

Heat Waves and Public Health Emergency

Introduction

Heat waves have produced large scale mortality and morbidity in other parts of the world. They can have especially devastating effects in locations with relatively mild climates. Such was the case in France in 2003 where a heat wave claimed the lives of thousands of individuals. The country was effected so highly because normal temperature ranges do not generally reach the levels seen during such an event. Heat waves are also unique in the way that they effect principally vulnerable populations. The elderly, young, and individuals with mental impairment are most at risk for mortality and morbidity.

Potential for a Heat Wave in Newfoundland and Labrador

In Newfoundland and Labrador temperatures in excess of 20°C are relatively uncommon with an average summer temperature of 18°C. Because of the mild temperature, interior climate control is not commonly used or present in many homes. This means that if a heat wave was to occur in Newfoundland and Labrador the potential repercussions could be similar to those experienced in France in 2003.

Heat waves occur when a high pressure system positions itself over a geographic area. The frequency of such events is increasing because of climate change which strengthens high pressure systems, increasing the length of hot weather. In Newfoundland and Labrador weather patterns are largely dictated by the jet stream, arctic weather, and the proximity to the ocean. These powerful currents produce continuously changing weather patterns and a mild general climate in the province; however, as demonstrated by Europe in 2003 and the Russian heat wave in 2010, large high pressure systems can position strongly enough to force the jet stream up or down. In this way Newfoundland and Labrador, even with its strong weather patterns, is at risk for this type of event.

Risks from Heat Waves

There are numerous potential health problems associated with heat waves. Heat stroke, dehydration, and exhaustion can cause morbidity in individuals of all ages. Though they are very treatable these conditions can be serious if not addressed in a timely manner.

While all people may be affected, the greatest risk from heat waves is disproportionately on vulnerable populations. In France in 2003 elderly individuals were the most impacted, comprising a large majority of deaths. Surprisingly, mortality was not highest in the frailest individuals but instead elderly individuals who were capable of living on their own. This group did not have the skills or knowledge to cope with the heat and did not have the readily available resources to help make adaptations. They may also be isolated without a lot of access to family or social contacts. Because the principal interventions in a heat wave surround encouraging behavioural adaption, vulnerability in the case of heat waves is identified by a reduced social network.

Children and those with mental or chronic illness are also more vulnerable during a heat wave. Children are more prone to heat exhaustion and dehydration while people with chronic disease or mental illness may see their conditions exacerbated by the heat. Identifying these vulnerable populations is an important step in choosing the most appropriate interventions.

Interventions

Most interventions for heat waves involve messaging around practices to avoid heat related morbidity. This can include consuming lots of water, avoiding caffeine and alcohol, staying indoors during the day, reducing strenuous activity, wearing lightweight clothing, eating smaller meals more often, closing curtains during the day to reduce indoor temperatures, and ventilating houses at night.

Messages should be geared toward risk groups. Accordingly, messages should target adult children of at-risk elderly individuals, encouraging them to check in on their parents and share coping strategies. This is an important step in identifying isolated individuals and establishing ways to reach them during a heat wave. As discussed earlier interventions should also target children (or their parents) as well as people with chronic disease or mental illness. Health Canada has created a communications guide for heat waves that highlights key messages, mediums, and target groups.

Besides messaging, a number of more hands on secondary interventions can be prepared. Cooling stations are a place where the public can go for temporary relief from the heat. These may include buildings that already have cooling like malls or public libraries or specially created cooling areas in churches and schools. While this may provide reprieve for some during the hottest hours it is not a solution and indeed some individuals may not be able to reach these locations if they have limited mobility.

Additionally, health services can prepare for an influx of illness. This includes heat stroke and dehydration as well as an increase of visits due to chronic disease and mental illness. Even if communication is done effectively an increase in visits for these issues may be observed. It is important to anticipate this increase and develop ways to help patients avoid additional heat stress.

Heat waves are a difficult event to plan for because the major intervention component is encouraging behaviours that reduce risk of heat illness. This is largely done through key messages. However, these must be targeted to difficult to reach groups. Preparing for health service demand surges and setting up cooling stations are secondary interventions that can limit the impact of a heat wave.

Conclusion

While Newfoundland and Labrador generally has very mild summers a heat wave is still possible under the right weather conditions. Because this type of heat is so uncharacteristic the province could be affected should this type of event occur. Messaging is the most important component of a heat waves response and it should be targeted towards vulnerable populations. Public Health Agency of Canada has a number of materials available to facilitate planning and response.

Links

PHAC Extreme Heat guidance documents - <http://www.hc-sc.gc.ca/ewh-semt/pubs/climat/index-eng.php>