

Hurricanes: lessons from Charley and the gang

Background and epidemiology: Immediately after Florida experienced 4 major hurricanes (Charley, Frances, Ivan and Jeanne) in quick succession during August and September of 2004, the Florida Department of Health deployed the Behavioral Risk Factor Surveillance System to assess the effect of the hurricanes on residents' health.¹ In October nearly 2000 respondents answered 30 questions on topics such as their level of preparedness, physical injuries experienced, use of portable generators and work absences.¹

This telephone survey found that before the hurricanes, nearly half of Floridians (48.7%) had no evacuation plan. Rather surprisingly, incidences of health consequences (physical injuries, lost workdays and loss of access to necessary medical treatment, including equipment and supplies) among people living in Florida counties lying outside the direct path of any of the 4 hurricanes were similar to those of residents of counties that had

been directly affected (Table 1).¹ These data imply that people living in the predicted path of a hurricane and those living in adjacent areas are about equally vulnerable. Orders for evacuation should therefore consider and possibly extend to nearby areas, especially when particular hazards, such as a potential for flooding, exist.

Portable generators were used after electrical power outages in about 1 in 6 homes, resulting in at least 173 cases of carbon monoxide (CO) poisoning (largely caused by running a generator indoors).¹ This result particularly resonates with Canadian health officials, who in 1998 witnessed some 2 dozen cases of CO poisoning in central Canada in the aftermath of the notorious ice storm.²

Preparedness and prevention:

Emergency preparedness requires that both the content and process of disaster planning be addressed. Several Ontario jurisdictions have adopted the incident management system (IMS) protocol (see also www.fema.gov/nims). IMS calls for the appointment of an incident commander and officers to cover the essential duties of administration and financial control, information, liaison, logistics, operations, planning and safety. Local physicians (both public health and clinical) and key stakeholders contribute greatly to disaster planning and response.

Community members with chronic conditions such as diabetes, cardiovascular disease and asthma should be warned of storms well in advance. Because they have special needs such as access to medications, therapy or specialized equipment (e.g., dialysis or oxygen), they need to have contingency plans in place to ensure access to vital care.

Portable generators are becoming more widely available for private use during power outages. The public needs to be

educated about their safe operation and the hazards of CO.

Not all communities face the same hazards (Box 1),³ but all share a random potential for an idiosyncratic environmental disaster. Planning is most effective

Table 1: Percentage of Florida respondents¹ reporting consequences from hurricanes Charley, Frances, Ivan or Jeanne, 2004

Consequence	In direct path	Not directly in path
Missed work or lost a job	53	56
Experienced physical injury	5	4
Used electrical generator inside residence	2	9
Biggest concern		
Quality of drinking water	52	50
Sewage disposal	15	11
Solid waste problems	10	9
Food protection, storage	11	13
Mosquito control	5	1

when based on the disaster scenarios most likely to occur locally. To ascertain this, local hazards such as flood zones and other potential or actual chemical, biological, physical or environmental circumstances must be inventoried. A transparent, participatory community planning session can then be arranged that takes into account the individuals and institutions likely to be involved.

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References

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2. Hartling L, Pickett W, Brison RJ. The injury experience observed in two emergency departments in Kingston, Ontario during "ice storm '98." *Can J Public Health* 1999;90(2):95-8.
3. Major hurricanes that affected Canada (map). Available: <http://atlas.gc.ca/site/english/maps/environment/naturalhazards/majorhurricanes> (accessed 2005 Aug 16).

Box 1: Hurricanes in Canada

Hurricanes are tropical storms in which winds of 120 km/h or more revolve around a centre of low atmospheric pressure called the eye.

They are unusual in Canada, occurring occasionally in the east (from the eastern Lake Superior area to the Atlantic provinces) and much more rarely along the west coast.³

Hurricanes form over warm ocean waters, generally between latitudes 5° and 25° north or south of the equator.

Most of those affecting North America originate off the west coast of Africa. They tend to travel northwest and then northeast, dissipating their energy over cooler waters and frictional land. Thus, hurricanes rarely strike Canada in full fury.