

Cooling and Air Temperature Requirements for LTCHs A Summary of Changes

Changes to Ontario Regulation 79/10

On May 15, 2021, amendments to sections 20, 21 and 26 of [O. Reg. 79/10](#) under the Long Term Care Homes Act, 2007 came into force. These changes relate to cooling requirements, air temperature and the plan of care for Long-term Care Homes (LTCHs). The changes were important to ensure residents in LTCHs are regularly monitored for heat-related illnesses and provided with a comfortable and safe environment to live in.

Maintaining a safe and comfortable environment is mandated for LTCHs year-round. Staff from various disciplines within the LTCH (environmental, nursing, activation, dietary, and medical) must work together to identify, prevent and mitigate the risk factors and symptoms associated with air temperatures, whether related to excessive heat or cold.

The revised sections are summarized along with links to resources that may be useful to LTCHs in developing or enhancing their existing plans, specifically their heat-related illness prevention and management plan (Plan).

Changes to the cooling requirements under s. 20

Section 20 consists of subsections (1), (1.1), (1.2), (1.3), (2), (3) and (4). The section involves the following topics;

- the development and implementation of the written Plan; and
- designated cooling areas (DCAs).

For the Plan, s. 20 (1), (1.1), (1.2) and (1.3) require specific details in the Plan contents, the frequency of evaluating the Plan and when to implement the Plan. These are summarized below;

- The Plan must be **developed** in accordance with evidence-based practices (EBPs). The term “prevailing practices” has been removed as an option. EBPs include the most current and valid research findings such as systematic reviews and descriptive and quantitative studies.
- The Plan must be **evaluated** and **updated** annually in accordance with EBPs;

What are Heat-Related Illnesses (HRIs)?

HRIs are a group of serious and escalating medical conditions which include heat rash, heat cramps, heat exhaustion, and heat stroke. A high body temperature (excluding infection) is also known as hyperthermia.

HRIs occur when the body is unable to properly cool itself and overheats due to external environmental conditions or from metabolic processes such as exercise. This process is known as thermoregulation.



The air temperature of the LTCH must not fall below 22°C at any time of the year.

Air temperature alone does not affect how a person will feel. Humidity plays an important role.

The Plan is to be implemented on any day when the indoor or outdoor temperature reaches 26°C, not just between May 15 and September 15 each year.

Separate designated cooling areas are required to be air-conditioned in LTCHs built prior to April 1, 1998. After 1998, all new or rebuilt LTCHs were required to have air-conditioned dining, activity and lounge areas and in 2015, new LTCHs were also required to have air-conditioned corridors.

- The Plan must be **implemented** every year between May 15 and September 15; and
- The Plan must be **implemented** on any day when the outside temperature reaches 26°C (as per Environment & Climate Change Canada’s forecast) at any point during the day; and
- Any time a DCA, a common area or corridor on each floor (or home area) or at least two resident’s rooms reach 26°C (as measured by the LTCH) for the remainder of the day or the following day.

The contents of the Plan must include:

- The identification of risk factors and symptoms that expose residents to or lead to Heat Related Illness’s (HRIs);
- The identification of strategies and interventions to prevent or mitigate HRIs;
- The requirement for staff to regularly monitor residents for both the risk factors and the symptoms related to HRIs and take appropriate action when identified;
- The identification of cooling systems, equipment, supplies and resources necessary to protect residents from HRIs; and
- The development of a protocol to communicate the Plan to staff, residents, volunteers and others.

Under s. 20 (2), which has not changed and continues to require LTCHs that are not centrally air-conditioned to designate a minimum of one separate DCA for every 40 residents. These areas can include but are not limited to any common area such as dining rooms, lounges, activity rooms or place of worship. If the space is not large enough to accommodate 40 residents, additional spaces will need to be designated to accommodate all residents when necessary.

Section 20 (3) now requires that DCAs be served by air conditioning, which is required to be maintained at a comfortable level for residents. Comfort levels will vary from resident to resident. LTCHs are encouraged to consult with residents to determine the most comfortable temperature.

Section 20 (4) includes the definition of “air conditioning” which includes any mechanical cooling system (or equipment) that can maintain a comfortable temperature of the DCAs during periods of hot weather. This may include but is not limited to systems or portable equipment that can remove the heat from a room and reduce the temperature of the air by using refrigerant/coolant, air or water-cooled chillers and/or cooling towers.

Altering interior features such as closing window coverings and using portable or ceiling fans are strategies to reduce heat and increase ventilation, but they are not a substitute for air conditioning. The benefit of fans for resident comfort may also be limited when the air temperature reaches 35°C. They would have to be used on a case by case basis during extreme heat conditions. During times when a resident is on contact/droplet precautions or when the home is experiencing a respiratory outbreak, fan use may need to be altered to control how infectious organisms are distributed. Consult with the LTCH's infection control program co-ordinator before use and review current literature by [Public Health Ontario](#).

Selecting the most appropriate mechanical cooling system or equipment will depend on the building design and other factors and LTCHs may benefit by having an Heating Ventilation Air Conditioning engineer or certified technician assess the spaces that need to be air-conditioned. An assessment will determine that the system or equipment chosen to cool the spaces will be of sufficient capacity and size to reduce air temperatures in those spaces during very hot days and that electrical demand or air balance in the spaces will not be impacted.

Changes to air temperature requirements under s. 21

Section 21 consists of subsections (1) to (4). Subsection (1) continues to require LTCHs to be maintained at a minimum of 22°C, year-round. Subsections (2), (3) and (4) are new and deal with measuring and recording the air temperature in specific areas of the LTCH. The amended Regulation requires that each day throughout the year, licensees must ensure that the temperature is measured and documented in writing, at a minimum in the following areas of the home three times per day:

1. At least two resident bedrooms in different parts of the home.
2. One resident common area on every floor of the home, which may include a lounge, dining area or corridor; and
3. For LTCHs that are not centrally air-conditioned, every designated cooling area, if there are any in the home.

LTCHs are required to keep a record of these documented measurements for at least one year.

For LTCHs that have indoor air temperatures monitored by automated building systems, equipment or devices, the requirements remain the same as above. The record must also be



Many different types of thermometers are available but not all thermometers are designed to measure air temperatures. Review the manufacturer's directions prior to use and verify accuracy.

kept in a readable and useable format that allows a complete copy of the record to be readily produced.

Changes to the plan of care requirements under s. 26 (3) 11

Under section 26 (3) 11 of the Regulation, a plan of care must be based on, at minimum, an interdisciplinary assessment of the seasonal risk relating to heat-related illness, including protective measures required to prevent or mitigate HRIs.

An interdisciplinary seasonal risk assessment of the resident for HRIs is the key to determining which resident specific cooling strategies and interventions will be necessary and effective during seasons when the air temperature creates uncomfortable conditions.

The assessment requires the involvement of the resident and/or their substitute decision makers. Doing so raises everyone's awareness about the potential risks of HRIs and increases participation in implementing the best strategies and interventions for the resident. Depending on the identified risk factors in each LTCH (humidity, air temperature, proximity to sun exposed windows and/or heat generating appliances or equipment) the strategies and interventions will differ for each resident. Additionally, residents may be different depending on the resident's specific needs, health status, medication use, profile and other individual circumstances.

HRIs in residents can be prevented when;

- the conditions or risk factors that cause them are well known to care staff;
- care staff are familiar with the signs and symptoms of HRIs,
- care staff have access to and know how to use various cooling supplies and interventions to mitigate symptoms.



An interdisciplinary assessment includes multiple disciplines, such as dietary, nursing, pharmacy and physicians who can contribute their area of expertise in assessing a resident for seasonal risk related to heat.

Residents with responsive behaviours and/or cognition impairment such as dementia are at an increased susceptibility to HRIs than residents who are mobile and cognitively well.

Strategies and Interventions – Internal Environment

The indoor environment, when not centrally air-conditioned will increase as the outdoor temperature and humidity levels increase. The factors that impact the amount of heat and humidity a building will retain depend on the building's age, insulation level, building materials, number of occupants, heat generating equipment, geographical location and many others. An environmental assessment conducted of the LTCH's operational systems, level of maintenance, electrical capacity, building structure, energy efficiency and equipment is beneficial to determine what strategies and interventions are needed to not only reduce or mitigate the amount of heat residents and other occupants will be exposed to, an environmental assessment can also contribute to the reduction of energy costs and the extending the life of the building structure. Some of the more common interventions include;

- Installing and using window coverings that block the sun and heat.
- Keeping windows closed if heat and humidity are higher outside (over 26°C and 50%).

- Familiarizing staff with the care and use of cooling equipment and supplies and that are readily available.
- Any heating, ventilation and air-conditioning systems are
- inspected by certified technicians twice per year and internal
- maintenance staff are familiar with the manufacture’s required
- routine maintenance checks.
- All portable cooling equipment is installed, cleaned and maintained in accordance with manufacture’s instructions.
- Re-schedule the time that heat generating equipment such as dryers and dishwashers are used to cooler times of the day if they are located near resident areas.
- Replace old fluorescent and incandescent lighting fixtures with ENERGY STAR certified LEDs, and other energy-efficient lighting systems.
- An adequate number of thermometers are available for staff to use to measure the air temperature in the required areas or thermometers are left in the required areas.
- Staff using thermometers are trained on their use and calibration methods.
- Thermostats are secured from tampering by untrained building occupants and are calibrated and accurate.
- Insulate ducting and pipes to prevent condensation or to reduce heat emissions.
- Ventilation and air return grilles/vents and openings are clean and unobstructed.
- Ventilate mechanical and elevator rooms, laundry rooms, kitchens, serveries, tub/shower rooms and other areas where equipment produces heat and/or moisture.
- Properly seal and insulate around any portable or heating and cooling equipment that penetrates outside walls. Provide proper insulating covers for portable air-conditioners that remain in windows throughout the four seasons.
- Insulate around water heaters and pipes, cooling system ducts.
- Retrofit or replace drafty doors and windows
- Where possible, Increase the amount of shade around the building by planting trees, shrubs, ornamental grasses and heat and water tolerant plants.
- Where possible, consider installing exterior shade producing structures such as awnings, roof overhangs and arbours and exterior window coverings such as louvers, shutters or shade screens (a mesh that looks like a window screen).



According to [Natural Resources Canada](#) and the [United States Department of Energy](#), the physical and structural building components, such as walls, roofing, windows, and doors, may have a significant impact on the energy consumption of a building if not adequately “weatherized” which includes sealing and insulating.



Thermal comfort is described as that condition of mind which expresses satisfaction with the thermal environment and is assessed by subjective evaluation ([ASHRAE Journal](#), 2018)

An older person may perceive an environment to be thermally comfortable when in fact it may pose threats to their health ([Kenny et al.](#), 2018)

Monitoring Indoor and Outdoor Conditions

In Ontario, an early warning system for all citizens is available called the [Heat Warning and Information System \(HWIS\)](#). It was implemented by [Environment and Climate Change Canada \(ECCC\)](#) on May 31, 2016 in order to standardize timely heat health messaging in order to reduce the avoidable human health consequences of extreme heat. LTCHs that routinely monitor the HWIS are able to prepare earlier for any upcoming extreme heat events.

Under the HWIS, the province has been divided into three regions, northern, southern and extreme south-west (Windsor) area. Each region has its own updated temperature and Humidex criteria based on health evidence and climatology for each region. ECCC issues heat warnings 18 to 24 hours in advance of an EHE when two consecutive days of weather that meets or exceeds [the criteria](#) set for Humidex and temperature (daytime highs and night time lows) are expected. Public Health Units are notified in advance of issuing a Heat Warning to allow for earlier preparation and enhanced monitoring.

There are several ways to determine the Humidex for an area;

1. The humidity and air temperature can be measured easily with a thermo/hygrometer and purchased in any hardware store.
2. The humidity and temperature can be found on the [Meteorological Service of Canada's website](#) for many cities in Ontario.
3. Download an app called "[WeatherCan](#)" to get up to the minute weather conditions, temperatures and other values. Watch the local news channel, in some cases the Humidex may be specified.
4. Visit your local public health unit's website which may include heat warnings for the area.
5. Check local websites for weather information.

Where the Humidex is not offered or known, it can easily be plotted on a chart. A Humidex chart is available on [ECCC's website](#).



The term "Humidex" is most often used in the summer months and is expressed as an index number, combining the temperature and relative humidity (or dew point) into one number to reflect a perceived temperature. It is used by the Meteorological Service of Canada (a division of ECCC) to describe how hot and humid the weather feels to the average person.

Relative humidity above 50% is an environmental condition which can increase discomfort as it increases.

Resources and Links

ASHRAE Journal

Thermal Comfort: Designing for People, February 2018

<https://commons.bcit.ca/besys/files/2018/08/Thermal-Comfort-Design-for-People.pdf>

Centres for Disease Control and Prevention

Warning Signs and Symptoms of Heat Related Illness

<https://www.cdc.gov/disasters/extremeheat/warning.html>

Environment and Climate Change Canada

<https://www.canada.ca/en/environment-climate-change.html>

Seasonal Weather Hazards

<https://www.canada.ca/en/environment-climate-change/services/seasonal-weather-hazards/publications/severe-summer.html>

Criteria for Public Weather Alerts

<https://www.canada.ca/en/environment-climate-change/services/types-weather-forecasts-use/public/criteria-alerts.html#heat>

WeatherCAN

<https://www.canada.ca/en/environment-climate-change/services/weather-general-tools-resources/weathercan.html>

Environmental Protection Agency (US)

Moisture Control Guidance for Building Design, Construction and Maintenance, December 2013

<https://www.epa.gov/sites/production/files/2014-08/documents/moisture-control.pdf>

Health Canada

Ventilation and the indoor environment

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/ventilation-indoor-environment.htm>

COVID-19: Guidance on indoor ventilation during the pandemic

<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/guide-indoor-ventilation-covid-19-pandemic.html>

Heat Alert and Response Systems to Protect Health: Best Practices Guidebook, 2011

<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/heat-alert-response-systems-protect-health-best-practices-guidebook.html>

Relative Humidity Indoors: Fact Sheet

http://publications.gc.ca/collections/collection_2018/sc-hc/H144-33-2016-eng.pdf

The Urban Heat Island Effect – Causes, Health Impacts and Mitigation Strategies – November 2009

<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/climate-change-health-adaptation-bulletin-number-1-november-2009-revised-december-2010-health-canada-2009.html>

Mount Sinai & Baycrest Hospitals and others

Non-Pharmacological Assessment and Management of Behavioural and Psychological Symptoms of Dementia in Primary Care, 2013

<https://www.mountsinai.on.ca/care/psych/patient-programs/geriatric-psychiatry/prc-dementia-resources-for-primary-care/dementia-toolkit-for-primary-care/responsive-behaviours-in-dementia/non-pharmacological-assessment-and-management-of-behavioural-and-psychological>

National Institute on Aging

Hot Weather Safety for Older Adults, 2016

<https://www.nia.nih.gov/health/hot-weather-safety-older-adults>

Natural Resources Canada

How to get the ventilation you need in your house

https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/16-0114%20Home%20Ventilation_access_eng.pdf

Energy Efficiency in Existing Buildings

<https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-buildings/energy-efficiency-existing-buildings/20682>

Ministry of Long-Term Care

Deputy Minister's Memo - 10-Point Heating, Ventilation, and Air Conditioning Plan

<https://www.ltchomes.net/LTCHPORTAL/Content/Snippets/10%20Point%20HVAC%20Plan%20Memo-signed.pdf>

Ontario LTC Action Group 2019

Best Practices for Nutrition, Food Service and Dining in Long Term Care Homes

<https://www.dietitians.ca/DietitiansOfCanada/media/Documents/Resources/2019-Best-Practices-for-Nutrition,-Food-Service-and-Dining-in-Long-Term-Care-LTC-Homes.pdf>

Public Health Ontario

Heating, Ventilation and Air Conditioning (HVAC) Systems in Buildings and COVID-19

<https://www.publichealthontario.ca/-/media/documents/ncov/ipac/2020/09/covid-19-hvac-systems-in-buildings.pdf?la=en>

FAQ: Use of Portable Air Cleaners and Transmission of COVID-19

<https://www.publichealthontario.ca/-/media/documents/ncov/ipac/2021/01/faq-covid-19-portable-air-cleaners.pdf?la=en>

The Use of Portable Fans and Portable Air Conditioning Units during COVID-19 in Long-term Care and Retirement Homes

<https://www.publichealthontario.ca/-/media/documents/ncov/ltrh/2020/08/covid-19-fans-air-conditioning-ltrh.pdf?la=en>

US Department of Energy

[Energy Saver 101: Home Cooling Infographic](#)

Energy efficient, windows, doors and skylights

<https://www.energy.gov/energysaver/design/windows-doors-and-skylights>

Kenny GP, Flouris AD, Yagouti A, Notley SR. Towards establishing evidence-based guidelines on maximum indoor temperatures during hot weather in temperate continental climates. Temperature (Austin). 2018 May 11;6(1):11–36.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6422495/>

Melissa Batchelor-Murphy, PhD, RN-BC, FNP-BC, FAAN, George Washington University School of Nursing and Elaine J. Amella, PhD, RN, FAAN, Medical University of South Carolina College of Nursing. Eating and Feeding Issues in Older Adults with Dementia: Part II: Interventions. Try This. Issue Number D11.2, Revised 2019.

https://hign.org/sites/default/files/2020-06/Try_This_Dementia_11_Part_2.pdf