destroyed
- 63 cultural centers partially or totally destroyed
- 1 million cubic meters of trees, branches and rubble

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Once the storm passes, the most difficult phase begins: recovery. In the case of Charley, damages were quantified at over \$1 billion, in Havana City, Havana Province and the Isle of Youth. The biggest damage was to high tension electricity towers on the grid providing current to the western part of the capital and to Pinar del Río province - the storm felled a total of 37 steel towers, a major blow. In Havana City and Havana Province, 1400 electricity poles and over 300 miles of wiring were downed. Just as serious, nearly 74,000 of the two regions' homes were totally or partially damaged, nearly 10% of the total. Over 54,000 hectares of agricultural products were destroyed in these two regions, Pinar del Río and the Isle of Youth; and nearly 600,000 laying hens and 70 million eggs were lost. (See box for further details.)

In Havana City alone, some 145,000 people participated in the cleanup and repair efforts during the first few days and weeks after Hurricane Charley. Organized in brigades, they hauled away some one million cubic meters of felled trees, branches and rubble.

They were just getting things back into shape when Hurricane Ivan threatened the island, but its wind force was largely dissipated in the Gulf of Mexico, as it took a sharp turn west. What has been learned from the two hurricanes? Pedro Saez says that they have reinforced the belief that public participation

and education are the key to disaster preparedness and recovery. And, he says, they also revealed areas needing improvement. "For example, with electricity: we need to have a better sense of our needs during a storm, and install some generators where they hadn't been foreseen up to now. This requires investment."

We also need to do a better job of trucking water to affected neighborhoods - when the power is out, the water stations can't pump, and so the trucks are essential, but they need more taps to fill from. We need to improve evacuation plans, and tailor them more specifically to the magnitude of each hurricane. We need to build housing that is more resistant to hurricane level winds, as much as we can given our economic limitations. And finally, we need to check our plans more often, to make sure that the resources we are counting on are actually there - that the trucks, the generators, the cables, and so on, are really on hand when we need them."

And there is no doubt, he says, that Havana will have to keep on learning: "We do live in the Caribbean, after all, and the meteorologists tell us that for at least the next 25 years, we're going to have a rough hurricane season."

* From *MEDICC Review*, Vol. VII, No 3, December 2004

Outstanding Job: ETECSA Honored for Hurricane Work

By Conner Gorry

Toiling around the clock to maintain and restore communications in the midst of Hurricanes Charley and Ivan, the workers of the Cuban telecommunications company ETECSA (Empresa de Telecomunicaciones de Cuba, S.A.), have been awarded the "Heroic Worker's Flag" by the Central de Trabajadores de Cuba (CTC), the national worker's union.

ETECSA's workers were commended in several areas including the efficient and effective organizational steps taken in preparation for the hurricanes, the valor, dedication and solidarity of their employees, and the ingenuity of their solutions during these natural disasters. For example, "as soon as the Civil Defense established the information phase of the hurricane [72 hours before], personnel was mobilized to lighten the short wave towers, by taking down the parabolas," stated Carlos Manuel Céspedes, Director of ETECSA's Business Network. "Consequently, almost no towers fell due to parabolas."

ETECSA Hurricane Measures

- Established special toll free number with recorded message carrying hurricane details
- Established special toll free number airing live radio broadcasts with hurricane details (54,000 calls were received in a five-hour period on Isla de la Juventud when power was lost during Ivan).
- Provided 260 cellular phones to Civil Defense teams, hospitals and clinics
- Provided and guaranteed service to 1,200 telephone lines for Civil Defense use
- Prioritized telephone service in hospitals and clinics

- Made available satellite systems to maintain contact with areas that had their telephone service interrupted
- Guaranteed international telephone, Internet and TV communications
- With technical support from INFOMED, guaranteed Internet communication between Cuban doctors working abroad and their families and institutions in Cuba
- Guaranteed www.cubasi.com service so hurricane updates could be transmitted over the internet uninterrupted
- In preparation, upgraded technology used by the Meteorology Institute (eg installed fiber optics and radio systems, increased transmission functionality, augmented reliability of communications, etc)
- Accelerated the installation of underground fiber optic lines

During Hurricane Charley, a category 3 event, service to 25,000 telephones was reported as interrupted in the City and Province of Havana; those clients had service restored in 72 hours. As a result of Ivan, a category 5 hurricane, 1,200 telephone customers lost service in Pinar del Río province and the special municipality of the Isla de la Juventud.

As a result of the experience gained during these two hurricanes, ETECSA is confident that their "system is now stronger, with fewer vulnerabilities," according to Céspedes. "We are always looking for communication alternatives, to expand our methods and minds to see different solutions, not only those provided by state-of-the-art technology," he concluded.

Water, Water Everywhere But Not A Drop to Drink

By Conner Gorry

There's a particularly cruel type of impotency reserved for the moment you turn on a faucet and nothing happens. Not a gurgle or drip, no deep rumble in the pipes, nada. This is exactly what occurs in countless homes across Cuba every day; while the rest of the world confronts the most devastating natural disaster in recorded history brought on by too much water, Cuba is an ongoing struggle against the worst drought to hit the island nation in over 70 years.

Since May 2003, Cuba has experienced historically low levels of rainfall, with the eastern provinces of Camagüey, Las Tunas, Holguín and Granma suffering the brunt of what is known here simply as "La Sequía" (The Drought). According to Aymee Aguirre, Vice President of the National Hydraulic Resources Institute, between May and October 2004, Cuba had received the least amount of rainfall since 1931 - 54% of normal levels nationwide, dropping to a crippling 47% in the eastern provinces.

Furthermore, almost all of the 235 reservoirs across the country are at less than 25% of their total capacity. The picture is even grimmer in the provinces of Las Tunas and Camagüey, where reservoirs directly serving the population are barely at 20% capacity. This has necessitated the use of cistern trucks, giant water taps on wheels that visit neighbor-

hoods, dispensing the liquid gold to hundreds of thousands of homes on regularly scheduled rounds; in some cases this is just once every 21 days.

Such extreme scarcity has engendered widespread conservation efforts to curtail water waste, an exacerbating factor cited by government officials and highlighted in nationwide public service announcements. Sealing dripping taps, upgrading pipe connections and other water-saving measures have become a priority among neighborhood associations all over the country. Additionally, the government has undertaken an aggressive water pipe building program which has been laying pipe intensively across Holguín to direct water from the Río Cauto to drought stricken areas. Providing the population with direct access to drinking water, hospitals, social services, and tourism, are among the areas prioritized for the liquid commodity.

In his annual report, Economic Minister José Luis Rodríguez estimated economic losses at US\$823 million due to the drought. This comes on the heels of the estimated US\$2.2 billion lost after Hurricanes Charlie and Iván hit the country in August and September respectively of last year.

From *MEDICC Review*, Vol VII, No 1 Jan/Feb 2005.

Improbably, Drought Worsens in Cuba

By Conner Gorry

You know the quick sizzle and pop you get when you sprinkle water on a hot griddle? That's the effect the few spurts of recent rainfall has had on Cuba's shriveling crops, empty reservoirs and dried water pipes. It's June already and it should be raining from Guantánamo in the east to La Bajada in the west, but it isn't and it hasn't, meaning the most dramatic drought to hit the country since 1901 is getting worse.

.....18 In February 2004, faced with a water shortage of critical proportions, the Cuban government convened a special committee to draw up short, medium and long term plans for confronting the drought. While kilometers of water pipe were constructed or repaired and conservation measures were enacted from the classroom to the kitchen, it still failed to rain. As a result, some two million of the island's 11 million people currently do not have reliable running water.

Grasping the importance of effective water management, the National Institute of Hydraulic Resources



sprang to action by identifying 4,000 kilometers of new pipe to be laid and plugging up leaks in existing pipes, which cause 50% of all water to be lost in transit. Water-filled trucks called pipas began hauling water to urban zones and neighbors lined up patiently to fill buckets and jugs. "My family only gets water every 28 days," from the water trucks, says a woman from Camagüey, the hardest hit of all Cuban provinces. Trucking in water is a strategy for ensuring people's 'sustainable access to an improved water source,' which 91% of the population enjoyed as of 2000, according to the most recent UNDP Human Development Report.

For the Ministry of Public Health, one of the most troubling possibilities posed by the drought is the re-emergence of preventable water-related diseases - eradicated long ago in Cuba. According to international guidelines, individuals need access to 250 liters of clean water a day to live healthy lives; 100 liters has been established as the absolute bare minimum. As I write this, many Cubans have access to only 20 liters of potable water a day, an alarming

In the Eye of the Storm: Disaster Management Lessons from Cuba

level of scarcity that has necessitated a proactive strategy to head off possible adverse public health effects. In order to prevent the emergence of communicable diseases and illnesses such as Hepatitis A, typhoid fever and intestinal parasites, the Ministry of Health has distributed updated hygiene guidelines for Camagüey, Las Tunas, Holguín and Havana, the provinces suffering most intensely from the water shortage. Particular stress is being placed on the selection and preparation of food and personal hygiene by workers in the public sector.

Nutrition is another area of concern, with many drought-specific policies addressing the need to assure the national food supply. The newest measure is a US\$2.3 million credit for small farmers (who account for 65% of all agricultural sales nationally), that helps them to stay afloat by investing in new drought-resistant crops, digging new wells or erecting more efficient irrigation systems. At present, only 17% of small farms have irrigation in place. Pesticides, which can contaminate ground water, are also being phased out.

The agricultural sector has been especially devastated, with losses estimated at US\$834 million. The sugar industry

has been hammered: this year's sugar harvest is estimated to squeak in at 1.5 million tons - down from 2.5 million tons in 2004 - and the lowest Cuba has reaped since 1909. The drought has so hurt cane production that Cuba has been forced to import sugar to meet domestic need, while exporting the domestic crop to satisfy trade agreements. Harvests of root vegetables - a staple in the Cuba diet - are down 20% from previous years as well. In addition, hundreds of thousands of cattle have been slaughtered or moved to areas with better water accessibility.

Although the UN hopes to increase by 50% the number of people worldwide who have access to safe, clean drinking water by 2015, by most accounts, that goal seems unlikely to be reached. Certainly there will be no sustainable resolution to the worldwide water crisis without international cooperation and coordination, a perennial topic of the annual UN World Environment Day, celebrated this year on June 5th. In the meantime, forecasters predict a drier than usual June in Cuba, where rain is increasingly viewed as 'blue gold.'

From *MEDICC Review*, Vol. VII, No. 6, June 2005.

Rain & New Initiatives Ease Drought

By Gail A. Reed and Julián Torres

Traditionally the good luck rite of showering fully clothed in the first rain of May has brought Cubans into the streets in droves, from youngsters to their grandparents. But the sky's stingy offerings this May - a paltry 56% of the month's average rainfall, following 18 months of severe drought - forced many to wait until June. The good news is that June rains hit 85% of their average by the last week of the month. The boost was enough to send reservoir levels to 36% of their combined capacity nationally, a modest turnaround on water depletion across the island that had reserves at a critical 27.1% the month before.

The rains, which were at or above traditionally high levels for June in several western provinces, also brought some reservoirs out of mothballs and returned water to the taps of at least 100,000 people in eastern Santiago de Cuba alone.

The more sobering news is that much still needs to be done - and much rain needs to fall - before Cuba's worst drought since 1901 becomes history. In a country of 11.2 million inhabitants, World Food Program country representative Rosa Inés Antolín estimates that the drought has threatened to leave one of every six Cubans without access to water. Most seriously affected since 2003 are the eastern provinces of Las Tunas, Holguín, Santiago de Cuba, Granma and Guantánamo, as well as the central province of Camagüey. Of the country's 235 reservoirs, 73 benefited from the June downpours, but another 17% are



essentially dry. Nationally, rainfall for 2004 was only 952 millimeters, or just 69% of the historical average.

The severity of the drought has health officials on high alert, since increased health risks are inherent to fluctuations in water supply: drought presents challenges for hygiene and food security, while excessive rains and flooding can lead to an increase in water- and vector-borne diseases. In both cases,

coordinated epidemiological surveillance of potential health risks is vital (see Training an Eye on Epidemics: Cuba's National Health Surveillance System, this issue).

Government Response

Last year, the Cuban government created a high-level national commission to identify short, medium and long-term solutions to bring precious water to the population, livestock and agriculture; and to harness resources to implement these recommendations. As a result, US\$20 million was invested in 2004, and another \$160 million has now been earmarked for key projects.

In Holguín Province these include:

- The "transvase" project, to bring water from the largest reserve to replenish supplies in the driest zones. This means building a number of dams, plus 160 kilometers (km) of canals. As a result, in the first 2½ years, 800 million cubic meters of water are expected to be shifted westward, with 320 million cubic meters moved annually thereafter.

- A 28-kilometer pipeline to link two reservoirs, sending their combined resources to local towns and resort areas.
- A 52.8-kilometer pipeline and three pumping stations already installed to alleviate shortages in various parts of the province.

Along with Holguín, similar projects are under way in Las Tunas, Camagüey and Havana City, with a total of US\$60 million going to rehabilitate water pipelines in these four provinces. In Santiago de Cuba, US\$10 million is being invested in refurbishing ailing aqueducts in this city where hydraulic engineers estimate that up to 40% of the water that enters seeps away in leakage. Cisterns are also projected for each of Santiago's 800 multi-family dwellings. In the meantime, the city's residents are on a distribution schedule that only brings them water every three to ten days.

In the short run in the most affected areas, 1.4 million people are receiving water from cistern trucks; and special food supplements have been allotted to the most vulnerable in five eastern provinces.

World Food Program Aid

On June 17, the World Food Program (WFP) announced emergency assistance for 773,000 of the people most seriously affected. The aid, beginning in July, contemplates food assistance for children under five, pregnant women and the elderly; donations of water tanks and buckets to families dependent on cistern truck deliveries; and spare parts for the trucks themselves. WFP will fund the first month of the US\$3.7 million program, and Ms. Antolín said she expects further support from donors such as the European Union, Canada and Japan. Due to the U.S. embargo, Cuba cannot access funds from the World Bank or the Interamerican Development Bank, according to Jorge Luis Aspiola, President of the National Hydraulic Resources Institute (INRH). The Institute has estimated losses from the drought so far at US\$835 million, or approximately 2.5% of the country's GDP plus significant losses of crops and livestock.

From *MEDICC Review*, Vol. VII, No. 7, July 2005.

Equity in Public Health: A Challenge for Disaster Managers

Abelardo Ramírez Márquez*
Guillermo Mesa Ridel **

Many governments have expressed their desire to reduce the unjust, and unjustifiable, inequalities that affect different social groups. While this concern is not new, there has never been such an enormous scientific and technical potential to right this wrong, never such an extraordinary capacity for wealth generation and, hence, redistribution. (1)

Significant contemporary scholars like John Rawls, Amartya Sen and Margaret Whitehead have attempted to study, define and interpret the concept of equity as it relates to social justice and public health. Some of them, starting out from the premise that good health and a state of well-being is potentially available to all, have claimed that a just society should secure for every one of its members the same basic liberties, the same rights to political participation, and the same opportunities. Seen from this point of view, equity confronts the rule of law with the notion of justice. (2)

Gender, age, race, ethnic background, and geography - not to mention income - can all affect individuals' access to healthcare and other vital services that also influence the overall degree of health and well-being. In spite of the enormous technological and scientific advances of recent decades, communicable diseases remain the most frequent cause of death in today's world among those living on the margins of society, underscoring the growing health inequity at both the international and national levels. (3) It is another facet of the unequal production, distribution and consumption of goods and services, including education and cultural expression.

The impact, magnitude, and recurrence of disasters in the Americas has less to do with the absolute characteristics of natural hazards - wind speeds, in the case of hurricanes, or rainfall

levels in the case of floods - than with the social, economic, environmental, institutional and other circumstances of the victims. In that sense, vulnerability is social. Generally, adverse natural phenomena cause the greatest damage among those social groups living in the most fragile conditions: peasants, indigenous peoples, the urban poor - broadly speaking, the excluded.

There is little reason to hope that the current development model - which is predatory and unsustainable - can right this wrong. As the masses become poorer, they also lose political power and spaces for participation, while increasingly feeble nation-states reduce their social investment and lose their response capacity even as vulnerability grows. International aid, meanwhile, can at best attenuate the impact of disasters once they have already occurred, instead of providing lasting solutions in the form of soft loans to improve poor countries' capacity to increase their exports, raise employment levels, and obtain the necessary revenue to fund disaster prevention programs.

In this context, it makes little sense to propose policies for improving the health of the general population without addressing the question of equity. (4) Efforts must focus on the inclusion of the disadvantaged, including women, children, the elderly, the disabled, and ethnic minorities. While their losses in disaster situations are low in absolute terms, due to their very poverty, relative losses are high given the impact on their standard of living. (5) This calls for the institutionalization of citizen participation mechanisms.

However, health inequities cannot be eliminated simply by reducing poverty, since they can still be found in those countries that provide the poorest groups with access to health and medical care, sanitary education and welfare and unemployment benefits. Inequities appear as a health gradient throughout the social hierarchy, not only among the

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least advantaged. It is essential to understand that disasters are caused by social and political structures, and are not the result of chance or bad luck. In the field of health and disaster prevention, all countries must work together to introduce the necessary changes. The current world economic crisis is affecting everyone - with one proviso: the rich are less affected; the poor, more. This means that the impact of the crisis is not the same for all individuals or all countries. (6)

Thus, in addition to medical services, the population must have equitable access to education, culture, sport, and all other ways to improve their well-being. And a key part of this must be a carefully crafted, multidisciplinary disaster reduction plan involving all relevant institutions and community organizations.

In Cuba, the foundations have been laid for knowing the hazards that can affect every community and every health facility, based on their vulnerabilities, and a monitoring and training plan has been developed for all relevant human resources. Public health institutions play their role in disaster reduction through teams of multidisciplinary specialists who work closely with all other sectors at the local level, employing a methodology that includes early warning, preparedness and response. The recent infestation by the Aedes aegypti mosquito and the resultant dengue epidemic that affected the country, most severely in Havana, put us to the test, forcing us once again to develop comprehensive interdisciplinary solutions based on health equity - that is, the allocation of resources where they were most needed.

With the valuable assistance of UNICEF, the Pan American Health Organization (PAHO), DIPECHO and other international organizations, and the cooperation of non-governmental organizations, we are perfecting our integral approach to disaster prevention and mitigation, and efforts are underway to make the best possible use of the country's scientific capabilities with a view to coordinating as a whole all prevention activities, including research and information, the coordination of relief and rescue efforts, and the handling of sanitary and epidemiological concerns - not to mention greater international cooperation, particularly with Latin America and the Caribbean, in fields such as forecasting, emergency assistance and training.

At present, we are involved in the design of a Health Equity Monitoring System for Cuba that should respond dynamically to warnings of possible health inequities and view them not only territorially and in terms of the groups involved, but also over time, so that decisions can be made to ensure the

highest degree of health equity. The project benefits from the political will of the government to see it executed, the existence of reliable information, and the quality of the human resources involved in it. The integral approach favored by our National Health System in the field of natural or man-made disaster prevention and mitigation has made it possible to build capabilities for preparedness, early warning and response in connection with this world-wide problem. It also places us in a position to collaborate and provide assistance to the countries of the region and the world, something we are gladly willing to do.

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Health Sector Preparedness for Emergency or Disaster Situations

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Introduction

The degree to which the medical services of a country are prepared to face a disaster denotes the quality of those services and their capacity to provide agile and timely preventive medical care in normal conditions. The level of preparedness of the National Health System depends on its organization and the capabilities of its staff, with the active participation

of a trained community. The Ministry of Public Health forms a part of the Civilian Defense system of our country, as stated in the National Defense Law (No.75, 1994), and Legal Decree No. 170 (May 1997).

Disaster plans are detailed in every unit of the National Health System and are incorporated into the national, provincial and municipal plans.

By law, leaders at every level are responsible for successfully carrying out the disaster plans.

Characteristics of Medical Assurance Plans Against Disasters

Action plans against disasters are designed by multi-disciplinary groups of specialists at different levels and are coordinated with all sectors of the economy.

The disaster action plan is unique as it is designed according to terrain and territory, taking into account different hazards and/or threats which are then incorporated into the plan.

The action plans against disasters should be very well known by all workers; they should know their activities and responsibilities.

Plans should be continually updated and simulated annually via METEOR Exercises [annual national meteorological exercises], which are organized by the National High Command of the Civil Defense; these exercises make it possible for the Civil Defense to verify if any particular plan requires updating. Preparedness for emergencies and disasters is part of the regular activities of the National Health System.

All action plans include prevention and mitigation measures.

The Structure of the Action Plan Against Disasters

The plan consists of:

- A textual part
- A graphic part
- Complementary documents (annexes)
- Textual Part

The textual part consists of:

- Introduction
- Objectives
- Appraisal of the situation
- Preventive and mitigation measures
- Actions to take during different phases of the disaster (before, during and after)
- Organization of preventive medical assistance
- Organization of hygiene and epidemiological measures
- Evacuation of the sick and injured
- Assurances
- Organization of management and communication
- Education of the people and workers
- Cooperation with other economic sectors
- Graphic Part

A topographic map or sketch shows:

- Health installations
- Housing for evacuated people
- Locations reinforced with medical brigades
- High risk zones for the population
- Warehouses, water supply sources, etc.

Complementary Documents

- Warning plan
- Calendar plan
- Maps on risk communities
- Transcripts of cooperation
- Periodic report tables

This methodology is intended to facilitate the planning process, maintaining the same order, format and structure, at every institutional level of the National Health System. It also takes into account all means through which the health of the population is secured, while preserving the strength of public health institutions.

General Aim

To guarantee preventive medical care, ensure hygienic-epidemiological measures and carry out the medical evacuation of casualties using the existing preventative assistance network in the most rational and effective way. This is achieved according to the territorial principle and under the leadership and control of the defense councils at each level.

Specific Aims

To guarantee timely medical care in order to reduce fatalities among the hurt and injured through an immediate and effective response that saves lives, prevents complications and allows for a fast recovery.

To guarantee timely stabilization to the injured in order to evacuate them to medical facilities quickly.

To establish hygienic-epidemiological measures so as to protect the population in high risk zones, prevent tainting of the food supply and prevent outbreaks of contagious diseases.

To have the necessary resources and logistic support to guarantee the action plan.

To assure ongoing training and education of health professionals and the population. (This constitutes the cornerstone in preparedness).

To establish cooperation among different sectors, in order to achieve a rational use of existing resources.

To inform international organizations about the exact needs (damage evaluation) in order to obtain assistance in a timely and efficient manner.

Organization of Treatment and Evacuation Phases of Preventive Medical Assurance in Case of Disaster

Organization of the Integrated Medical Emergency System

The Integrated Medical Emergency System is an integrated system involving first aid by paramedics, small emergency and basic ambulance services and attention by medical personnel (medical doctor or a medical technician). This doctor or technician functions as the first link in a chain that begins with proffering first aid, after which the patient is moved to the second phase or directly to an intensive or intermediate care ambulance, depending on the urgency of the case. This assures the patient receives continuous care up to the moment he/she is out of risk and leaves the intermediate or intensive care unit.

The system consists of:

- A national coordinating center
- 15 provincial coordinating centers
- 35 emergency coordinating sub-centers
- 2421 emergency services throughout the primary care assistance network (polyclinics and emergency rooms).

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- The whole system is supported by short, accredited emergency courses specializing in the principles of the chain of survival.

Organization of Hygienic-Epidemiological Assurance

The health surveillance system (alert-action) in our country plays a fundamental role in case of disaster, as any change in the epidemiologic pattern is quickly identified, allowing for the implementation of measures to combat any change in the health of the at-risk population. It also plays a fundamental role in the control of contagious disease outbreaks sparked by the possible deterioration of basic services, that guarantee the population's survival.

Hygienic-Epidemiological Assurance

- Hygienic-epidemiological teams in Defense Zones.
- Hygiene and epidemiology centers - They move mobile sanitary and anti-epidemic laboratories to the provincial and municipal levels.
- Hygiene and Epidemiology Units (municipal level).
- Research institutes support the hygiene and epidemiological sub-system (reference: Tropical Medicine Institute "Pedro Kouri" - IPK; National Center for Toxicology - Cenatox)
- Units for Health Analysis and Tendency (Health Surveillance System).
- During the phase before the disaster, specialists from the Ministry of Public Health need to approve the hygienic conditions of suitable locations for evacuating the at-risk population; designates collective food distribution centers that have the appropriate conditions for this purpose; audits food handlers; assesses the quantity and quality of the water supply; reviews the liquid and solid waste disposal system and its hygiene; and assesses other areas crucial to public hygiene.

Assurance Organization

- List medical staff by occupational category for those installations involved in the case of a disaster.
- Calculate the number of hospital beds for use in each hospital unit according to the expected disaster, allowing for more should the need arise.
- Assess needs and reserves of vital medicines that can affect services (for how many days).
- Assure stocks of disinfectants, pesticides, detergent and soap.
- Assure reserves of water (m³), gas, combustible and electricity generating equipments.
- Assure stocks of medicinal oxygen (for how many days).
- Ensure special medicines and other materials for regions that could become isolated.
- Assure means of transport, including ambulances, in sufficient quantity, in good technical condition and with the support they need.
- Assure alternative means of communication, for example amateur radio.
- Identify resources that must be available to other levels.
- Evacuation of Injured and Sick People in Case of Disaster

Organization of Treatment and Evacuation Phases of Preventive Medical Assurance in Case of Disaster

Health Care Units		
First Phase	Second Phase	Third Phase
First aid	Qualified medical assistance (basic surgery)	Specialized medical assistance (general surgery)
Paramedic teams	Surgery Polyclinic	It is given at:
First medical care	Rural and municipal hospitals give the following services:	Provincial hospitals
Family Doctor consulting room	Surgery	National hospitals
Family Doctor	Gynecology-Obstetrics	Research institutes
Nurses	Pediatrics Internal Medicine	
Paramedics	General Integral Medicine	
Polyclinic	Dentistry	
	General Comprehensive Medicine (Family Medicine)	
	Pediatrics	
	Gynecology-Obstetrics	
	Internal Medicine	
	Dentistry	

Note: Victims receive psychological support in all phases.

*According to the latest figures from the Annual Health Statistics Report of the Ministry of Public Health (2003), there are 32,291 Family Doctors covering 99.2% of the total population in the country.

Principles of evacuation are based on the prioritization system (triage), as well as a color-coded system established for the massive reception of hurt, sick and poisoned people.

- Red code: requires immediate stabilization, with good survival prognosis
- Yellow code: requires direct medical surveillance, but care can wait
- Green code: can wait or medical treatment is not required

Plan for the Massive Reception of Bodies

Before the expected disaster, measures should be taken for inquests and identification and classification of the dead. Steps taken to achieve this include:

- Training of medical forensic personnel and preparation of their working conditions.
- Preparation and location of refrigerated transport and designation of places with appropriate sanitary conditions to receive the dead.

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The Cuban Health System's Response to the Effects of Hurricane Michelle

Julio Teja, MD 1

Introduction

Hurricane Michelle was the first great intensity hurricane (category 4) to hit our country in the 21st Century. As a result, the Cuban Health System, as part of the System of Civil Defense Measures, was called upon to act in the face of the emergency. Curiously, the last hurricane of similar force to hit Cuba in the 20th Century occurred in the same part of the country in 1952. The span of time between both events - 49 years - means two generations never experienced a hurricane of such force, only weaker tropical systems. Confronting Hurricane Michelle was a challenge to the country, and to our health system in particular.

Hurricane Michelle developed from Tropical Depression No. 15 during the 2001 cyclone season. It formed from a tropical wave in the western Caribbean Sea on October 29, 2001. At 6pm on November 4, Michelle made landfall at the Bay of Pigs, between Playa Larga and Playa Girón, Matanzas Province, as a category 4 hurricane, with sustained winds of about 136 mph (220 km/h), and stronger gusts of up to 149 mph (240 km/h), moving northward at about 9 mph (15 km/h). Later, it gradually weakened to a category 1 hurricane (maximum sustained winds of 93 mph or 150 km/h), moving out to sea at 1am on November 5, passing north of Sagua la Grande, Villa Clara Province.

Michelle was an extensive hurricane, with a diameter of 310 miles (500 km). The influence of the cyclonic circulation of its winds ranged from the eastern part of Pinar del Río to Ciego de Ávila Province, including the Isle of Youth and its adjacent keys.

1. Preparing to Respond to Hurricane Michelle

As established by National Defense Law 75 and Legal Decree 170 of May 1997, the Ministry of Public Health is accountable to the Cuban government for medically ensuring emergencies and disasters. This is done through governmental structures which are integrated within the High Command of the National Civil Defense.

Emergency and disaster plans are increasingly important as they have become working tools which define and formalize actions to be taken in these special circumstances.

Preventive, realistic planning is a must, especially in poor countries with few resources to face, prevent and mitigate nature's severe events. These plans are working tools that make it possible to coordinate risk-reducing actions between every institution, local government and the entire population, without improvisation; this is the efficient use of human and technological resources to reduce damages. Measures to this end include timely advice to the population by all possible means and planned, preventive evacuation of high-risk populations.

Serious, fatal consequences were prevented by the implementation of prevention, mitigation and preparation measures that were included in the hurricane plans, especially

timely warnings and planned, preventive evacuation of the population.

These plans stipulate that analysis and projections should be made in every municipality in the first three months of each year. Before the start of the hurricane season, each municipality undergoes an assessment and evaluation process using historical antecedents, threat maps, and architectural studies, that determine which zones are the most vulnerable and which houses and public buildings are in such structural condition that may cause them to be damaged. It is then possible to know beforehand how many people should be evacuated (children and adults), and the necessary means to ensure evacuation. Furthermore, this makes it possible for the commission on evacuation centers to approve shelters beforehand, determine their capacity, hygienic conditions, water supply, liquid and solid waste disposal systems, and assure medical care.

Our health system participates in the METEOR Exercises [emergency situation simulations] that are planned every year for the entire country by the High Command of the National Civil Defense for the whole country before the start of the hurricane season.

It is of critical importance that health personnel be trained so that everyone knows what role they are to play within the plan, the health education measures to be taken and the population's norms of behavior to implement in case of an emergency.

The family doctor and nurse concept has made it possible to permanently allocate a doctor's office in every community (for more on the doctor and nurse team, see MEDICC Review's November issue, 20 Years of Family Medicine). This has been a positive experience in coping with the effects of a disaster. This structure makes it possible to have qualified medical personnel right in the center of destruction or its surroundings, where they become an active factor in the population's health education and the preparation of the "first-aid and basic-care hygiene teams." We all know that simple hygiene and basic health education can be much more efficient than late intervention by many experts.

Cuba's Integrated System for Emergencies is implemented in primary care by the Main Emergency Polyclinic, which coordinates a network of family doctors' offices in close connection with the Hospital Emergency Subsystem. In addition, medical and nursing staff participates in ongoing education and courses in vital trauma support at all levels.

Another resource is the Health Analysis and Tendency Unit (UATS). This is a computerized system of epidemiological surveillance which is interconnected with all levels of the national health system allowing it to take action in controlling and implementing corrective measures when faced with any natural or induced phenomena that could affect the population's health.

These disaster plans are managed by government leaders in every territory and by special catastrophe management posts, which are organized in "operation groups" prior to the announcement of the informative phase of a disaster. These

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unified and coordinated posts are the highest management bodies in each territory, in charge of the protection measures to adopt. They are equipped with means of communication and with previously trained management and coordination personnel. They are the governmental working bodies which direct and conduct the implementation of measures to protect the population in case of disaster. For more, see Spotlight: Hurricanes in Havana: A Tale of One Province.

2. Establishing Phases

When Michelle formed as a tropical depression on October 30, a number of actions had already begun to be implemented. The informative phase was established for the provinces of Pinar del Río, Havana, Havana City, Matanzas, and the Isle of Youth, where protection measures were enacted as planned. The informative phase was introduced 97 hours in advance for the western provinces of the country.

According to current legislation, particularly Legal Decree 170 of the Civil Defense System of Measures, four phases are established to protect the populations in case of danger. The following parameters are established to adopt these phases in case of hurricanes:

- According to the position of the hurricane in relation to our territory - The Informative Phase is established 72 hours before the country is affected; the Hurricane Alert Phase is implemented 48 hours before; the Hurricane Alarm Phase is established 24 hours before; while the Recovery Phase is put into practice as soon as the hurricane is no longer dangerous to the country.
- The characteristics of the cyclonic body - wind speed, influence, and associated rainfall.
- The rain period and its behavior, as well as the volume of cumulative water in dams.
- The situation of schools in the countryside and non-permanent school camps in the countryside, as well as other population at risk and economic objectives.

These phases are considered part of the Medical Securing Plan for hurricanes and intense rainfall.

Based on the abovementioned information and on the tropical cyclone reports issued by the Forecast Center of the Meteorology Institute, the following hurricane phases were established in the country from the early moments of direct hurricane hazard:

Informative Phase : Introduced 97 hours before its estimated landfall for the western part of the country, and 79 hours in advance for the rest of the threatened provinces.

Hurricane Alert Phase : Established 79 hours in advance for the western part of the country, and 55 hours before its estimated landfall in the central territory.

Hurricane Alarm Phase : This phase was established 37 hours in advance for the western and central parts of the country, as well as for Ciego de Ávila Province, where it was initiated 25 hours in advance.

Recovery Phase : Established for all the affected territories when the hurricane was no longer dangerous for the country.

3. Major Measures Taken:

a) 1295 catastrophe management posts were activated, including:

Hurricane Fast Facts: Mighty Michelle, November 3-5, 2001

- Category 4 Hurricane
- Highest sustained winds: 136 miles per hour (220 km/h)
- Highest wind gusts: 149 miles per hour (240 km/h)
- Most rain that fell in a 24-hour period: 9.22 inches (234.3 mm) in Arroyo Arenas, Ciudad de la Habana Province
- Greatest wave height: 13.12 to 16.4 feet (4 to 5 meters) along the south coast of Isla de la Juventud and Miramar and Vedado in Ciudad de la Habana
- Farthest ocean penetrated inland: .62 miles (1 kilometer) in Cárdenas, Matanzas Province
- Diameter of the hurricane eye: 24.8 miles (40 kilometers)
- Reach of hurricane winds (in diameter): 310 miles (500 kilometers)
- Percentage of Cuban territory affected: 52% (home to 53% of the population or 5.8 million people)
- Deaths in Cuba: 5
- Deaths in Caribbean & Central America: 17
- Number of homes completely destroyed: 12,579
- Number of homes damaged: 153,936
- Estimated amount of sugar destroyed: 400,000 tons
- Estimated amount of citrus destroyed: 398,000 tons
- Estimated agricultural losses: US\$577 million (US\$317 million in damages plus US\$260 million in lost production)
- Total cost of recovery effort: US\$785 million

12 Provincial posts

151 Municipal posts

1,132 Posts in defense zones

b) 102,468 people were mobilized, including those in the health sector, which represented 41% of the number estimated.

c) 6,095 means of transportation were used with different purposes, which represented 82% of what had been planned for. This number included more than 1,000 ambulances and other transport for the health sector.

d) In the Hurricane Alert Phase 219,729 students in the countryside were evacuated. 219,206 of them were evacuated to their own homes, while 522 were lodged in shelters. Primary medical care was ensured for all of them with family doctors.

e) A total number of 564,031 people were evacuated, 166,339 of which were lodged in shelters. The rest of the evacuated people were protected in houses of relatives and neighbors. This has been one of the highest figures of evacuated people in the history of our country, with no accidents or human losses during the evacuation process. [The number of evacuees during Hurricane Ivan in September, 2004 was more than triple that - 1,898,396 people - also without accidents or injuries. Eds. note].

f) 777,668 animals were evacuated to safer zones, including 320,364 cattle, 288,590 of other types of livestock, and 376,198 fowl.

g) 1,028 previously planned shelters were activated nationwide. Medical posts were established in all of them in compliance with the health sector plans. All Family Doctor's offices remained active to care for the population that was evacuated in their relatives' houses and in zones affected by the hurricane.

h) Preventive medical care and epidemiological surveillance were provided to the affected population. Sanitary control measures were taken with regards to water supply quality, disposal of solid and liquid waste, food hygiene, and control over insects and rodents.

i) Other measures adopted included:

Tree pruning was accelerated before the hurricane in those cases in which trees were hazardous to the population, buildings or electricity. Other measures included garbage collection, removal of billboards, signs and other objects that could be swept away by the wind.

Specialized forces were activated for rescue tasks and urgent damage trouble-shooting.

Administrative government bodies responsible for the major assurance measures activated their emergency plans to guarantee protection of the population and the economy. Epidemiological surveillance measures were increased. The population was instructed on what measures to implement in each phase. A crucial role was played by the family doctors as they informed the population on hygienic and sanitary measures, norms of behavior to follow in these circumstances, and provided psychological support after the hurricane.

As conceived by the Ministry of Basic Industry, power circuits were switched off in coordination with the National Electricity Board in those places where wind speed exceeded 43 mph (70 km/h), in order to prevent short-circuits, transformer burns and accidents affecting human lives.

A few hours before possible landfall of the hurricane, the Minister of Public Health called a coordination meeting to finalize details on the protection measures. The seven following actions were established within the number of health-related activities to carry out:

- Prevent damages to people's health by means of prevention.
- Guarantee an adequate number of hospital and out-of-hospital beds for medical care. Between 20% and 30 % of hospital beds were made available and new admissions were limited to emergency cases. Consultations were cancelled.
- Give special attention to usually isolated zones with supporting medical brigades.
- Prevent damages to health units.
- Activate the integrated medical emergency service for disasters.
- Guarantee medical and medical-hygienic-sanitary care to the evacuated population.
- Prevent epidemics in the affected population (epidemiological surveillance).

4. Major Damages

In general, it was necessary to adopt protection measures against Hurricane Michelle from Pinar del Río to Camagüey, including the Isle of Youth Special Municipality, affecting 52% of the whole Cuban territory where 53% of the population lives (about 5 million inhabitants).

During Hurricane Michelle, five deaths were reported, and 10 other people were slightly injured.

A large number of houses (131,000) were affected, as well as hundreds of schools and other social institutions and economic installations that included sugar mills and agricultural facilities. Serious damage was also caused to electrical power lines, communications, water and gas supply, and the road system.

In agriculture, most of the damages were to citrus, banana, aviculture, and various crops. Great losses were reported in different species of cattle and fowl intended for the population.

As regards the health sector, the major losses and damages reported were:

- 839 units of the National Health System were affected. Of these, 609 of them were slightly damaged (72.5%); 214 were partially damaged (25.5%), and 16 were completely destroyed (2%). It was necessary to implement alternative solutions given the existing conditions and the need to continue providing medical care.
- Most damages were found in roofs, dropped ceilings, doors and windows, transformers and electrical networks.

Damage Recovery

By January 14, 2002, approximately two months after Hurricane Michelle passed through Cuba, 400 health care units had been recovered, representing 48% of all those affected. It must be emphasized that regardless of how damaged they were, all of our units continued to offer medical care to the population as their good condition was being reestablished. Thanks to very close coordination, limitations on care were solved by other institutions in the same province, or in other provinces if required.

Conclusions

Considering the hurricane's magnitude and its impact on the country's infrastructure, it should be pointed out that the prevention, preparation and response measures that were put into practice by the Civil Defense System of Measures – including those pertaining to the Health System – were a key factor in reducing the hurricane's impact on our people's lives and health. They guaranteed the vitality of medical care in accordance with what was needed, maintained the system of epidemiological surveillance, reinforced sanitary norms and the understanding of them by the people, and ensured quick recovery from the damages suffered by the health sector, thus contributing to maintaining and recovering the levels of the quality of life of our population.

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Importance of Protective Factors for the Mental Health of Children and Adolescents in Emergencies and Disasters

Cristobal Martínez Gómez, MD

Introduction

Children and adolescents are at a higher risk of becoming victims and suffering the losses resulting from disasters. They are much more vulnerable; the younger they are the more difficult it is for them to understand what has happened. Historically, the effects of such events on mental health and the way to prevent and eliminate such consequences have been considered of little importance.

In many countries educational programs aimed at preparing people to protect children before, during and after a disaster do not exist. Governmental and non-governmental institutions do not coordinate their efforts.

Psychologists, psychiatrists, psychotherapists and psycho-educationalists have not been trained adequately at their institutions in order to prevent and attend to the disorders of affected children and teenagers.

It is necessary and practical to emphasize prevention, to focus on actions to promote health and prevent disorders that disasters may cause.

The social system should offer the following protective factors:

- Timely, detailed and systematic information about the proximity, intensity, possible damage and risks for the people and the protective actions to be taken.
- Means of evacuation, if necessary.
- Material resources to protect houses and buildings.
- Assurances for medical assistance, both physical and psychological
- Confidence in the qualification of formal and informal leaders to manage the activities related to the protection and recovery of health and welfare of affected people.

The Resiliency Approach

Most recently, both theory and practice identify “prevention” as the highest priority when confronting disaster situations, taking into account the following premises: investigate the vulnerability factors, increase the resilience of the population, reduce risks and promote equity and subsistence (before, during and after the event). It is important to take into account that resilience in this regard is defined as the capacity of human beings to face and overcome life’s adversities and

become transformed in a positive manner by them. Resilience is determined by protective factors defined as: conditions or environments capable of encouraging the development of individuals and groups, while generally reducing the effects of unfavorable conditions. Protective factors are the opposite of risk factors, defined as characteristics or qualities of a person or community linked to a high probability to cause health damage.

It has been proven that women and children are the main users of health services in disaster situations. Cultural factors and customs of the population also influence mental health and the special needs of vulnerable persons.

Therefore, in any evaluation designed to prevent and detect health problems, it is necessary to include all the traumatic mental effects that may appear in children and adolescents. This is reinforced by the universally accepted criterion that these age groups are more vulnerable and sensitive, but also more receptive and flexible. Thus, systems must be created which provide information and education and allow for the identification of problems/issues and then follow-up in terms of appropriate promotional, preventive, monitoring and rehabilitation activities.

It would be best to establish the highest possible “predictability” of events. If there is an event pattern, there is also an emergency pattern. For example, we are aware that stress will appear; then it is necessary to establish means to prevent and reduce it and also avoid its consequences. The reinforcement of protective factors previously identified provides for effective, necessary and productive actions.

In the three-phases of a disaster (before, during and after), the preparation of the population will be a determinant factor in diminishing mental health damage/consequences in the child and adolescent population.

What To Do?

Before

The reduction of vulnerability in this age group is most effectively accomplished prior to the disaster by preparing the population in general, especially in terms of education and training, consonant with the prevailing social/psychological and cultural characteristics present. Fully informed knowledge on the best way to evacuate and accommodate children and teenagers reduces their vulnerability and diminishes the impact on their psyche. Adults and aid personnel should transmit safety and calm to successfully contribute to those purposes. Unnecessary and unjustifiable terror and fright are more harmful than a real danger.

During

There should be a previously planned response activated or enabled from the moment the phenomenon begins to occur. For that, the population should have received prior appropriate and opportune education and training to ensure qualification for the task at hand. Personnel should be trained to give “psychological first aid.” Personnel trained in emergency care psychiatry should be included in medical aid brigades. The impact on children/teenagers mental health should be evaluated. During the evacuation and at the site of already existing emergency housing or settlements/camps, family separation should be avoided as a top priority in order to guarantee a less hostile and/or unnatural environment for children. If a previous evacuation was not carried out, the same criteria should be considered to proceed, remembering that gender segregation disrupts families.

After

Damage will be evaluated afterwards by means of a “diagnosis” or diagnostic evaluation of the mental health state of the children and adolescents. A response plan designed to assist and rehabilitate the affected population should be established. Every attempt should be made to guarantee the possibility of attending some type of school and ensuring adequate time and space for play. The participation of the population in recovery activities as a key factor for mental health should be duly noted and implemented. Consciousness-raising is important so that the idea of recovery and return to normal conditions is perceived as a common effort, to be handled in a coordinated, united manner as everyone’s task (government, nongovernmental organizations, industry, services, school, family, neighbors). Thus the importance of prior psychological qualifications and preparedness.

How?

Before

By means of:

- Educational, preventive, promotional and/or other kind of programs, habitually performed during the “PRE-IMPACT” phase.
- Population training in organizing different activities, such as: play-related, school, recreation and others, according to the children/teenagers needs in both normal and disaster situations.
- Clear establishment of standard instructions for evacuation, temporary camps, refugee status, etc. specific to the situation of children and teenagers in emergencies and disasters.
- Clear establishment of the role of communities and institutions in order to satisfy the most important needs in disasters, aimed to favor optimal child/adolescent and family mental health.

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Adequate monitoring and evaluation should be planned for and carried out from the beginning of the program. Results can be applied to future training programs and for the qualification of the coordinating commission, donors, local government officers, formal and non-formal community leaders, children/teenagers and their parents – all of whom contribute

to achieve the social, financial and political support necessary for the success of the program.

During

Taking into account the first impact on child and adolescent mental health in emergencies and disaster situations, it is necessary to have very well planned life-saving and rescue activities. In order to develop the aims of the program within this context, it is important to understand the specific social/cultural reality of the child/teen population in question. Social and cultural factors significantly influence the way young people will behave during the disaster. Among these, those that exert the greatest influence, due to the fact that they are considered protective factors are:

- Individual characteristics (knowledge, attitude, beliefs, values, motivations and experience)
- Families and adults of the community
- Institutions (school, workplaces, religious and social organizations)

The results help to improve community understanding about the current and potential benefits of the program, the development of a sense of belonging through participation, the improvement of coordination and the development of incentives specifically geared toward support of children and teenagers. Another aspect that should be taken into account is that infancy, childhood and adolescence are experienced in different manners in every society and often even within the same one; many differences may exist in terms of how each of these critical life stages are dealt with.

After

It will be necessary to create a specially trained team to evaluate damages by means of a diagnostic overview of the child/adolescent mental health situation. Thus it is important to have performed a previous qualification/training process with the available personnel to carry out the response plan already designed. The community should be organized to create emerging classrooms and open-spaces to guarantee school attendance and areas designated and appropriate for play and recreation. Participation of the population in reconstruction/recovery activities should be encouraged in collaboration with social, religious and political institutions, generating the awareness/consciousness that this should be a common task involving everybody.

Factors which create obstacles to the best development of these activities are:

- Having no basic information regarding the target population’s situation
- Inadequate recovery information
- Lack of coordination and/or advance planning to ensure program strategy improvements

Factors facilitating the best development of the activities are:

- Knowing the system will offer what is expected
- Having tried the elements contributing to program efficacy
- Establishment of a genuinely participative commitment among the given community

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- Having assured data collection
- Being creative and flexible
- Having defined aims and a realistic approach
- Having previously established a monitoring and evaluation system to measure changes and efficacy
- Limiting costs

Actions Requiring Professional Personnel Training

- Crisis Intervention
- Death, loss and mourning counseling
- Knowledge of family functioning/dysfunction
- Social communication.
- Hospitalization (partial, total)
- Outpatient care
- Psychopharmacology
- Social, humanitarian and community support systems and resources in place, specifically geared to children and teenagers during emergencies and disasters.
- Psychological evaluation
- Specialized psychological interventions: psychotherapy or other techniques, specifically focused on children and teenagers and specific to emergency/disaster situations.

Information Intended For Non-professional Personnel And Families

The days and weeks after the event will be difficult. Besides thinking about physical health, it is necessary to take some time to think about mental health. It is normal to suffer some insomnia, anxiety, anger, hyperactivity, depression or lethargy, but these should disappear in a relatively short time. If any of these symptoms become acute, seek professional help. Do not forget that before, during and after "the storm," children need special care and extra attention. To help maintain their sense of security and safety, try to ensure that they have a favorite toy or other personal items to keep with them and/or have close at hand. State or local health departments should be prepared to help you find the necessary local resources you might need, from food and/or housing assistance to hospitals or health service suppliers.

A catastrophe like an earthquake, hurricane, tornado, fire, flood or a violent act is a terrifying experience for children, adolescents and adults. When talking to children about the incident, it is very important to recognize which elements of the disaster caused fear in everybody. Reducing danger or minimizing the extent or significance of potential danger(s) will not eliminate child concerns nor will this approach be particularly helpful or reassuring. A number of factors affect child reaction when he/she faces a disaster. It is very important to bear in mind just how the child sees and interprets his/her parents' reactions and the reactions of others in the family and the community. Usually, children not only perceive their parents' concerns, but are also particularly sensitive during a crisis. Parents should be open with their children and allow them to know that they are concerned but at the same time, they should emphasize their confidence in their own and the community's abilities to confront the situation.

Child reaction also depends upon the magnitude of the destruction and/or death he or she sees during or after the disaster. It is highly probable that a child will have serious difficulties if a friend or relative is hurt or dies or if his/her home or school, for example, is severely damaged.

The child's age also affects his/her reaction in the face of a disaster. For example, a six-year old can show his reaction to the catastrophe by refusing to go to school, while a teenager might minimize (deny) the importance of the tragedy, but show signs of increased irritability, starting fights with siblings or parents and/or doing less well academically. It is very important to explain and discuss the event using words the child can understand, and to listen closely to questions in order to give the specific "answers" or information being sought.

Stress-provoked Disorders

After a catastrophe, people can develop acute or post-traumatic stress disorders, which is psychological damage as a result of having experienced or being witness to an extremely traumatic and/or terrifying event. If those manifestations appear immediately after the event, then it is generally referred to as Acute Stress Syndrome, but if they appear sometime later, the terminology used is "Post-traumatic Stress Syndrome."

Children with this disorder generally have repetitive episodes in which they suffer from a series of symptoms and signs, including a reliving or re-experiencing of the traumatic experience. These children often revive the trauma by re-enacting it, sometimes repeatedly, when they play. Small children may exhibit disturbed sleep with apparently troubling dreams about the event which can develop into ongoing nightmares invoking the disaster itself and/or involving monsters, rescue activities or threats to themselves and/or others.

Parents should be especially alert to the following changes in child behavior:

- Refuses to go back to school; increased attachment to Mom or Dad, including acting like their "shadow", following them around the house, etc.
- Persistent fears related to the catastrophe (like fear or permanent separation from their parents, for example)
- Sleep disturbances, like nightmares, shouting during sleeping, bed-wetting, persisting for more than several days after the event
- Lack of concentration, irritability, increased hyperactivity
- Easily frightened, nervous, heightened startle response
- Behavioral problems; for example, inadequate or inappropriate behavior at school or home (not seen before) – atypical for the particular child
- Complaints about physical discomfort (stomachache or headache, dizziness, etc.) without any apparent physical origin
- Isolation from family and friends, sadness, apathy, low activity and concern about disaster events

Professional advice or treatment should be sought to prevent or minimize the development of disorders in children

affected by a catastrophe, especially for those who have experienced destruction, death, major loss or physical/medical consequences. Parents concerned about their children can request the pediatrician or the family doctor to refer them to a psychiatrist who specializes in children and adolescents.

Mourning In Children And Teenagers

Any modification of the role of a family member will induce a change in the other members. Therefore, the death of any member involves reorganization in family relationships. Such rearrangement starts a long time before the loss, along the entire terminal phase if, of course, the outcome is known beforehand or anticipated. The process will proceed differently but just as dramatically in the case of an accident or unanticipated loss.

Mourning as a process is standardized in all cultures. Every culture has its own process or processes for mourning - wake/funeral, familial outcry and manifest bereavement, burial/cremation, etc. – all accompanied by a series of different rituals. All societies develop and establish such rituals as the expression of an apparently uniquely human need. Human beings need to cry for their dead and for their loss. Popular wisdom in many cultures identifies this need to cry for the dead because crying brings relief. Non-expressed sadness does damage to our mind and spirit as well as affecting our physiological functions and systems. The entire body/mind/organism is disturbed and these disturbances can be expressed in many ways - from tachycardia (increased heart rate), stomach disorders, hypertension, skin reactions, to sexual dysfunctions, major depression, aggression, etc. Nevertheless, the primary manifestations of grief seem to be at the level of the psyche.

Loss and separation from parents, family or the social and school environment represent risk factors in infancy, childhood and adolescence, aggravated by the lack of psychological resources common to these age groups. In disaster situations children and teenagers bear an additional or greater burden of shock, confusion and suffering due to loss. As well, they often lack much needed appropriate/adequate support from other relatives who are also suffering from the same tragedy and thus unable to assume responsibility for these children in the absence, for example of the protection of significant adults who have disappeared, died and/or are otherwise unaccounted for.

Children elaborate mourning in a very curious way, different from that of adults. Sometimes they do not cry at all or they may begin with a furious crying, accompanied by very or not so aggressive actions. Gradually, this violent crying becomes milder but may be continuous. Then, the child may ask why his loved relative "is gone", when he/she will come back, or if he/she (the child) has some responsibility for his/her absence. Sometimes they ask if the dead person will come back, and say: "When he/she comes back....", or "when he/she lives again..." Often these questions go unanswered, but usually they are prominent in the thinking of the child.

Often, especially in younger children, there are feelings of responsibility and/or guilt related to the loss. We had the painful experience of a three-year old child who continuously said to his mother "when my father comes back I will tell him

that you did this [or that...] to me". In children, guilty feelings are often related to the fact that sometimes they "wished" some relative would die, and when he/she really dies, they believe in their own magic thoughts and think of themselves as responsible.

Although mourning is triggered by something idiosyncratic in each person, there are situations that trigger mourning in all people and involve risk factors. Logically, those risk factors will be different according to the life stage the person is living. In young adults, the most frequent factors are: divorce, first pregnancy, abortion/miscarriage (especially if it is repeated), giving birth to a disabled child, unemployment, loss of a parent and migration. In adults and elderly people the most frequent factors are: retirement, lack of functional capability, loss of relatives, close friends or familiar environment, and illness or disability of other family members.

The way mourning develops is decisive for re-adapting to the environment and to one's life. The attitude we should assume to treat mourning in primary health care settings should be receptive and observational, with maximum effort devoted to empathic listening. Evaluate risk factors as well as sleep disturbances. It is very important to distinguish between normal and pathological mourning.

In the case of normal mourning, a six-month follow-up period should suffice, although each individual is different. If risk factors are present professional help should last from six to twelve months, depending, again, on the individual and circumstances. In the case of "pathological mourning" it is necessary to establish a process and "treatment plan" for mourning and grief counselling with closer follow-up and if the problem is very serious or chronic, specific treatments for the existing and/or underlying disorders should be considered.

Children facing death

Children's reactions to a loved one's death is very different from adult reaction.

Preschool children tend to believe that death is temporary and reversible. This idea is reinforced by comics/cartoons and children's literature, where the protagonists often "die" and then "come back to life" again. Children between the ages of five and nine years old, more or less, begin to think about death more similarly to adults, as the concept becomes more real to them. Nevertheless, they may begin to think or imagine, in an ongoing way, that they or some other close person could die. Parents should be conscious and attentive to their children's reactions to death and understand which reactions are "normal" and which signify the possibility of exaggerated symptoms or danger signals. It is normal that several weeks or more after a relative's death, for example, some children experience a deep sadness, or they may seem to believe that the relative is still alive. Long-lasting denial or the persistent avoidance of feelings of sadness is not healthy and can result in serious problems in the future.

Frightened children should not be forced to go to the funeral or burial, nor should they be denied participation – it depends on the child and the family context. Always, however, it is a good idea to allow children to participate in some type of

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symbolic ceremony or ritual, such as lighting a candle, praying or visiting the grave. When the child accepts death, it is normal that he/she demonstrates his/her sadness for a long period of time, sometimes at unexpected moments.

Family members and close friends should spend as much time together with the child as necessary, and clearly let him know that he is allowed to manifest his/her feelings freely and openly. If the dead person was essential to the child's stability, then anger is a natural reaction. It can be manifested by means of violent playing, nightmares, irritability and/or a variety of other behaviors. This aggressiveness is sometimes directed at other family members. After the death of a parent, many children act more childlike, wanting to be fed, taken care of and/or cuddled like a "baby."

Small children believe they are the cause of many things that happen around them, they perceive themselves as the center of their world. Thus, they can think that the person died because of something they did or said or even wished for or thought about... They feel guilty because they believe their wish was "fulfilled" and/or that they could or should have been able to prevent the death.

Danger signals

- Prolonged period of depression, where the child loses interest in his/her activities and daily happenings.
- Insomnia, loss of appetite or prolonged fear of being alone.
- Regression to an earlier age for a long period.
- Excessive imitation of the dead person.
- Frequently saying he/she wants to go away with the dead person.
- Being isolated from his/her friends.
- Significant deterioration in his/her studies, refusing to go to school.

These warning symptoms can indicate that specialized attention is needed. A child and adolescent psychiatrist or specialized psychologist can help with the process of accepting death and teach other survivors how to help the child in his/her process of grief and mourning.

Conclusions

- Knowledge of protective factors and their use is the most effective action to avoid psycho-affective damage in children and teenagers, during disasters and in general.
- Organize young people (peer counselors), women, teachers and community personnel groups with the aim of developing a corps of community-based people who can work and give advice before, during and after the disaster.
- Qualify the personnel designated to assist children, emphasizing those aspects involving the promotion

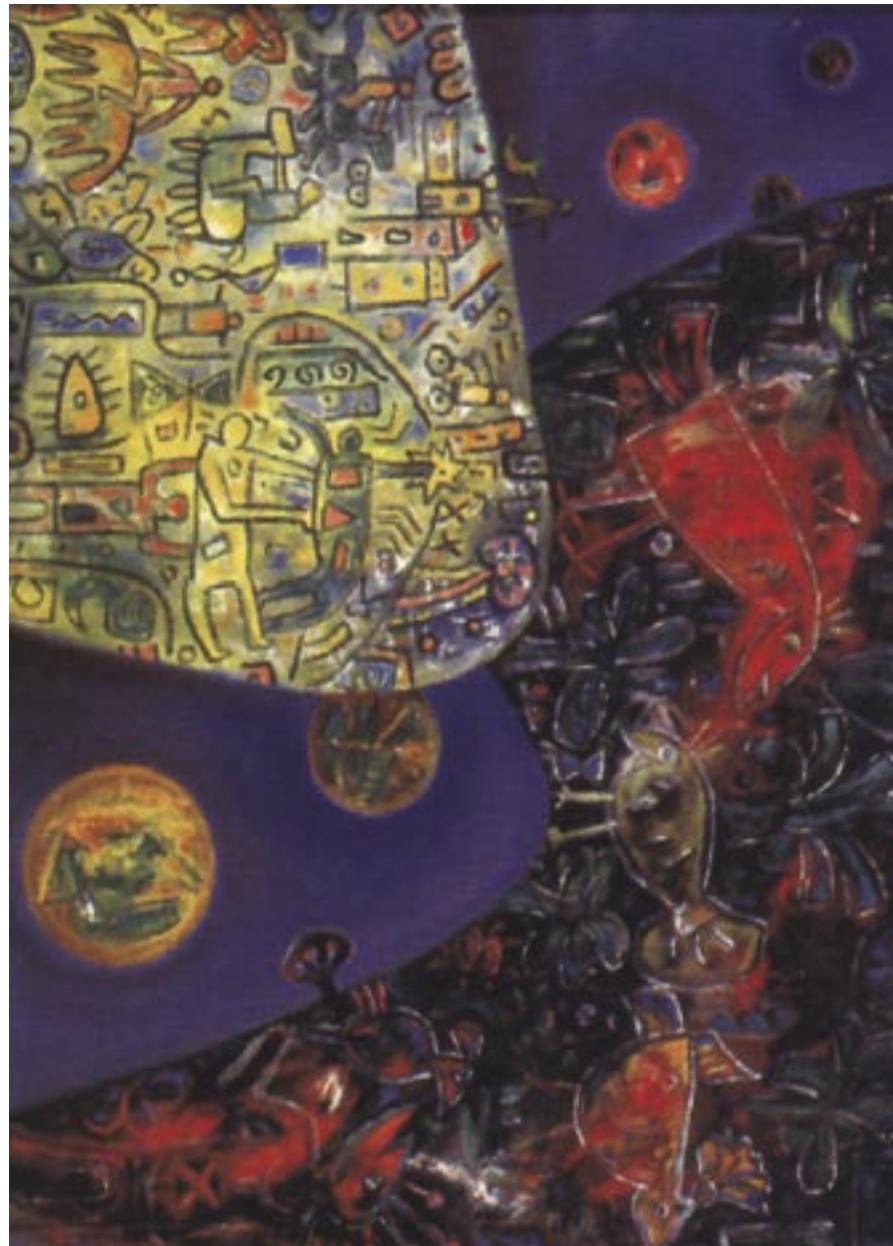
of protective factors, avoidance of or attention to risk factors, early detection of disorders and actions for their eradication.

- Governmental and non-governmental community-based organizations and institutions should be the strategic center to organize all activity and tasks in a systematic and coordinated way.
- Separating children from their parents or another significant adult should be avoided.
- Families should understand the importance of maintaining emotional/affective contact, touching and hugging the child frequently, particularly at bedtime.
- Families should be kept together as a unit, not separated, and should be helped to maintain as much of the usual family activities as possible.
- Constantly reinforce the idea that they (the children) are safe and protected by and within the family.
- Establish clear, direct and simple communication; inform children how they can be affected and keep them abreast of what is going on and/or what could happen within limits dictated by age and developmental level.
- Listen carefully and patiently to their feelings and questions, and help them to understand what happened. Address their fears and concerns, allowing them to cry if they wish. Reaffirm that their fears, painful dreams, sadness and fantasy are normal reactions. If they do not express themselves spontaneously, ask them what they think about other children's feelings.
- Encourage children to play. If they play/re-enact the "disaster" then help them find positive outcomes and/or resolutions to problems.
- Going back to school should be a top priority.
- Encourage productive activities, taking part in simple reconstruction jobs, according to their ages, aimed to facilitate the return to normality and to enable participation in recovery.
- In case of death, it should be faced in an honest, open manner, saying that it is normal to be sad, and using simple words according to the child's age. Never blame a child for someone's death and be attentive to the possibility that he/she may be blaming themselves and counteract that notion. It is not generally considered to be a good idea to say that the dead person is happy in heaven, because in many cases the child could begin then to wish to die in order to go to heaven to be with his/her lost loved one.

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Cuba's
Global Disaster
Cooperation
from Chile
to Pakistan
1960-2005



ISLAS BRAVAS, ERNESTO GONZALES PUIG, 1957

Cuban Medical Teams in Global Disaster Relief

By Gail A. Reed

It may have come as a surprise to some that Cuba would be among the first to offer help in the wake of the terrorist attack on 9/11—its airports were immediately opened to U.S. planes stranded in the skies, medical teams and blood donations were readied. But the reaction was in fact common practice from the Cubans over the years, their response coming quickly in the face of disasters around the world since the early 1960s.

Cuba's first international health brigade was dispatched in 1960 to Chile, where cities lay buried beneath the rubble of a catastrophic earthquake. Martyred Chilean President Salvador Allende—then a member of the legislature—was in Havana at the time. He later recounted the experience to Cuban health workers. "I was here when Prensa Latina (news agency) reported that vast cities in my country had been devastated by the quake. And I watched as Cuba mobilized...and beyond the (fraternal) attitude of the government, the obligation of its leaders, I witnessed your attitude—the attitude of the people of Cuba. I saw the trucks rolling by (carrying) the anonymous generosity of people who gave what they needed for themselves." (1)

This theme—the poor helping the poor—is at the heart of Cuba's South-South cooperation with other developing countries today, and permeates much of its disaster relief efforts. In 1970, in nine days, 106,000 Cubans voluntarily gave their blood for the victims of the earthquake that hit Peru.

Most often over the years, Cuba has sent disaster relief in the form of medical brigades, as shown in the chart below. Sometimes the aid has gone to countries with which Cuba's government had no diplomatic relations. And frequently, the teams have found themselves among the first to arrive, before the disaster itself has subsided. Cuban doctors still talk about their hands trembling from the after-shocks as they treated the wounded in Nicaragua's 1972 earthquake. And they have also found their rush to assistance has made for strange allies: two



Cuban volunteers at a Havana blood bank after the earthquake in Peru, 1970.

GRANMA
Cuban physicians told *MEDICC Review* they were ferried over flood waters in US Army helicopters after Hurricane Mitch hit Central America.

Treating victims of catastrophes in Cuba itself has played an important part in the disaster relief program. Since 1990, over 17,000 children and several thousand adults suffering from the aftermath of the Chernobyl nuclear accident have been cared for at Havana's Tarara seaside rehabilitation center and other facilities (See MR Interview with Dr. Julio Medina this issue). The experience accumulated in such a massive effort was also applied to 52 Brazilian children, flown to Cuba after they were exposed to radiation at a dump site in Rio de Janeiro.

Cuba's experience in confronting its own health emergencies has also been put to work in other countries. The formidable lessons of the national campaigns against dengue fever were the basis for collaboration with health authorities in El Salvador (2000) and Honduras (2002), stemming the epidemics in those countries. (2)

In the case of Honduras, not only were Cuban physicians already on the ground to bolster the effort, but 485 young Hondurans home for the summer from Havana's Latin American Medical School spent 45 days of their vacation going door to door in Tegucigalpa. With the support of the Honduran Health Ministry and later joined by medical students from the National Autonomous University of Honduras (UNAH), they hauled fumigating equipment on their backs up and down the sprawling hillsides surrounding the city center, also educating families on ridding their homes of the *Aedes aegypti* mosquito, carrier of the disease. (3)

The most recent example of Cuban assistance in the face of disaster is, of course, Haiti. This is an experience worth further study, considering that over 500 Cuban health personnel were already stationed across the country when the disturbances of February, 2004 and Tropical Storm Jeanne this fall rocked the small nation. Many of the Cuban physicians

Examples of Cuban International Disaster Relief 1960-2000

1960	Chile	Earthquake, 5,000 dead	Medical team
1970	Peru	Earthquake, 60,000 dead	Medical team, 6 rural hospitals, 106,000 blood donations
1972	Nicaragua	Earthquake, 5,000 dead	Medical team, food, medicines
1974	Honduras	Hurricane Fifi, 2,000 dead	Medical team
1990	Soviet Union	Chernobyl disaster program	17,733 children treated in Cuba through October, 2004
Date	Brazil	Radiation poisoning	52 patients treated in Cuba
1998	Central America	Hurricane Mitch, 30,000 dead and disappeared	Medical teams
1998	Haiti	Hurricane Georges	Medical team
1999	Venezuela	Torrential rains, mudslides, 9,000 dead	Medical team
2000	El Salvador	Dengue epidemic, 10,000 cases over 16 wks.	Medical team, advisors and equipment



Cuban doctors evacuate the wounded during disturbances in early 2004.

were deployed in the most remote areas, or in the epicenter of the emergencies: the city of Gonaïves, where Haiti's independence was first declared. Despite their own precarious situation, and despite offers to return home, all of the physicians decided to stay through rebellion and even occupation.

Over 11 million tons of food and medicine were shipped in just prior to the collapse of the government of President Jean Bertrand Aristide in February, but no one could foresee the devastation of Jeanne. Once again, the Cubans kept on working.

The fact that they were already in place before the storm has put them in a unique position to make more profound contributions to the city's process of healing. In one case, family doctors have brought together hundreds of children orphaned or simply traumatized by the disaster, working with psychologists to bring some sense of stability and optimism back into their lives (see *Mental Health of Children and Teenagers in Emergencies and Disasters*, this issue). In Haiti, as elsewhere, the poorest of the poor is where disasters strike the hardest—and where the majority of Cuban doctors are also to be found, constituting a safety net rarely available to these populations.

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Cuban Disaster Doctors in Guatemala, Pakistan

By Conner Gorry

Mothers swing pick axes and claw at the mud, searching for loved ones buried in the rubble. Rotting corpses and shortages of food, water and medicine threaten survivors, while relief efforts are hampered by impassable roads or inclement weather. This same, desperate scene is repeating itself from Guatemala to Pakistan, where catastrophic natural disasters have shaken these nations to the core.

The aftermath is horrific, with entire communities entombed in Guatemala and Pakistan, while nearly 1,000,000 are displaced in Mexico and a dengue outbreak grips El Salvador in separate post-disaster scenarios. To help save survivors of such events is the goal of Cuba's Henry Reeve International Team of Medical Specialists in Disasters & Epidemics. Units of this specialized, rapid response volunteer team of health professionals are now serving in Guatemala and Pakistan, their expenses assumed by the Cuban government.

Conceived during Hurricane Katrina as a mobile team staffed with doctors trained in disaster response and epidemic intervention, the 1,586 medical professionals—each equipped with 50 pounds of medicines—pledged to serve anywhere in the world they were needed (see *MEDICC Review*, Vol. VII, No. 8, 2005). In a ceremony on September 19, Cuba formally constituted the International Team, the founding members of which collectively possess an average of 10 years clinical experience and service in 43 countries. Ultimately, the United States rejected Cuba's offer to send these medical professionals to the Gulf States during the ongoing post-Katrina relief effort.

Who Was Henry Reeve?

Born on April 4, 1850 in Brooklyn, NY, Henry Reeve fought in the U.S. Civil War (where his abolitionist and anti-colonial sentiments crystallized), before landing in Cuba on May 11, 1869 to fight in the First War of Independence from Spain. According to Cuban history books, he distinguished himself for his bravery in 400 battles, eventually becoming a Brigadier General in the independence forces. On August 4, 1876, he was wounded by three enemy bullets, and as Spanish horsemen charged, he delivered the final, fatal shot himself rather than fall into enemy hands.

Now 3,000 strong, the team's members are required to speak at least two languages, take post-graduate courses in epidemiology, and be physically fit. They also receive specialized training in medical assistance during epidemics and pandemics; and HIV prevention methods and treatment for people suffering from HIV/AIDS.

"We're ready and willing to go anywhere we're needed," said Dr. Dayane González, "whether it's Cuba, the United States, wherever." Dr. Gonzalez' colleague and fellow team member Dr. Alexander Martínez echoed this sentiment when asked to which country he preferred to travel. "We're trained to serve and help save lives; wherever that's necessary, I'm willing to go."

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Henry Reeve Team In Action

And what a need there is: several hundred specialists are currently serving alongside local and other international health workers in post-earthquake Pakistan, and in Central America in the wake of Hurricanes Stan and Wilma. While each disaster scenario provides particular challenges, the circumstances in which the Henry Reeve Teams are working to save lives are both tragic and trying.

Guatemala, with over 840 missing and 650 dead following Hurricane Stan, was the first country to accept the Henry Reeve doctors, and 300 began arriving on October 8th, each carrying medicine-filled backpacks to treat acute diarrhea, respiratory illnesses, skin afflictions, malaria, dengue, and other illnesses. By the end of October, the Cuban Henry Reeve volunteers in Guatemala numbered 600.

Among their ranks are surgeons, pediatricians, internists, vector specialists and epidemiologists. These professionals supplement the 235 Cuban doctors on long-term stints in Guatemala, providing rural primary health care services as part of the ongoing Comprehensive Health Program (CHP). The CHP was established between Cuba and several Central American countries following Hurricane Mitch in 1998, as a more sustainable way to address these country's underlying health problems.

Speaking from Guatemala, Dr. Yoandra Muro, head of the Cuban CHP team there said, "the situation is very difficult and our main goal now is to prevent epidemics, which we have done, despite outbreaks." The Cuban doctors have also been going house to house in a prevention campaign where they inquire about general health – particularly fevers and diarrhea - and talk to families about measures such as the need to boil drinking water. The strategy has paid off according to Muro, who believes basics like this have saved many lives, especially among children.

As new Cuban volunteers arrived in Guatemala on October 8, a 7.6 earthquake ripped across northern Pakistan, killing upwards of 73,000 people and seriously injuring another 69,000, according to Pakistan's chief of disaster response. The death toll was likely to rise as relief teams made their way into previously inaccessible areas. As many as 3 million people were made instantly homeless – three times the number of Asia's December tsunami - as the bitter winter approached. Relief officials announced recently that there are not enough winter-weather tents in the world to house these people. Into this situation arrived 200 Cuban doctors - including surgeons, anesthesiologists, internists and trauma specialists--one of the largest groups of foreign doctors to come to Pakistan's aid.

Later planeloads of physicians have dramatically increased the original number, and Cuba's Ambassador to the UN Juan Antonio Fernández, said his country is prepared to send up to 1,000 doctors, depending on requests from local officials. Further supplies pledged by Cuba to the Pakistan relief effort include three field hospitals and hundreds of winterized tents. At this writing, the Cuban team is divided among three hospitals, one in central Islamabad, which is receiving patients airlifted to the capital for care. "We're working very intensely in 12-hour shifts," said one Cuban volunteer at the hospital. "It's astonishing the number of children we're treating, especially for trauma."

International Track Record

Cuban medical teams have been providing international disaster aid for 45 years, beginning in 1960 when the 20th Century's most violent earthquake struck Chile, killing 5,000. Since then, Cuba has provided post-disaster medical and technical assistance to nearly a dozen countries.

Recognition of Cuban expertise in disaster preparedness and response prompted the UN Development Program (UNDP) and Association of Caribbean States to select Havana as headquarters for the new Cross Cultural Network for Disaster Risk Reduction to facilitate regional cooperation in disaster management (see *MEDICC Review* Vol. VII, No. 7, 2005).

Cuban Medical Graduates Oath, 2005*

We Pledge:

To strive always to be worthy representatives of Cuban health professionals, devoting ourselves with true love to our profession, with a profound respect for human life, feeling the pain of others as our own, seeing in each patient and their family our own loved ones, and working tirelessly towards excellence in health services.

We Pledge:

To make every effort, every day to improve ourselves professionally, politically and culturally, so as to offer the highest quality care to our people, based on the principles of medical ethics and revolutionary values that reject commercialization, corruption, and the mistreatment of people wherever we may find ourselves.

We Pledge:

To serve the revolution unconditionally wherever we are needed, with the premise that true medicine is not that which cures, but that which prevents, whether in an isolated community on our island or in any sister country of the world, where we will always be the standard bearers of solidarity and internationalism.

*Excerpt, *Cuban Medical Graduates Oath*, read September 19, 2005 at graduation ceremonies, Havana.

Keeping a universal public health system with such international solidarity underpinnings such as Cuba's well staffed in both quantity and quality is an ongoing challenge. On September 19th, in the same ceremony officially constituting the international disaster and epidemics team, Cuban medical schools graduated 1,905 new doctors from across the country. Increased opportunities to study health science careers have also boosted enrollment.

In the 2005-2006 academic year, 95,595 Cuban students are matriculated in medicine, nursing dentistry, clinical psychology and university-level allied health sciences.

Cuba's Response to Katrina Disaster

By Conner Gorry

As we went to press with this issue, Hurricane Katrina was a catastrophic *fait accompli*, leaving large swaths of the Gulf Coast in ruins and a wake of destruction reminiscent of a war zone. Although the number of lives lost was incalculable at press time, the hurricane's aftermath posed serious public health concerns, with the potential to spark widespread epidemics. Indeed, unsanitary conditions in hospitals and shelters, contaminated drinking water, lack of medicines for the chronically ill and other disaster-related health problems had already manifested just days after the storm struck.

Tetanus, dengue, E. coli, cholera, malaria and other water- and vector-borne diseases are among the health risks following an event of this scale. Psychological trauma, particularly for the more than 250,000 displaced children affected by this disaster, is a longer term and often more difficult public health challenge now facing the U.S. How to effectively and efficiently address such challenges in the atmosphere of despair, loss, violence and confusion that gripped the U.S. South after Katrina, takes a specialist health workforce trained to recognize pathologies and deliver health care in disaster scenarios.



MICHELE FRANK

Physician volunteer: "We're ready to go wherever we are most needed."

On August 30, Cuba - recognized by the UN, Oxfam and other international organizations as a leader in disaster response (International Voices Weathering the Storm: Lessons in Risk Reduction from Cuba) - paired its condolences to the devastated families with an unconditional offer to send over 1,000 Cuban doctors to the disaster zone at its own expense. On September 4 th, the number was raised to 1,586, with another 300 in reserve. The volunteers from across the island were concentrated in Havana preparing to travel if needed, along with scores of recently graduated Latin American Medical School MDs who also volunteered. (Top Story

Where There Were No Doctors: First MDs Graduate from Latin American Medical School). The medical teams, which the Cuban government pledged to have on the ground in the areas worst hit, have been named the Henry Reeve Brigade, in honor of the U.S. hero who joined the fight for Cuban independence from Spain.

Specialists in family medicine, cardiology, pediatrics, epidemiology and other fields, and trained in disaster response and the health risks engendered by such events, the health professionals were outfitted with two backpacks each, filled with 24 kilograms (52.8 pounds) of essential medicines. Resources carefully selected to provide maximum coverage

Table 1: Examples of Cuban International Disaster Relief Missions (1960-2000)

1960	Chile	Earthquake - 5,000 dead	Medical team
1970	Peru	Earthquake - 60,000 dead	Medical team, 6 rural hospitals, 106,000 blood donations
1972	Nicaragua	Earthquake - 5,000 dead	Medical team, food, medicines
1974	Honduras	Hurricane Fifi - 2,000 dead	Medical team
1990	Soviet Union	Chernobyl disaster program	17,733 children treated in Cuba through October, 2004
1990s	Brazil	Radiation poisoning	52 patients treated in Cuba
1998	Central America	Hurricane Mitch - 30,000 dead and disappeared	Medical teams
1998	Haiti	Hurricane Georges	Medical team
1999	Venezuela	Torrential rains, mudslides - 9,000 dead	Medical team
2000	El Salvador	Dengue epidemic - 10,000 cases over 16 weeks	Medical team, advisors and equipment

In the Eye of the Storm: Disaster Management Lessons from Cuba



MICHELE FRANK

Waiting for Washington: Cuban medical team assembled in Havana.

for such a disaster, the backpacks contained re-hydration therapies, insulin, hypertension medications, treatments for systemic and topical infections, and minor surgical instruments, among others. With their packs on their backs and an average of 10 years clinical experience, these physicians were prepared to provide an experienced, mobile team able to move where health care was most needed. This flexibility would be enhanced by diagnostic kits carried by the doctors working alone or in pairs, for on-site patient evaluation in either English or Spanish.

The team as a whole already has considerable international experience, collectively having worked in 43 countries. They committed to stay in the disaster zone as long as necessary, as have many Cuban emergency medical teams before them (see **Table 1**).

Over 50 countries offered aid to the U.S., many from the comparatively resource-scarce Global South, including Venezuela, Sri Lanka, South Korea and Guatemala. U.S. Secretary of State Condoleeza Rice stated that no offer from foreign governments would be turned down, although Cuba was still awaiting an official response when this issue of *MEDICC Review* went to print in early September. Meanwhile, the 1,586 Cuban medical professionals remained on-call in Havana, ready

to fly to the U.S. at a moment's notice. The following are some vital statistics of the Cuban emergency medical team prepared to carry 36 tons of medical aid and their own clinical skills to victims of Hurricane Katrina:

- 857 are women; 729 are men.
- 699 have previously worked overseas.
- Average age is 32 years old.
- Average clinical experience is 10 years.
- 1,097 are specialists in family medicine.
- 72 physicians have two or more specializations.
- All have disaster-preparedness training.

Most significantly perhaps, they were prepared to go to the most isolated, hardest hit and poorest regions—clearly an important disposition, given the social composition of the victims left behind when the hurricane struck. Analysis of census data by the Associated Press of Katrina victims in the three dozen hardest-hit communities in Mississippi, Alabama and Louisiana revealed:

- Some 60% were minorities.
- 2 out of 10 households had no car – double the national average.
- Almost 25% live under the poverty line – about double the national average.
- 1 of 100 homes did not have adequate plumbing – double the national average [1].

President Fidel Castro stressed that the Cuban government and medical team assembled were “waiting patiently” for a response from Washington, but noted critical hours had already passed during which the doctors could already have been on the ground.

To learn more about Cuba’s disaster preparedness strategy, see *MEDICC Review*’s issue dedicated to the theme “Disaster Management in Cuba: Reducing the Risks”.

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From *MEDICC Review*, Vol. VII, No. 8, August/September 2005.

UN Proposes Havana-Based Disaster Prevention Network

By Conner Gorry

Cuba’s hurricane season - predicted to be worse even than last year’s devastating storms - kicked off June 1 with heavy downpours and a three-day workshop designed to more effectively prepare for, confront, and recover from natural disasters. Jointly convened by the Association of Caribbean States, the Cuban Civil Defense, the United Nations Development Program (UNDP) and the Office for the Coordination of Humanitarian Affairs (OCHA), Cuba, with its proven and hopefully replicable, natural disaster response program, was a logical location for the meeting.

Held from June 1st through 3rd, the purpose of the “Seminar Workshop for National Authorities: Risk Management Policies, Systems and Experiences in the Caribbean,” was to define a regional plan of action within the larger goals for international disaster preparedness and risk reduction. Such a plan is long overdue.

Following the deadly hurricanes that ripped through the Caribbean in late 2004 and the December 26 tsunami in Asia, experts from all over the world convened in Japan in January 2005 to draft the Hyogo Framework of Action (HFA; <http://www.unisdr.org/wcdr/intergover/official-doc/L-docs/Hyogo>-



This 2004 hurricane snapped palm trees in Cuba like toothpicks.

JOSE RUBIERA

framework-for-action-english.pdf). The Framework calls for worldwide strategies to minimize risk and loss due to natural disasters, which is critical as these become both more frequent and more powerful.

According to UN Under Secretary General for Humanitarian Affairs, Jan Egeland, Cuba is a leader in the field, with one of the world's best systems for protecting its citizens and a demonstrated ability to minimize and manage the impact of natural disasters. The meeting highlighted the opportunity for Cuba to transfer its best practices in disaster management to other countries of the Caribbean. Specific areas in which Cuba could help include organizing workshops, sending disaster specialists to countries in need and knowledge sharing about early warning systems, elaborated Egeland.

Natural Disaster Statistics

- More than 1.5 million people died from natural disasters in the last 20 years.
- In 2003, worldwide economic loss due to natural disasters totaled US\$60 billion.
- In 2004, the Caribbean alone lost US\$7 billion as a result of natural disasters.
- In September 2004, 3,006 Haitians died during Tropical Storm Jeanne.

Source: United Nations

During the proceedings, a plan was outlined to develop an integrated regional network allowing nations to augment their capacity to confront and mitigate the effects of natural disasters. Proposed by the UNDP and agreed upon by consensus, the Havana-based network - known as the Cross Cultural Network for Disaster Risk Reduction - would have the support of various UN agencies, underscoring the importance of a multilateral, interdisciplinary model to resolve inequalities that exacerbate losses. Improving the social and economic conditions of the poor, who are the most adversely effected by natural disasters, is integral to establishing sustainable systems in the Caribbean.

The final declaration, "The Havana Consensus on Disaster Risk Reduction in the Greater Caribbean," calls on

governments to improve cooperation and exchanges with regional and international actors, primarily by strengthening alliances and augmenting information flow. According to the document, "the key factor to reduce[ing] vulnerability and enhanc[ing] disaster preparedness and response is the level of national political commitment and allocation of national resources."

Unfortunately, some countries are better equipped to do so than others. In his opening remarks, Undersecretary Egeland singled out Haiti as particularly vulnerable, even while myriad factors render the country unable to manage and reduce that vulnerability. The declaration went further, calling on "the international community to support activities geared toward strengthening the resilience and coping mechanisms of vulnerable communities through the development of effective people-centered early warning systems, [and] integrated public health measures."

"The key factor to reduce vulnerability and enhance disaster preparedness and response is the level of national political commitment and allocation of national resources."

The Havana Consensus, June 2005

Specific measures designed to reduce risk and improve prevention and recovery responses expressed in The Havana Consensus include:

- Implement the earthquake and hurricane building codes as defined by the Association of Caribbean States;
- Install Early Warning Systems in the most vulnerable areas;
- Create risk-management centers;
- Promote public education and awareness as regards risk and natural disasters;
- Insert risk reduction measures into the recovery phase;
- Launch sustainable socio-economic programs that aim to reduce future risk;
- Strengthen disaster response mechanisms so that simultaneous natural events can be managed;
- Develop a regional network of recovery specialists who can respond to disasters and aid in integrating recovery and reduction efforts across nations, international agencies and donor organizations;
- Integrate risk reduction and climate change considerations into development strategies; and
- Focus on the UN Millennium Development Goals relating specifically to disaster response and recovery

Undoubtedly, the progress of these actions will be scrutinized, evaluated and analysed during the VII International Congress on Disaster Reduction, to be held in Havana in June 2006.

Cuba Marks 15 Years Treating Chernobyl Victims

By Conner Gorry

When disaster strikes, the world is riveted. Who can forget Mt. St Helen's spewing ash over Washington State or the thousands of corpses stacked like logs after the chemical plant catastrophe in Bhopal, India?

Unfortunately, once the immediate crisis is contained and the headlines shift to the next big story, world attention fades. This is precisely what happened after the nuclear accident in Chernobyl, now largely forgotten in many places. But not in Cuba, where over 18,000 children and young adults have been treated for a panoply of illnesses over the past 15 years.

Ukrainian Health Minister Nykola Efremovich Polischuk was in Cuba recently to commemorate the anniversary. In remarks delivered at a ceremony in Havana's Teatro Nacional, he pointed out that the island nation is one of the few countries to have extended aid to Chernobyl's victims. The ongoing and sustainable medical nature of this aid is what distinguishes the Cuban program and has led to broadened bilateral relations over the past 15 years.

The Explosion

On April 26, 1986, the central reactor at the nuclear plant in Chernobyl, Ukraine exploded and caught fire, killing dozens and inciting panic as plumes of radioactive smoke spread outward; the toxic fallout eventually killed thousands. Children were among the first to be evacuated in a massive exodus that saw 150,000 people abandoning their homes and workplaces; everything for a 30-km radius from the reactor was left behind



GRANMA ARCHIVE

Victims of the Chernobyl explosion first arrived for treatment in Cuba in 1990.

in the evacuation, creating an instant ghost town.

Aid was swiftly dispatched in the disaster's aftermath and many orphaned children found safety with adoptive parents in Spain, Italy, France and Germany; recreational programs and group vacations for affected children were also offered by various countries including Italy, Israel and Spain. But after a few years, the disastrous event in Chernobyl was eclipsed by other catastrophes, even though thousands were still - or becoming - sick.

Cuba Offers Medical Treatment

Mounting evidence about the nature and scope of the radioactive fallout led the Cuban government to establish its "Chernobyl Children" program at the Tarará Pediatric Hospital in 1990. The idea was to provide free, comprehensive medical care to the most severely affected children aged 5-15

years from the region. From the first group of 139 severely ill children who arrived in Cuba on March 29, 1990 to the nearly 800 patients - both children and adults - treated in 2004, that idea has blossomed into a concrete reality helping people of many nations get well in the wake of disasters.

The majority of the first young patients arriving from Chernobyl suffered from gastrointestinal, immunological and hematological illnesses. Endocrine problems, particularly thyroid cancer and hyperplasia, were the most common. In the earliest stages of the Tarará project, Cuban doctors and specialists treated 289 patients with leukemia and performed six bone marrow and two kidney transplants. Ukrainian officials estimate the Cuban government has spent some US\$300 million to treat these thousands of children – far and away more than any other country has offered the victims of Chernobyl.



GRANMA ARCHIVE

In an exclusive interview with **MEDICC Review**, Dr. Julio Medina, Director of the Tarará Pediatric Hospital said “the first cases we saw had thyroid-related illnesses – these were the first effects of the accident. Today, we consider post-traumatic stress disorder the second effect of the accident.” Genetic malformations - especially in the kidneys - resulting from radioactive exposure, and skin disorders like vitiligo, are other long-term effects being treated at Tarará.

Like all patients in the Cuban public health system, the Chernobyl kids are treated using an integrative approach that includes a wide array of specialists - from pediatricians and oncologists, to psychologists and dentists. They also benefit from the latest advances in Cuban biotechnology, receiving hepatitis B and other vaccinations and recombinant interferon therapy.

Dr. Medina added that though officials “peg the number of victims at 100,000, it is very difficult to say...because the area is still contaminated.” Since much of that contamination is with Cesium 137, (with a half life of between 20 and 50 years), coupled with the fact that some evacuees are repopulating Chernobyl after 19 years away from home, it’s likely the doctors at Tarará will continue to treat a fair number of comely children, their flaxen hair gone due to alopecia.

From Disaster to Development

Cooperation between the governments of Cuba and the Ukraine during the 15 years of the Chernobyl Children’s program has fostered a unique relationship between the two public health systems. In 1998, the governments signed an accord that brought the integrative Tarará treatment model to the Ukraine, with a Cuban medical team including an endocrinologist, pediatrician, hematologist and psychologist, arriving in the Crimea.

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The working partnership on the Chernobyl project could serve as a model for other countries. In 2003, the Ukrainian Parliament took the Chernobyl Children project under consideration and voted to make it an official government program, earmarking funds for its future development.

As for the Tarará facility, it has branched out from its roots as a hospital for the victims of Chernobyl and been



GRANMA ARCHIVE

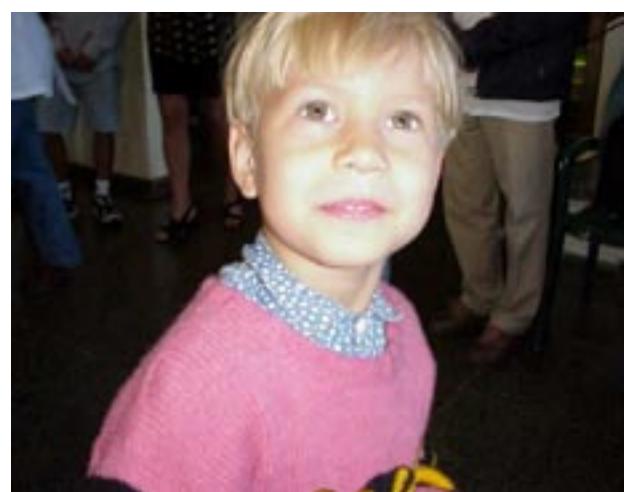
Post-Chernobyl

- 60% of the effected population has fears about the food supply and suffers from insomnia, irritability and a feeling of helplessness
- 30% has lost any interest in life

Data from Center for Democratic Initiatives, an NGO interviewing victims ten years after the explosion.

transformed into an international post-disaster medical center, treating children from all over the world. Earthquake victims from Armenia, Brazilian children suffering from Cesium 137 poisoning and traumatized families evacuated fromMontserrat when the volcano on that island rendered it almost entirely uninhabitable, all have benefited from the expertise and solidarity of the Tarará Pediatric Hospital.

From *MEDICC Review*, Vol. VII, No. 5, May 2005.



GAIL A. REED

Nineteen years later, Cuba continues to treat children from Chernobyl.

Cuban Doctors Quietly Saving Lives in Haiti

The day after tropical storm Jeanne left over 2,200 dead and missing, the Cuban medical team was on the job. MEDICC Review spoke to Cuban ambassador in Port of Prince, Rolando Gómez González, who said they are in constant contact with the some 400 strong medical team who were unharmed in the disaster. Although the homes of the Cuban doctors in Gonaïves were flooded along with 90% of the people in Haiti's fourth largest city, they had already started setting up emergency care stations. The city's hospital La Providence was under water.

In a subsequent conversation, MEDICC Review learned from Cuban medical team head, Dr Juan Carlos Chávez, that they treated 248 sick or injured people in the first couple of days in Gonaïves. The demand was so overwhelming the Cubans had to seek more space where they could operate and care for people with more serious problems. Chávez said the day after, they attended 742 people and the day after that almost a thousand others.

According to Dr Chávez, the Cuban medical professionals are working hand in hand with the Panamerican Health Organization, the International Red Cross and local authorities. He explained further that a group of 45 doctors who were on vacation in Cuba were on their way back to Haiti with medicine and other health supplies.



Cuban doctors, nurses, lab technicians and specialists are located in all nine departments of Haiti. Pediatricians, gynecologists, surgeons and other specialists work in the provincial hospitals, while family doctors live and treat patients in remote and difficult areas, referring cases to the nearest hospital which is generally very far away.

Before Cuban health solidarity began in 1998, most rural Haitians had never been to a doctor in their life. At that time, there were only 2,000 Haitian doctors for a population of over 8 million. The vast majority of Haitian doctors have private practices in Port of Prince.

Cuba's Comprehensive Health Care Program plan offered to Haiti free of charge calls for hundreds of Cuban doctors to work in distant and difficult areas where local doctors don't want to. The Cubans not only treat the sick and ailing, they work with local authorities and community organizations to prevent



disease. At the same time, young people from these poor regions, towns and neighborhoods study medicine in Cuba to return home and replace Cuban medical personnel. Some 500 young Haitians are currently studying medicine in Cuba.

To date, Cuban doctors have logged five million office consultations and saved 86,000 lives, according to Dr Chávez. Furthermore, where Cuban doctors operate, they have reduced the infant mortality rate from 5.23 for every thousand live births to 2.59 and for children under five from 159 to 39. The maternity mortality rate has been cut from 457 for every 100,000 births to 285. All in all, the Cuban medical team serves some 75% of the Haitian population.

The impetus for Cuba's offer to help Haiti and other countries in the region was another pair of notorious hurricanes: In September 1998, Hurricane Georges ripped through central and southeast Haiti, taking more than 200 lives and destroying crops, infrastructure and hundreds of homes. A short time later, Hurricane Mitch wreaked havoc in Central America where countries like Honduras were ravaged. A rapid response was forthcoming from President Fidel Castro who offered a Comprehensive Health Care Program (CHP) for the victims of these catastrophes, eventually extending medical care to ever larger parts of the population. To read about this program in detail and the countries now benefiting from it, see International Cooperation Report: Making South-South Collaboration Count.

The impact of the Cuban medical team in Haiti goes beyond what statistics can convey, since they are on-hand to volunteer help whenever disaster might strike. In late May, for example, when torrential rains flooded towns like Jacmel and Marigot and others on the Haitian-Dominican border, over 3,000 thousand people perished or were missing. The Cuban doctors were among the first on the scene treating the sick and injured. In another extraordinary display of solidarity during the severe political violence at the beginning of the year, the Cuban medical team served an overwhelming number of wounded, free of charge. As violence reached a peak February 29 th, the day President Jean Bertrand Aristide left the country, Cuban doctors treated over 400 patients in Port of Prince.

Cuban Doctors Give 'Help with Dignity' in Gonaives

by Anna Kovac

Despite rising violence and grave public health threats in the wake of Tropical Storm Jeanne, 64 Cuban doctors, nurses and other health professionals say they will continue to provide medical care for residents in the devastated town of Gonaives, Haiti. They are among over 400 Cuban medical workers scattered throughout the country, mostly family physicians on two-year rotations in a bilateral program that commits Cuba to long-term medical assistance to Haiti's population.

The Cuban ambassador in Port of Prince, Rolando González Gómez, told Medicc Review since the storm almost completely flooded Gonaives, the Cuban medical team there has attended to over 45,000 patients, free of charge. He said they have given over 3,620 vaccinations to children and pregnant women who are the most vulnerable to possible epidemics.

The Cuban medical team is not alone, but they appear to be carrying the heaviest weight. Although a flurry of international aid and personnel arrived directly after Tropical Storm Jeanne ravaged Haiti, the aftermath and long recuperation period sees much fewer aid workers. Oxfam, Catholic Relief Services, and the French Red Cross have temporarily pulled out of Gonaives because of growing violence there. Many aid workers said they didn't want to take the risk.

The Norwegian Red Cross has set up a field hospital where two Norwegian doctors and three Canadian doctors are



Two of over 45,000 Haitian patients attended by Cuban medical staff in the wake of Tropical Storm Jeanne



Despite challenges, Cuban doctors and medical specialists continue their work in Haiti

working side by side with 25 Cuban medical personnel. In the poor district of Raboteau there are 15 Cubans taking care of the sick and injured, whereas the rest of the Cuban team is in several areas where the homeless are concentrated.

The Cuban assistance goes beyond direct medical care, to shore up the Haitian health infrastructure and carry out general disease prevention efforts. After the storm, Cuban electromedicine engineers and technicians went to work repairing medical equipment and machinery at health facilities. And Cuban health professionals continue health education campaigns begun before the tragedy, especially important now, as the severe flooding has worsened already poor hygiene conditions. A Haitian government official who asked not to be named praised the Cuban teams: "The Cubans are giving real help with dignity and respect for the Haitian people," she said, adding "help like this is help that lasts."

After the arrival of another group of students last month, there are now some 600 young Haitians studying medicine on scholarship in Cuba, and the hope is that they will return home to take the place of the Cuban doctors in Haiti now. The first 128 are expected to graduate next summer.

From *MEDICC Review*, Vol VI, No 1, Oct 2004.

Flash! As We Go To Press

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A medical team of 24 Cuban health professionals including family doctors and technicians, arrived in Colombo recently carrying medicines and know how to tsunami-struck Sri Lanka, the press in that country reported. Another Cuban medical team landed in Indonesia to help with disaster-related health issues there; Cuba is recognized worldwide as a leader in risk reduction and disaster relief.

Cuban Ambassador to Sri Lanka Enna Viant, her daughter and Sri Lankan officials greet the Cuban medical team as they land in Colombo with donations of medicine and expertise.





RONDA NOCTURNA, RAÚL MARTÍNEZ, 1979

Humanitarian
Agencies
Assess
the Cuban
Strategy

World Disasters Report 2005

Chapter Two: Run, Tell Your Neighbour!

Hurricane Warning in the Caribbean

Reprinted by permission of the International Federation of Red Cross & Red Crescent Societies. For full report, go to <http://www.ifrc.org/publicat/wdr2005/index.asp>.

From August to November 2004, nine hurricanes raked the Caribbean. At least 2,000 people were killed. Hundreds of thousands were left homeless. Economic losses totalled over US\$ 60 billion. Haiti suffered by far the greatest human toll. Yet Cuba, Jamaica and the Dominican Republic, while hit very hard, suffered relatively low death tolls. Why? Much of the difference comes down to knowledge and warning. The chapter reveals that local organization and awareness are as important as timely, accurate hi-tech warnings.

During 2004, Cuba proved how effective it is in protecting human life from windstorms. When Hurricane Charley hit in August, 70,000 houses were severely damaged and four people died. When Hurricane Ivan swept past a month later, over 2 million people were evacuated but no-one lost their lives.

Cuba has a world-class meteorological institute, with 15 provincial offices. They share data with US scientists and project storm tracks. Around 72 hours before a storm's predicted landfall, national media issue alerts while civil protection committees check evacuation plans and shelters. Hurricane awareness is taught in schools and there are practice drills for the public before each hurricane season. Most adults are reasonably well educated, so they understand what officials and forecasters tell them.

With the storm 48 hours away, authorities target warnings at high risk areas. Local officials check that vulnerable people can evacuate. Finally, with 12 hours to go, everyone who needs to be evacuated should be in shelters, homes must be secured, windows boarded up and neighbourhoods cleared of loose debris. These are the legal requirements in Cuba, and they were enforced during Charley and Ivan. According to Audrey Mullings, a Jamaican Red Cross volunteer: "The best thing to learn from Cuba is that you don't need a lot of money to make things work."

In Jamaica, the prime minister went on national radio and TV the day before Ivan hit to remind people that the storm had just killed 39 in Grenada. Jamaica's meteorology office benefits from US forecasts which predicted where the storm would make landfall to within 50 km. Volunteers from the Jamaican Red Cross and Parish disaster committees issued street warnings, called residents by cell phone, checked shelters were ready, watched rivers for signs of flooding, and borrowed private vehicles to evacuate the blind and disabled.

Since Hurricane Gilbert in 1988, there have been great improvements. The country's disaster preparedness office has mapped flood and landslide hazards, developed community-based warning systems and maintained a year-round public awareness programme. June is 'disaster preparedness month', during which awareness days, practice drills and displays are

organized. These factors helped keep the death toll during Ivan down to 17.

Dominican Republic shares Hispaniola island with its neighbour Haiti. When Tropical Storm Jeanne dumped record rains during mid-September, rivers overflowed – 23 Dominicans died, 40,000 were rescued and 2 million were affected. The day before, the meteorological institute issued a warning and maps showing the storm's likely path. News quickly reached even the smallest settlements. Radio stations relayed the message. Some received cell phone calls from relatives in Puerto Rico, who'd seen the storm approaching on TV. Others got the news from local mayors riding into rural areas by horseback or motorcycle.

However, people focused on the wind rather than flooding. Many decided not to evacuate, because they lived in wind-safe houses. Some awoke to find their houses flooding. One family of 11 spent the night up a tree, until they were rescued with a home-made raft.

Over the border in Haiti, Jeanne's rains inundated the coastal town of Gonaives. Floodwaters rose two metres in 30 minutes, killing 1,800 people and leaving 800 missing. Why did the same storm carry away 100 times more Haitians than Dominicans? Jeanne's rains lashed deforested mountain slopes, causing deadly landslides. The sudden departure of President Aristide seven months earlier had led to great instability and rioting. Early warning systems require local government to prepare people, convey warnings, monitor events and help evacuate. The system existed on paper but didn't function in practice.

Haiti's meteorological centre lacked resources. The country's emergency operations centre wasn't working. Warnings never made it to Gonaives. When the storm struck, most residents thought the mountains would shield them. They had no idea what was about to hit them. Over the last 60 years, hurricanes have killed 17,000 Haitians. Clearly Haiti needs help to reinforce its preparedness and warning systems.

Effective hurricane warning requires both technology and people-to-people communication. Secrets of success in the Caribbean include:

1. Hurricane forecasting: the US shares its forecasting tools with the region – providing accurate forecasts 3-5 days in advance. Cuba supplements these with its own radar and computer models. Challenges remain – particularly in forecasting hurricane intensity.
2. National warning: Authorities should convey initial 3-5 day alerts, followed by specific warnings to trigger preventative action 24 hours before the hurricane's expected landfall.
3. Local government: provides the vital link between national level warnings and communities at risk. Lo-

In the Eye of the Storm: Disaster Management Lessons from Cuba

cal officials must have resources available for warning and evacuation. Warnings should include localized detail on possible flooding and landslides – often more deadly than high winds. If local government is weak, the warning chain breaks.

4. Civil society participation: not even in Cuba can the government do everything. Civil society – including local NGOs, Red Cross, church and youth groups – must pitch in. This involves trusting official warnings.
5. Popular understanding and action: vital to Cuba's success in hurricane preparedness. Public awareness campaigns – through schools and practice drills – are essential.

The technology of early warning is the easy part – the real challenge lies in making it people-centred:

Make warnings intelligible: People at risk need to know what to do when they get a hurricane warning. Increasing basic literacy will help.

Make warnings specific: National warnings must be supplemented with local warnings of flooding and landslides.

Encourage local ownership: early warning systems are more likely to succeed if people at risk participate in designing and maintaining them.

Supplement local knowledge: personal experience and oral history are important – but not always reliable. Experience must be discussed critically and supplemented.

Spread awareness through schools: children who are aware of hurricane hazards spread awareness through their families and neighbourhoods, and become more receptive as adults.

Link warning to risk reduction: Investment to tackle root causes of vulnerability, such as uncontrolled urbanization and deforestation, is urgently needed.

Principal contributors to this chapter were Ben Wisner, Victor Ruiz, Allan Lavell and Lourdes Meyreles. Ben Wisner, is an independent researcher affiliated with the Development Studies Institute at the London School of Economics, the Benfield Hazard Research Centre (University College London) and the Disaster Prevention Research Institute at Kyoto University, Japan. Victor Ruiz is an independent consultant and

Jamaica's community disaster response teams

"I was glad that I could warn them before the storm", says Patricia Greenleaf simply. Patricia is a member of the Jamaican Red Cross's community disaster response team (CDRT) for Cedar Valley. Along with dozens of other volunteers, she went from street to street issuing warnings by megaphone, 48 hours before hurricane Ivan hit. They encouraged marginalized groups and people with special needs – including the elderly and mentally impaired – to hang a white flag or piece of material outside their home to signal that they needed help when the time came for evacuation.

Hurricane Ivan, the most powerful storm the Caribbean had seen for 50 years, had just pounded Grenada with 250 km/h winds, killing 39 people and damaging or destroying 90 per cent of the island's buildings. The Jamaica Red Cross put all its branches and 12,000 volunteers on high alert. They opened 1,000 community shelters across the country.

When 'Ivan the Terrible' struck Jamaica on 11 September 2004, Patricia's team was ready. They had prepared a local map detailing potential risks and resources. They knew where Cedar Valley's most vulnerable people lived. They had drawn up a community response plan, with the local Red Cross branch. They were already trained to carry out light search and rescue, emergency first aid and rapid assessment. And they were equipped with medical kits, megaphones, shovels, rope, waterproof boots and helmets. Despite widespread damage to property, no one in Cedar Valley died during the storm.

sociologist based in the Dominican Republic. Allan Lavell, is the coordinator of the risk and disaster research programme at the Secretariat General of the Latin American Social Science Faculty (FLACSO) and the Latin American Network for the Social Study of Disaster Prevention. Lourdes Meyreles is a sociologist who coordinates FLACSO's Dominican Republic programme. Ruth Chisholm, the Jamaica Red Cross's director of emergency services and communication, contributed this Box.

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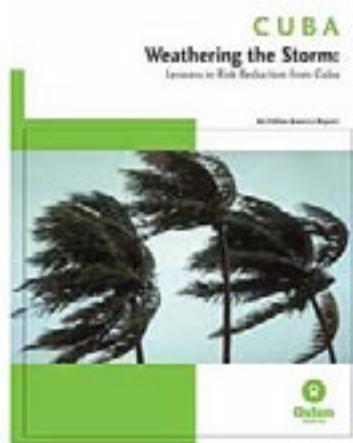
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For US citizens and residents, certain restrictions on travel to Cuba may apply. Consult www.marazul.com.

Weathering the Storm: Lessons in Risk Reduction from Cuba

Perhaps the most comprehensive English-language study ever published on the topic, this 2004 Oxfam America report explains how Cuba so consistently, successfully and equitably reduces risk and mitigates disaster damage. The authors Martha Thompson and Izaskun Gaviria, have an accessible and readable writing style that not only analyzes the causes and consequences of natural disasters and how Cuba is able to safeguard lives during these extreme events, but also explores the possibility of duplicating this success. Indeed, the chapter dedicated to “Replicating the Cuban Experience,” serves as a narrative blueprint for other countries looking to improve their risk management of natural disasters mostly, but also industrial accidents like chemical spills and large-scale transportation accidents.



According to the authors. The Cuban example, “raises the distinct possibility that life-line structures (concrete, practical measures to save lives) might ultimately depend more on the intangibles of relationship, training, and education than on high cost procedures and resources, a possibility that holds great hope for other poor countries facing high risks of disaster.” Towards this end, the report outlines 12 factors called the “golden dozen” that Cuba manages successfully in its risk management program:

- social cohesion and solidarity (self-help and citizen-based social protection at the neighborhood level)
- trust between authorities and civil society

- political commitment to risk reduction
- good coordination, information-sharing, and cooperation among institutions involved in risk reduction
- attention to the most vulnerable population
- attention to lifeline structures (concrete procedures to save lives, evacuation plans, and so on)
- investment in human development
- an effective risk communication system and institutionalized historical memory of disasters, laws, regulations, and directives to support all of the above
- investments in economic development that explicitly take potential consequences for risk reduction or increase into account
- investment in social capital
- investment in institutional capital (e.g. capable, accountable, and transparent government institutions for mitigating disasters)

Chockfull of statistics, interviews with risk managers, designers of emergency action plans and members of the civil defense, plus lively boxed text with personal anecdotes from regular citizens, *Weathering the Storm: Lessons in Risk Reduction from Cuba* is an insightful investigation that will prove increasingly important as weather events become more drastic worldwide. This is especially true for those of the global south, who are typically at the highest risk when disaster strikes.

The full report is available in English and Spanish at www.oxfamamerica.org/cuba

From *MEDICC Review*, Vol VI, No 3, December 2004.

Links

World Disasters Report 2005

International Federation of Red Cross & Red Crescent Societies. <http://www.ifrc.org/publicat/wdr2005/index.asp>

Weathering the Storm:

Lessons in Risk Reduction from Cuba

OXFAM America Report. www.oxfamamerica.org/cuba

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VII International Conference on Disasters

Disasters 2006 – “For a Safer World”

www.loseventos.cu/desastres2006

Havana Consensus on Disaster Risk Reduction in the Greater Caribbean

<http://www.onu.org.cu/uunn/noticias/consensus.html>

Hyogo Framework of Action 2005-2015

“Building the Resilience of Nations & Communities to Disasters”

Adopted at 2nd World Conference on Disaster Reduction

<http://www.unisdr.org/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>

CLAMED

Centro Latinoamericano de Medicina de Desastres

Latin American Center for Disaster Medicine

www.clamed.sld.cu

International Strategy for Disaster Reduction

Latin America & the Caribbean

http://www.eird.org/eng/revista/n11_2005/art10.htm