TORONTO

STAFF REPORT
ACTION REQUIRED

Reducing Health Impacts of Cold Weather

Date:	September 12, 2016
To:	Board of Health
From:	Acting Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

There is strong evidence that cold weather can affect the health of all members of the population, and is a particular risk for people who are experiencing homelessness. Toronto Public Health coordinates Toronto's Cold Weather Plan, which aims to prevent harmful health impacts of cold weather on residents of Toronto. The Plan is a living document which is updated as new information becomes available.

New research shows that in Toronto, cold-related injuries are most common from mid-December to the end of February. Extremely cold temperatures such as those that currently trigger Toronto's Extreme Cold Weather Alerts are linked to the highest risk of cold-related injuries in Toronto. When temperatures are moderately cold (i.e., when temperatures are -15 °C or warmer), the risk is lower, but compounds over time. This means that most cold-related injuries in Toronto occur at times when Extreme Cold Weather Alerts are not in place. Interviews with people experiencing homelessness found that throughout the winter their health is also affected by precipitation, changes in temperature, high occupancy in shelters, anxiety, stress, and worsening of pre-existing conditions.

The findings suggest that cold weather response in Toronto should have multiple components: 24-hour continuous drop-in services during the period of greatest health risk for those most vulnerable, alert-based response on extremely cold days as they occur, and messaging and actions to address health risks that persist throughout the winter.

In 2015-2016, Shelter, Support, and Housing Administration (SSHA) partnered with two community agencies to offer continuous 24-hour cold weather drop-in services for January and February, with alert-based drop-in services offered during the remainder of

the cold season. For 2016-2017, SSHA will seek approval to advance the start date for continuous services to mid-December to better correspond with the period of greatest risk for cold-related injuries, and is planning a third site, if feasible, to assist with service demand.

This report was prepared in collaboration with Toronto's Shelter, Support and Housing Administration Division.

RECOMMENDATIONS

The Acting Medical Officer of Health recommends that:

1. The Board of Health support in principle the expansion of continuous 24-hour drop-in service by the Shelter, Support and Housing Administration Division to better protect the health of people experiencing homelessness during the cold season. This expansion could include extending the availability of the continuous 24-hour drop-in service by two weeks and, if feasible, adding a third, overnight drop-in site, such that all three operate from December 15 to February 28 with alert-based services for the remainder of the November 15 to April 15 cold season;

2. The Board of Health forward this report to:
    a. The General Manager of Shelter, Support and Housing Administration, the Executive Director of Municipal Licensing and Standards, the Director of the Toronto Office of Emergency Management, the General Manager of Toronto Parks, Forestry and Recreation, the Director of the Environment and Energy Division, Toronto Community Housing Corporation, Toronto Police Services, Toronto Paramedic Service, and Toronto Transit Commission for their information and follow-up as appropriate;
    b. Centre for Urban Health Solutions (C-UHS), Street Health, Toronto Community Health Centres, Sherbourne Health, Community Care Access Centres, Public Health Ontario, Environment Canada, Health Canada, Association of Local Public Health Agencies, Canadian Public Health Association, Ontario Public Health Association, Toronto District School Board, Toronto Catholic District School Board, Ontario Medical Association, and Registered Nurses Association of Ontario for their information.

Financial Impact

There is no financial impact to Toronto Public Health beyond what has already been approved in the current year’s budget.

DECISION HISTORY

In July 2014, City Council adopted the report *Comprehensive Review of Cold Weather Protocols and Cold Weather Health Impacts in Toronto* from the Medical Officer of Health and the General Manager, SSHA. At this meeting, City Council approved the transfer of responsibility for co-ordinating Toronto's cold weather alert and response program from SSHA to the Medical Officer of Health in time for the 2014-2015 cold weather season. At the same meeting, City Council adopted a recommendation that the Medical Officer of Health update the weather criteria for issuing Extreme Cold Weather Alerts, as appropriate, based on current scientific evidence (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.HL32.3).

In February 2015, City Council directed the General Manager, SSHA, to report to the May 2015 meeting of the Community Development and Recreation Committee (CDRC) on the feasibility of operating additional drop-in and/or warming services during the 2016 winter season, complementing and supplementing the Out of the Cold program and schedule, regardless of any issuance of Extreme Cold Weather Alerts (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.CD1.6)

At its meeting in July 2015, City Council authorized the General Manager, SSHA, to submit a business case for enhanced Cold Weather drop-in services for consideration through the 2016 City Operating budget process (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.CD4.4).

In October 2015, the Board of Health requested the Medical Officer of Health report to the Board of Health in Fall 2016 on the Cold Weather Protocol for 2016-2017, including a review of global best practices, as well as further research to be conducted on the health impacts of cold weather on Toronto's population, especially vulnerable groups. The Board of Health also supported a CDRC recommendation to implement continuous 24-hour cold weather drop-in services for January and February 2016 (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.HL7.3)

In November 2015, City Council authorized funding to implement continuous 24-hour cold weather drop-in services for January and February 2016 (http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.CD7.3).

ISSUE BACKGROUND

Cold weather can adversely affect the health and wellbeing of Toronto residents. Exposure to cold weather is known to increase the immediate risk of direct cold weather injuries such as hypothermia, frostnip, frostbite, chilblains, and trenchfoot. Cold weather can also increase the risk of mortality and hospitalizations for up to several weeks after exposure, especially for people with heart conditions. Those who are especially vulnerable to cold weather include people experiencing homelessness, people who work

outdoors, the elderly, those with pre-existing heart conditions, and children. A 2014 review by Toronto Public Health (TPH) providing detailed information about the health impacts of cold weather is available at www.toronto.ca/reports.

TPH coordinates a Cold Weather Response Plan with the goal of preventing harmful health impacts of cold weather on residents of Toronto. The Plan is in effect each year between November 15 and April 15. During this time period, the Medical Officer of Health issues an Extreme Cold Weather Alert when Environment Canada forecasts temperatures of -15 °C or colder or wind chill of -20 or colder in the following 24 hours. The Plan identifies key partners, responsibilities, and responses related to cold weather and includes City agencies and community organizations. The Plan is a living document which is updated prior to each season based on experiences of the previous season and any new information that becomes available. The Plan is available from http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=f187fec7e1aa9410VgnVCM10000071d60f89RCRD.

COMMENTS

Research

When TPH completed a comprehensive review of health evidence for the impacts of cold weather in 2014, there were several areas where information was limited. In particular, information was lacking about the impacts of cold weather in the Toronto population, and on people experiencing homelessness in the City. Since then, local research has been conducted and provides new information which is specific to health impacts of cold weather on Toronto's population. These research efforts include an examination of how emergency department visits for cold-related injury are related to weather conditions in Toronto. As well, TPH partnered with the Centre for Urban Health Solutions (C-UHS) and Shelter, Support and Housing Administration Division (SSHA) on two projects. The first was to examine emergency department charts for people experiencing homelessness who had a cold-related injury, and the second was to conduct interviews with service providers and clients at Toronto drop-ins to better understand the health impacts of extreme weather on Toronto's homeless population. Details of the research projects can be found in Attachment 1, *Health Evidence to Support Extended Continuous Operation of Drop-In Services for Homeless People During Winter*.

The findings suggest that in Toronto cold-related injuries are most common from mid-December to the end of February. While only 4% of visits to Toronto emergency departments for cold-related injuries among people identified as experiencing homelessness occurred during the first two weeks of December, 11% occurred in the second half of December. Fifteen percent occurred during the first two weeks of January, 12% in the second half of January, 11% in the first half of February, and 10% in the second half of February. After that, the visits drop off again, with only 5% of visits in the first half of March.

The coldest days are associated with the highest risk of cold-related injury. During the cold weather season (November 15 – April 15) for Toronto hospitals, there were an average of 6.6 visits to the emergency department per day when the temperature was -20 °C or colder, 3 per day for temperatures between -15 °C and -19 °C, 1.4 per day for temperatures between -10 °C and -14 °C, and less than 1 visit per day for temperatures warmer than -9 °C. However, over the course of a typical Toronto cold weather season, there are far more days with moderate temperatures. For example, between 2006-2015 there were 44 days with temperatures of -20 °C or colder in Toronto while there were 509 (almost 12 times as many) days with temperatures between -4 °C and 0 °C.

The low risk on each moderately cold day compounds over the winter, resulting in more cold-related health impacts. Among Toronto's general population, about 56% of emergency department visits occurred at temperatures warmer than -15 °C. Among a subset of people experiencing homelessness in Toronto, 66% of visits to emergency departments for cold-related injuries occurred at temperatures warmer than -15 °C. This pattern of elevated burden of illness associated with moderate cold has also been observed in a 2015 study of temperature-related mortality in 13 countries including Canada (Gasparrini et al., 2015), as well as in a 2016 study of temperature and mortality in Ontario led by Public Health Ontario (Chen et al., 2016).

Cold-related injury is not the only health impact from cold weather. Interviews with 40 clients and eight service providers at Toronto drop-ins found that people experiencing homelessness report a range of health concerns including anxiety and stress related to living in "survival mode", and worsening of other pre-existing health conditions. The study found that dampness, rainy conditions, and temperature fluctuations substantially increased the impact of cold weather on health. As well, the population at the drop-ins includes more street-involved people during the winter, which may reflect the ongoing nature of challenges that the winter season creates for people who are homeless and under housed.

Together, these findings illustrate that having access to a range of Toronto's services throughout the winter and not just on Alert days is vital for vulnerable people such as those experiencing homelessness.

Global Best Practices

It is difficult to identify a 'gold standard' in cold weather response by looking at practices in other jurisdictions. A review of cold weather responses that are in place across Ontario and in winter cities around the world found that there is little consistency in whether or not a plan exists, what criteria are used, and what kinds of responses are enacted. For example, in Ontario, most public health units that have a cold weather alert use a criterion of either -30 °C for at least 2 hours (based on Environment and Climate Change Canada's cold warning), or a combination of -15 °C and -20 wind chill, similar to Toronto. Sample thresholds for action from elsewhere include 0 °C with rainfall or -2 °C without (Vancouver), -40 °C for two hours (Saskatoon), 0 °C or -7 °C (for different levels of response in New York City), or 2 °C plus ice and snow (UK's national plan). Some

locations, such as Regina, do not issue Alerts at all, and increase services for the duration of the winter season.

As well, cold weather responses in other places appear to span a range of complexity. Some countries such as the UK, France, and Ireland have national plans that are implemented locally, taking into account local conditions. The UK has four levels of response ranging from year-round planning (level 0) to major incident (level 4) and outlines actions to be taken by a broad range of public and community agencies including health care and volunteer sectors. Other national plans such as those in France and Ireland also have multiple levels of readiness. In general, the implementation of both national and locally-designed responses considers local needs and often include an element of providing additional services or shelter to people experiencing homelessness. In other Ontario public health units, response is often limited to issuing additional messaging about how to prevent cold-related health impacts, with further response left up to individual municipalities. In many places, including winter cities such as Winnipeg, there are no formalized cold weather response plans, with officials frequently relying on severe weather or all hazards plans to guide their decisions.

Current Responses in Toronto

Toronto's Cold Weather Plan includes both seasonal and Alert-based elements, many of which are targeted to people experiencing homelessness.

Before the beginning of each cold weather season, the Cold Weather Response Committee meets to plan and prepare for the upcoming season. When Extreme Cold Weather Alerts are called, TPH notifies all Cold Weather Plan partners as well as community organizations and individuals who have signed up to receive notifications. Throughout the winter, TPH provides information about health impacts of cold weather and extreme cold weather to the general population on a dedicated website, and through social media and via 311. All of TPH's messaging was reviewed and updated in 2016 to reflect emerging research. The revised messaging includes the health impacts of cold weather and extreme cold weather and how to stay safe and active during winter weather. Targeted information is available for health professionals and in presentations to vulnerable adults and seniors groups. As well, TPH plans to share information with local school boards prior to the 2016-17 cold weather season.

Many of Toronto's Cold Weather Plan partners offer services throughout the winter, with added vigilance on Cold Weather Alert days. For example, Municipal Licensing and Standards is responsible for investigating complaints from tenants who have no heat or low-heat in their building (e.g., whose apartments are heated to less than the 21 °C required by Toronto Municipal Code Chapter 497). In the event of an Extreme Cold Weather Alert, front line officers are prepared to respond to an increase in such calls. The Toronto Police Service ensures that its members pay special attention to areas where vulnerable people at risk of cold-related illness spend time, and encourages them to go to a safe place. Toronto Parks, Forestry and Recreation staff the community centres, which are available for anyone to warm up during cold weather and have parks ambassadors connecting with potentially vulnerable individuals in the City's parks and public green

spaces. Other Cold Weather Plan partners include Toronto Paramedic Services, the Office of Emergency Management, 311, and Community Care Access Centres.

A key focus area for response activities under the Cold Weather Plan is to prevent impacts on people experiencing homelessness. Current cold weather service system responses for individuals experiencing homelessness include low-barrier overnight and meal services provided throughout the city through the Out of the Cold program, relaxed admission and discharge criteria at emergency and transitional shelters, increased hours of operation for emergency shelters that are normally closed during the day, 24-hour street outreach service during Extreme Cold Weather alerts, increased access to transit, and increased shelter referral co-ordination by the Streets to Homes Assessment and Referral Centre.

Over the last two winter seasons, SSHA funded Margaret's Toronto East Drop-In and St. Felix Centre to provide 24-hour cold weather drop-in services. During 2014-15, services were offered during Extreme Cold Weather Alerts. The following year, their operation was enhanced to implement continuous 24-hour cold weather drop-in services for January and February 2016. Average daily use of the drop-in services was over 405 people across both drop-ins and the overnight average was over 106.

Focus groups and interviews following the 2015-16 cold weather season indicated that drop-in clients strongly preferred the enhanced service model to an alert-based model. The continuous service throughout January and February contributed to the development of stronger relationships between clients and staff and a greater sense of engagement with the services. Both drop-ins were able to successfully house a total of 40 people who had been living outdoors. In addition, interviews with service users from the cold weather drop-ins were overwhelmingly positive, demonstrating an ongoing need for this service.

The research carried out by TPH in collaboration with C-UHS and SSHA indicates there would be substantial health benefits associated with beginning the continuous operation of drop-ins in mid-December rather than waiting until January 1. As well, given the significant service usage during the 2015-16 season, SSHA recommends that, if feasible, a third site, operated by a community agency, provide continuous overnight drop-in service from mid December 2016 to end of February 2017.

Improving Toronto's Cold Weather Plan

Toronto's Cold Weather Plan has been updated to reflect the new research findings and proposed changes in cold weather drop-in operations.

Ongoing evaluation of the continuously operated 24-hour drop-ins enables SSHA to make informed decisions about their continued operation and assess whether improvements can be made to the current model of operation. TPH collaboration in the 2016-17 evaluation will ensure that health considerations and outcomes are assessed to the greatest degree possible.

To date, cooperation between TPH and SSHA has resulted in successful research and actions that improved implementation of Toronto's Cold Weather Plan. Continued collaboration of TPH and SSHA will help ensure that cold weather decisions affecting the health of Toronto's most vulnerable people are based in strong health evidence.

CONTACT

Kate Bassil
Manager, Healthy Public Policy
Toronto Public Health
Tel: 416-338-7413
Email: kbassil@toronto.ca

Monica Campbell
Director, Healthy Public Policy
Toronto Public Health
Tel: 416-338-0661
Email: mcampbe2@toronto.ca

SIGNATURE

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Dr. Barbara Yaffe
Acting Medical Officer of Health

ATTACHMENT 1

Health Evidence to Support Extended Continuous Operation of Drop-In Services for Homeless People During Winter

REFERENCES

Chen et al. 2016. Assessment of the effect of cold and hot temperatures on mortality in Ontario, Canada: a population-based study. *CMAJ Open.* 4(1): E48-E58. DOI:10.9778/cmajo.20150111

Gasparrini et al. 2015. Mortality risk attributable to high and low ambient temperature: a multicountry observational study. *Lancet*. 386(9991):369–375. DOI: http://dx.doi.org/10.1016/S0140-6736(14)62114-0