

Sullivan, Michelle A HLTH:EX

Subject: Heat Related Deaths Review

Location: Skype Meeting

Start: Wed 2021-07-14 4:00 PM

End: Wed 2021-07-14 4:30 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Henry, Bonnie HLTH:EX

Required Attendees XT:Henderson, Sarah ENV:IN; Lapointe, Lisa PSSG:EX; Baidwan, Jatinder PSSG:EX; Sidhu, Tej PSSG:EX; Reka Gustafson; david.mcvea@bccdc.ca; XT:HLTH Kosatsky, Tom

Categories: Teleconference

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Sullivan, Michelle A HLTH:EX

From: Henderson, Sarah [BCCDC] <Sarah.Henderson@bccdc.ca>
Sent: July 16, 2021 2:39 PM
To: Henry, Bonnie HLTH:EX; Gustafson, Reka HLTH:IN; McVea, David [BCCDC]; XT:HLTH Kosatsky, Tom
Subject: RE: Heat Related Deaths Review

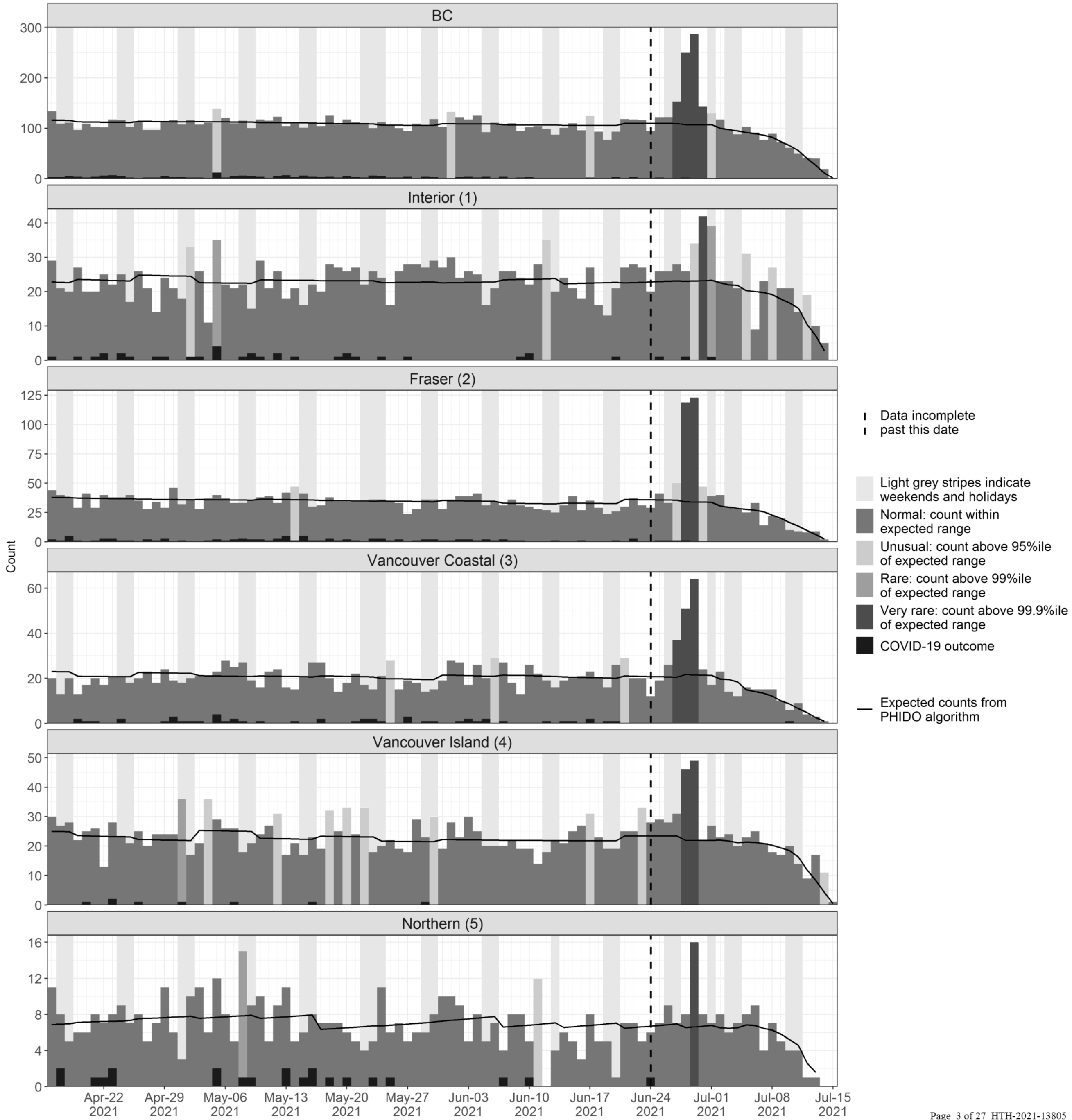
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Hi all –

Just showing you the mortality data as of today. There definitely has been a flurry of later-than-usual registrations. Excess mortality still not looking as high as 500, but we'll see how things are on Tuesday when I would expect the next big jump in registrations (Friday-Sunday always slow). Regardless of any discrepancy with the BCCS, the impacts are clear.

Thanks,
Sarah

Daily counts of Mortality in:



Sarah B. Henderson, PhD
Scientific Director | Environmental Health Services | BCCDC
Associate Professor (Partner) | School of Population and Public Health | UBC
Office: 604.707.2449
Cell: 604.910.9144

[#DifferentTogether](#)

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I often work outside of normal business hours because it suits me. There is no expectation that you will respond outside of your working hours.

From: Henderson, Sarah [BCCDC]

Sent: Wednesday, July 14, 2021 5:45 PM

To: Henry, Bonnie [EXT]; Gustafson, Reka [BCCDC]; McVea, David [BCCDC]; Kosatsky, Tom [BCCDC]

Subject: RE: Heat Related Deaths Review

Hi Bonnie and all,

Thanks for coordinating the call today. Very interesting to see how the BCCS is tackling this. I'm not aware of any such effort around the 2009 event, but Taj says that he will ask around about it.

It is clear that the BCCS must remain independent in its investigation, and we will continue epidemiologic investigation with the tools available to us: administrative and geographic data linkages that can help to elucidate the patterns of importance. I will hope that we can bring the efforts together in due time.

We have agreed that our team should meet with Taj weekly over the next few weeks, to touch base on progress.

One thing: towards the end of the conversation, Tej did state that most temporary certificates needed to register deaths have been issued by now. I'm prepared to be surprised, but I really don't think the Vital Statistics data are going to shift by another 200 deaths at this point. I think we do have to prepare for significant discrepancy between estimated excess mortality and excess reports to the BCCS. We will keep a close eye on the data for the next week or two, but there have not been big shifts over the past two days. We should have early estimates available to share next week, and I've asked Kathleen to produce them daily as of Monday so that we can evaluate how stable the data are.

Thanks,

Sarah

Sarah B. Henderson, PhD
Scientific Director | Environmental Health Services | BCCDC
Associate Professor (Partner) | School of Population and Public Health | UBC
Office: 604.707.2449
Cell: 604.910.9144

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I often work outside of normal business hours because it suits me. There is no expectation that you will respond outside of your working hours.

-----Original Appointment-----

From: Henry, Bonnie HLTH:EX [<mailto:Bonnie.Henry@gov.bc.ca>]

Sent: Monday, July 12, 2021 10:26 AM

To: Henry, Bonnie HLTH:EX; Henderson, Sarah [BCCDC]; Lapointe, Lisa PSSG:EX; Baidwan, Jatinder PSSG:EX; tej.sidhu@gov.bc.ca [EXT]; Gustafson, Reka [BCCDC]; McVea, David [BCCDC]; Kosatsky, Tom [BCCDC]

Subject: Heat Related Deaths Review

When: Wednesday, July 14, 2021 4:00 PM-4:30 PM (UTC-08:00) Pacific Time (US & Canada).

Where: Skype Meeting

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Sullivan, Michelle A HLTH:EX

Subject: Expert meeting on emergency responses to extreme heat
Location: Zoom^{s.15; s.17} | ID^{s.15; s.17} | Passcode:^{s.15; s.17}
Start: Thu 2021-07-22 12:00 PM
End: Thu 2021-07-22 1:30 PM
Recurrence: (none)
Meeting Status: Accepted
Organizer: Richardson, Gregory (HC/SC)
Categories: Teleconference

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===== MESSAGE TO INVITEES =====

Hello,

You have been invited to participate in a 1.5-hour meeting organized by Health Canada. The purpose of this meeting is to share information on emergency responses to extreme indoor temperatures.

The meeting invitation has been extended to select US and Canadian experts on heat, as well as health and emergency management officials who have recently experienced the unprecedented extreme heat event in Western Canada and the US. Should you wish to recommend additional attendees, please feel free to email their contact information to myself or Rachel Siblock (Rachel.siblock@canada.ca).

A meeting agenda is included below.

Health Canada will also be preparing a Q&A document to summarize the meeting and to distribute to other interested stakeholders across Canada. If you would like to share any references or written information related to the meeting discussion questions, we would welcome that as well.

Thank you and we look forward to the discussion later today,
Gregory

Gregory Richardson RPP, MCIP

A/Manager, Extreme Heat Program
Climate Change and Innovation Bureau
Health Canada, Government of Canada
Email: gregory.richardson@canada.ca

Gestionnaire intérimaire, Programme de chaleur extrême
Bureau des changements climatiques et de l'innovation,
Santé Canada, Gouvernement du Canada
Courriel: gregory.richardson@canada.ca

===== **MEETING AGENDA** =====

MEETING PURPOSE

To discuss emergency responses to extreme indoor temperatures in the context of the recent extreme heat event in Western Canada and the US.

ATTACHMENT:

See attached PDF for expert bios and a list of meeting attendees.

AGENDA:

1. **Review of meeting purpose and agenda** – Gregory Richardson and Carolyn Tateishi (5 minutes)
2. **Meeting context review** (Extreme Heat Event in Western Canada) – Dr. Sarah Henderson (3 minutes)
3. **Situational discussion** – Regional Partners (15 minutes)
 - a. What indoor temperature challenges have you faced during the recent heat event?
 - b. What indoor temperature related questions do you have?
4. **Vulnerability to extreme indoor temperatures** – Dr. Glen Kenny (5 minutes)
 - a. Dr. Kenny will speak to the physiological risk factors to indoor temperatures, and challenges faced by vulnerable populations during an extreme heat event.
5. **OPEN DISCUSSION: Immediate health protective actions for protecting the public from extreme indoor temperatures** – All (Remainder of the time)
 - a. What protective actions can we communicate to the public to keep their bodies and homes cooler, especially overnight, if in a hot indoor environment?
 - b. How should health officials communicate the health risks of high indoor temperatures to the public (including vulnerable populations)?
 - c. What warning signs should caregivers, family, friends, or others look for (or if by phone, what questions should be asked) when performing a wellness check? What signifies dangerous indoor temperatures during a check?

- d. Are there best practices for extending hours of cooling centres and opening overnight cooling centres?
- e. In what circumstances, if any, should evacuation to a cooling centre be considered for susceptible individuals?

6. **Summary and review of action items** – Gregory Richardson (5 minutes)

Sullivan, Michelle A HLTH:EX

From: Richardson, Gregory (HC/SC) <gregory.richardson@canada.ca>
Sent: August 13, 2021 1:07 PM
To: gkenny@uottawa.ca; Jenni.Vanos@asu.edu; hunter.jones@noaa.gov; ssaha@cdc.gov; dvq3@cdc.gov; cuejio@fsu.edu; Siblock, Rachel (HC/SC); Stranberg, Rebecca (HC/SC); McDavid, Kristina (HC/SC); Gallant, Victor (HC/SC); Tateishi, Carolyn (HC/SC); Enright, Paddy (HC/SC); Berry, Peter (HC/SC); MacDonald, Melissa (EC); Patton, Cara (EC); Howe, Mike (EC); XT:Henderson, Sarah ENV:IN; XT:HLTH Kosatsky, Tom; McVea, David [BCCDC]; michael.lee@bccdc.ca; michael.schwandt@vch.ca; Emily.Newhouse@fraserhealth.ca; Waters, Shannon Dr. HLTH:IN; XT:Fumerton, Raina HLTH:IN; XT:Mema, Dr. Silvina HLTH:IN; Kamran.Golmohammadi@fnha.ca; emily.peterson@vch.ca; Vineet.Saini@albertahealthservices.ca; XT:HLTH Mitchell, Ruth; Finley, Rita (PHAC/ASPC); Chris Boyer; Trtanj, Juli (Ext.); Cameron, Mary HLTH:EX; Sterloff, Trish HLTH:EX; Tan, Shirlee; Elsenboss, Carina; Duchin, Jeff; Danielle Nagele - NOAA Affiliate; Michelle Hawkins - NOAA Federal; Houston, Addison; THAM KIM; York Emily A; Boardman, Marnie (DOH); Portner, Cory (DOH); Lavigne, Eric (HC/SC); maxime.roy.ccsmtl@ssss.gouv.qc.ca; David Kaiser (CCSMTL); Wasserman, Cathy (DOH); Christopher Uejio; Saha, Shubhayu (CDC/DDNID/NCEH/DEHSP); XT:HLTH Fyfe, Murray; Henry, Bonnie HLTH:EX; XT:HLTH Stanwick, Richard; McLean, Kathleen (Ext.); Lubik, Amy [FH]; kevin.liang@alumni.ubc.ca; s.22; Verge, Shelley; Ye, Xibiao HLTH:EX; Clarke, Kate [BCCDC]; Bharmal, Aamir Dr. HLTH:IN; Naik, Rushay (HC/SC); XT:HLTH Deegan, Heather; Blessin, Scott [PHSA]; Liv Yoon; Luttrell, Gethsemane
Subject: Notes & Q&A | Health Canada experts meeting on emergency responses to extreme heat (July 22 2021)
Attachments: 1. QA - July 22 2021 HC Experts Meeting - Emergency preparedness for extreme indoor temperatures.pdf; 2. Kenny - 22.7.2021 - Presentation Slides - Heat stress in older adults.pdf; 3. Kenny & Meade - 27.7.2021 - Heat mitigation via partial or full immersion in water.pdf

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Hi all,

Thank you for participating in and contributing to the experts meeting on emergency preparedness for extreme indoor temperatures on Thursday July 22nd.

Please find attached the following documents:

1. Meeting notes and Q&A
2. Dr. Glen Kenny's annotated slides entitled "Heat stress in older adults"
3. Response by Dr. Kenny and Dr. Meade about effectiveness of partial/full immersion in water to keep cool during a heat wave

Please note we plan to translate the full package of documents to French shortly.

Many thanks,
Gregory

Gregory Richardson RPP, MCIP

A/Manager, Extreme Heat Program
Climate Change and Innovation Bureau
Health Canada, Government of Canada

Email: gregory.richardson@canada.ca

Gestionnaire intérimaire, Programme de chaleur extrême
Bureau des changements climatiques et de l'innovation,
Santé Canada, Gouvernement du Canada
Courriel: gregory.richardson@canada.ca

-----Original Appointment-----

From: Richardson, Gregory (HC/SC)

Sent: 2021-07-15 5:13 PM

To: Richardson, Gregory (HC/SC); gkenny@uottawa.ca; Jenni.Vanos@asu.edu; hunter.jones@noaa.gov; ssaha@cdc.gov; dvq3@cdc.gov; cuejio@fsu.edu; Siblock, Rachel (HC/SC); Stranberg, Rebecca (HC/SC); McDavid, Kristina (HC/SC); Gallant, Victor (HC/SC); Tateishi, Carolyn (HC/SC); Enright, Paddy (HC/SC); Berry, Peter (HC/SC); MacDonald, Melissa (EC); cara.patton@ec.gc.ca; Howe, Mike (EC); Henderson, Sarah; Kosatsky, Tom [BCCDC]; McVea, David [BCCDC]; michael.lee@bccdc.ca; michael.schwandt@vch.ca; Emily.Newhouse@fraserhealth.ca; shannon.waters@viha.ca; Raina.Fumerton@northernhealth.ca; Silvina.Mema@interiorhealth.ca; Kamran.Golmohammadi@fnha.ca; emily.peterson@vch.ca; Vineet.Saini@albertahealthservices.ca; Ruth.Mitchell@gov.ab.ca; Finley, Rita (PHAC/ASPC); Chris Boyer; Trtanj, Juli (Ext.); Cameron, Mary HLTH:EX; Sterloff, Trish HLTH:EX; Tan, Shirlee; Elsenboss, Carina; Duchin, Jeff; Danielle Nagele - NOAA Affiliate; Michelle Hawkins - NOAA Federal; Houston, Addison; THAM KIM; York Emily A; Boardman, Marnie (DOH); Portner, Cory (DOH); Lavigne, Eric (HC/SC); maxime.roy.ccsmtl@ssss.gouv.qc.ca; David Kaiser (CCSMTL); Wasserman, Cathy (DOH)

Cc: Christopher Uejio; Saha, Shubhayu (CDC/DDNID/NCEH/DEHSP); Fyfe, Murray W. (Dr); Henry, Bonnie HLTH:EX; Stanwick, Richard (Dr); McLean, Kathleen [BCCDC]; Lubik, Amy [FH]; kevin.liang@alumni.ubc.ca; s.22

Verge, Shelley; Ye, Xibiao HLTH:EX; Clarke, Kate [BCCDC]; Bharmal, Aamir [FH]; Naik, Rushay (HC/SC); Deegan, Heather; Blessin, Scott [PHSA]; Liv Yoon; Luttrell, Gethsemane

Subject: Expert meeting on emergency responses to extreme heat

When: 2021-07-22 3:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).

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Gestionnaire intérimaire, Programme de chaleur extrême
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MEETING NOTES & Q&A

Expert Meeting on Emergency Responses to Extreme Temperatures (July 22, 2021)

ISSUE & MEETING PURPOSE

In late June 2021 western North America experienced an unprecedented extreme heat event. Hundreds of temperature records were broken in Canada and the US, often on consecutive days at the same location. Nighttime temperatures were also well above seasonal norms. Early information suggests this event had a substantial impact on human health and wellbeing.

Health Canada hosted a meeting on July 22, 2021 of western North American health professionals and heat health experts with the purpose of Copyright

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CONTEXT

- Due to the temperate climate of much of western Canada, in particular of the populous southern BC coast, many western Canadians remain unaware of heat health protective actions and/or may not perceive high temperatures as a health risk until experiencing ill-health.
- In some parts of western Canada, many households do not have air conditioning (A/C).
- While final data is not yet available, early information suggests that those most impacted by the recent extreme heat event in western Canada were older people living alone in their own homes.
- Some communities in western Canada have established Heat alert and Response Systems (HARS) or hot weather response plans to guide effective public health action leading up to and during extreme heat events. Many others are developing or beginning discussions to develop such systems or plans.
- The unprecedented nature of the recent event reinforces the need for new research and the identification of public health best practices to incorporate into these systems and plans.

APPROACH TO DEVELOPING THIS DOCUMENT

This Q&A document:

- provides a summary of meeting outcomes organized by theme, including challenges and possible solutions.
- includes observations from meeting attendees.
- includes additional evidence to support recommendations made from the experts.

QUESTIONS & ANSWERS

A. How to identify populations at risk, improve risk recognition and support appropriate and effective action?

Alert and Warning Systems:

- Health Officials from BC, Washington and Oregon highlighted unprecedented nature of the June/July extreme heat event, including its large geographic scope, long duration, record-breaking maximum and minimum temperatures, and little to no overnight relief.
- Despite the unprecedented nature of the event, experts observed low public health and general public awareness of the degree and potential lethality of the temperatures forecast for the late June / early July extreme heat event.
- Environment and Climate Change Canada provides early notification of likely heat events to public health authorities through the EC Alert Me program. The criteria for heat warnings vary geographically.
- The general public should be encouraged to regularly check the weather through apps (WeatherCan), radio, television, and print media.

Surveillance:

- Health Officials in Washington State highlighted that it is critical to monitor health impact signals (e.g., hospitalizations, ER presentations, ambulance call outs, etc.) in as close to real-time as is possible in order to identify needs and target health interventions at regional, community, and neighbourhood levels.
- Surveillance is important to provide early warning signal, monitor health impacts, target interventions and to evaluate interventions (WHO EURO 2021).

Effective risk communications:

- Experts highlighted the benefits of using trusted messengers to share heat-health messages (e.g., faith and community leaders, pharmacists, primary care physicians). There is potential to expand the network of trusted messengers to other groups who serve those at risk, such as disease-specific associations, AA.
- Meeting participants noted the need to address cumulative warning fatigue, as due to the COVID-19 pandemic and the increasing frequency of extreme events, the population's capacity for receiving, processing and acting on health risk messaging may be oversaturated.
- Experts noted it may be possible to overcome messaging fatigue through messaging targeted directly to those most at-risk of heat health impacts (e.g., the elderly), such as through the use of automated (or manual) phone warning and health advisory systems (Mehiriz *et al*, 2018).
- Experts identified the need to consider linguistic minorities when communicating heat health risks. Effective strategies identified included: translating heat-health materials into multiple languages; identifying (e.g., through public consultation) and incorporating culturally appropriate

themes into heat health messaging (e.g., imagery and symbols); and partnering with community leaders and media outlets.

- Oregon Health Authority noted they produce health promotion products in multiple languages.

Wellness Checks:

- Experts suggested health authorities facilitate or encourage more frequent wellness checks. These can be organized by public health and municipal officials, or undertaken by family members, friends and neighbours. Such checks should adhere to local public health guidance in the context of COVID-19.
- One participant noted that during the recent heat wave in BC, at least one fatality occurred following a morning wellness check. Fatalities have been reported under similar conditions elsewhere. The US CDC recommends checking in on people at higher risk twice a day.
- Experts noted those who live alone (typically older) *are consistently identified* as being at greater risk to heat associated deaths. Individuals living alone may have difficulty recognizing they are at risk or perceiving that it is too hot.
- Experts identified the following tools that may support effective wellness checks:
 - Registries of at-risk residents; partnerships with those who commonly provide services to the vulnerable (e.g., Meals on Wheels, Red Cross, and the Salvation Army);
 - Use of pre-existing social networks (e.g., encourage residents to check-in on friends, family and neighbours); and
 - Partnering with emergency responders and other organized services (e.g., police and military) to conduct wellness checks.

B. How to stay cool at home?

Cool Indoor Environments:

- An expert reported that most homes in BC (without A/C) likely reached indoor temperatures above 26C during the late June/early July extreme heat event.
- Experts identified that safe indoor temperature research for various population groups is ongoing. However, available evidence suggests that the risks of ill-health for the most vulnerable populations increase when indoor temperatures approach and/or exceed 26C (see Dr. Kenny's attached slides).
- Experts noted that pre-existing inequities (e.g., socioeconomic status) will influence how individuals experience extreme heat and that equity should be considered when developing heat health messaging. For example, some adaptations (e.g., A/C, etc.) may be cost prohibitive for some residents.
- Experts from Washington State noted the public health benefits of working with utility providers to ensure that, when possible, outages or service disruptions do not occur during periods of pronounced heat health risk (i.e., planned disruptions or targeted disruptions intended to reduce the burden on the electricity grid).
Experts highlighted that health authorities in some jurisdictions have had success working with utility providers to provide subsidized rates and / or grants for at-risk groups and service providers who support at risk groups.

Cool people directly:

- Health officials who participated noted that many people (especially older adults) do not recognize that they are too hot before it is too late to take effective action and seek medical care.
- Experts noted that full body immersion (i.e. baths) may pose accessibility challenges for some at-risk groups. Partial immersion may be more accessible. One effective partial immersion strategy experts noted is to immerse the lower legs or arms in tepid water (warmer than 15C to avoid cold shock). Frequent repetition may be needed. Generally, the more body surface area immersed, the greater the cooling benefit.
- Due to the frequency with which some at-risk groups experience falls while bathing or using the bathroom, when possible supports should be provide to improve safety and accessibility (Kenny and Meade 2021).
- One expert noted that cooling the body with water, such as the strategies identified above, may be effective but generally, results in short lived benefits and may need to be repeated frequently to be health protective

C. When and how to use cooling centres?

- Several public health officials identified very low usage of cooling centres during recent extreme heat event in western Canada and beyond. Possible reasons identified include: low heat risk perception; preference to stay home, especially during COVID-19; an inability to bring pets; concerns for cultural safety; concerns regarding the inclusivity of the space; and transportation challenges.
- It was identified that some locations traditionally used as cooling centres were currently being used as vaccination centres, and had limited availability.
- Experts noted that the stress of transporting those experiencing heat associated illness to cool environments may increase the risk of death.
- Emerging research suggests that short-term ambient cooling may result in reduced heat loss once re-exposed to a hot environment. Most participants agreed that cooling in place is preferred due to these challenges (Kenny 2021).
- Actions identified by the experts that may improve cooling centre effectiveness include: mapping community needs, heat vulnerabilities, and resources and working to align cooling centre locations with those most at-risk; and by aligning cooling centre locations with locations frequently visited by at-risk groups (e.g. familiar people, locations that allow pets, and familiar and enjoyable activities).
- Public health officials and experts suggested that in extreme and extended heat events, authorities consider extending cooling centre hours and possibly providing sleeping arrangements for those most at-risk.
- A US expert identified the potential benefits of collaborating with transportation companies to provide free/subsidized accessible transportation or in-situ/mobile cooling (e.g., parking air-conditioned buses in places accessible to those at-risk, and providing subsidized use of ride-hailing apps).

- The British Columbia Centre for Disease Control provides [guidance on operating cooling centres in the context of COVID-19](#).

D. How to plan and coordinate an emergency response?

Population and Community Level

- Several experts identified that extreme heat can result in power outages, cooling failures or other impacts to health care facilities and health supporting infrastructure (e.g., public transit). Efforts to incorporate extreme heat considerations into all-hazard emergency planning, including in the health care sector, may help improve community resilience to future events.
- Experts also suggested interfacing directly with the acute care system to prepare emergency rooms, long-term care (LTC) facilities, home care providers and others in advance of an extreme heat event (these actions occur as part of a Level 2 extreme heat alert in greater Vancouver). WHO has a [checklist](#) on planning for heat events for health care facilities.
- In cases when the impacts of extreme heat events are anticipated to or are reaching emergency levels, experts suggested mobilizing additional resources or activating incident management systems.
- For example, England declares a national heat emergency when *"a heatwave is severe and/or prolonged that its effects extend outside health and social care, such as power or water shortages, and/or where the integrity of health and social care systems is threatened. At this level, illness and death may occur among the fit and healthy, and not just in high-risk groups and will require a multi-sector response at national and regional levels"* (PHE 2020). Public health officials noted that some jurisdictions activated their emergency management protocols/incident management systems (IMS) during the late June/early July extreme heat event (in some cases also in response to wildfire events).
- Experts noted that pre-event heat emergency planning can help identify available resources and establish protocols to initiate their use. For example, in heat associated mass casualty events where traditional emergency services are likely to be overwhelmed, some jurisdictions have mobilized other responders to assist in response efforts ([BC RCMP 2021](#)).

CONCLUSIONS & NEXT STEPS

- Extreme heat is a growing public health threat. The recent extreme heat event in western North America has reinforced the need to prepare for future events.
- Health Canada would be pleased to further discuss opportunities to support health authorities in advancing heat response efforts.

REFERENCES

* **Note:** Hyperlinks to other references are provided directly in the body of the text.

- Gamhewage, G. (2014). An introduction to risk communication. WHO.
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Appendix 1: Heat Health Resources

Health Canada Publications on Heat Health

All available here: <https://www.canada.ca/en/services/health/publications/healthy-living.html#climate>

- Extreme heat and human health: For pharmacists and pharmacist technicians
- 3 ways to protect you and your loved ones during an extreme heat event.
- It's much too hot! Protect yourself from extreme heat.
- Keep children cool! Protect your child from extreme heat.
- You're active in the heat. You're at risk! Protect yourself from extreme heat.
- Infographic: Staying healthy in the heat.
- Heat Alert and Response Systems to Protect Health: Best Practices Guidebook
- Acute Care During Extreme Heat: Recommendations and Information for Health Care Workers
- Extreme Heat Events Guidelines: Technical Guide for Health Care Workers
- Communicating the Health Risks of Extreme Heat Events

Global Heat Health Information Network (GHHIN)

- Heat and Health.
- Heat and COVID-19 Information Series

Local and Regional Resources

- Vancouver Coastal Health. www.vch.ca/heat and www.vch.ca/wildfiresmoke
- BC CDC. 2017. Municipal Heat Response Planning in British Columbia, Canada
- BC CDC. 2017. Developing a Municipal Heat Response Plan: A Guide for Medium-sized Municipalities

Heat Physiology

- Kenny, G.P. 2021. Heat Stress in Older Adults (see attached).
- Kenny, G.P and R. Meade. 2021. Q&A Re. Total and Partial Immersion for Cooling (see attached)
- Kenny et al. 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.
- Meade RD, Akerman AP, Notley SR, McGinn R, Poirier P, Gosselin P, Kenny GP. Physiological factors characterizing heat-vulnerable older adults: A narrative review. Environ Int. 2020 Nov;144:105909.
- Matthew N. Cramer et al. Keeping older individuals cool in hot and moderately humid conditions: wetted clothing with and without an electric fan. Journal of Applied Physiology (2020).

International Extreme Heat Event Planning and Response Guidance

- WHO EURO. 2021. Heat and health in the WHO European Region: updated evidence for effective prevention.

Heat stress in older adults

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HUMAN AND ENVIRONMENTAL PHYSIOLOGY RESEARCH UNIT



The following presentations provides a brief overview of the information presented during the meeting hosted by Health Canada held July 22, 2021. Should you have any questions please reach out by emailing me at gkenny@uottawa.ca or call me at 613-562-5800 ext. 4282.

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Is lower limb immersion (and possibly whole body immersion via baths/showers) likely or unlikely to cool sufficiently to avoid health impacts particularly during high intensity, long duration heat events?

Are you able to provide some context about when and how either partial or total body immersion can be helpful (recalling the information about the risk of cool water shock and slips/falls)?

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Robert Meade (PhD) and Glen P. Kenny (PhD).

Should require additional information please email us at either rmead015@uottawa.ca and/or gkenny@uottawa.ca

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