Key Messages

- Hot washes and debriefs are two activities that can contribute to public health emergency preparedness (PHEP). These activities capture at a high-level, the strengths and weaknesses of an emergency response as well as reflect on learnings for future response and recovery efforts.

- Based on the public health literature, major components of a hot wash or debrief were identified and described along with real-world examples. These encompass timing, participants and specific roles, guidance, steps and materials, discussion questions, and post-hot wash reporting.

- Across the hot wash and debrief literature, there are few evidence-based frameworks to provide a foundation for consistent approaches and research.
Conducting a hot wash or debrief soon after a public health emergency response has ended is an important way for local PHUs and other health system stakeholders to have time-sensitive discussions about their public health emergency response.

Sharing information after real world events is useful to build practice knowledge and understand application nuances of hot washes and debriefs. Overall, more research is needed to understand hot wash and debrief processes and their impact in PHEP.

**Issue and Research Question**

The Coronavirus Disease 2019 (COVID-19) pandemic has raised awareness about the state of PHEP for countries around the world. PHEP has previously been defined as: “the capability of the public health and health care systems, communities, and individuals, to prevent, protect against, quickly respond to, and recover from health emergencies, particularly those whose scale, timing, or unpredictability threatens to overwhelm routine capabilities”.¹ As the public health system plans for pandemic recovery and strategies to support enhancing PHEP for future health threats, it is important to emphasize learning and improvement. Hot washes and debriefs are two specific, but related strategies described in the emergency preparedness literature that can support ongoing response efforts.²

- **A hot wash** is an activity typically undertaken immediately after a public health emergency or incident to capture initial comments, identify challenges and circulate solutions as well as reflect on learnings that may be used to address ongoing and future responses. A hot wash can inform ‘in the moment’ efforts, the direction of a recovery assessment and guide future responses. The term ‘hot debrief’ is used in some jurisdictions (e.g., Australia, New Zealand, United Kingdom).³⁻⁷

- **A debrief** is described as a short qualitative assessment conducted after a hot wash (if a hot wash is done), and discusses the strengths, weaknesses and lessons learned at a high level, to inform ongoing and future emergency planning.⁸ While there is variation in terminology and approaches, both hot washes and debriefs identify information about events while they are recent, pinpoint issues, initiate solutions and support more in-depth PHEP reporting such as After-Action Reviews (AAR). They can both also inform ongoing response efforts, recovery, further in-depth analysis and planning for future emergency responses.

The primary aim of this Evidence Brief is to describe the major components of a post-emergency hot wash or debrief relevant to public health. Selected examples from the evidence are provided throughout to guide direction and highlight real-world hot wash and debriefs undertaken. Components described include: hot wash and debrief timing, participants and specific roles, guidance, steps and materials, discussion questions and post-hot wash and debrief reporting.

The effectiveness of hot washes and debriefs as well as psychological debriefing was out of scope for this Evidence Brief. The World Health Organization (WHO) recommends that psychological elements not be a part of debriefing to lower the risk of anxiety and post-traumatic stress.⁹
Methods

During July and August 2021, Public Health Ontario (PHO) Library Services conducted searches of primary and preprint literature published from 2003 onward. The search was re-run on December 22 2021 to retrieve the most recent indexed literature. The search included the year 2003 to capture articles related to the severe acute respiratory syndrome (SARS) outbreaks. The literature search involved three databases: MEDLINE, Business Continuity & Disaster Recovery and Scopus. Search terms included, but were not limited to: health care, public health, debrief, hot wash, quality improvement, critical incident, health emergencies and public health emergency management. The detailed subject headings and search strategy is available upon request.

A search of grey literature was also conducted (August 2021), using the same search concepts as the indexed searches and was applied to five custom Google search engines. The detailed search strings and strategy is available upon request. The first 100 results from each search string were reviewed for relevance. The results from the grey literature search were combined and duplicates were removed.

Articles were eligible for inclusion if they reported a hot wash and/or debrief strategy or implementation and were related to PHEP or emergency management for infectious or non-infectious diseases that were public health emergencies and/or involved outbreaks and/or pandemics within Organization for Economic Co-Operation and Development countries. Health care settings were part of the initial search, but excluded during screening. Three reviewers were involved in the screening process. All results were divided randomly among the three reviewers; each acted as the primary screener of their third, and 20% were screened independently by a second reviewer. Full text articles were retrieved and followed the same screening process as the title and abstracts with the same three reviewers. Discussion was used to reach agreement on the final set of articles.

For all articles included in this Evidence Brief, any methods, process details, contexts as well as key findings pertaining to hot washes and debriefs were extracted. The extraction task was divided among the three reviewers, who each extracted relevant information and summarized the content from one third of the final set. The common components reported for undertaking a hot wash or debrief were identified using a thematic analysis approach. The major components were first identified by one reviewer, followed by an iterative process of analysis and discussion about the extraction and included articles with two further reviewers. Discrepancies were resolved by discussion and consensus.

The sub-sections of the main findings are organised by the major hot wash and debrief components identified from the evidence. The components are described in turn, reflecting the approximate sequence they occur if setting up and conducting a hot wash or debrief: timing, participants and roles, guidance, steps and materials and post-hot wash or debrief reporting. Some of the evidence descriptions have additional real world details noted.

Prior to publication, content was reviewed by PHO subject-matter experts.
Main Findings

A total of 938 indexed records were retrieved from the library searches (736 in July-August and 202 in December, 2021). After title and abstract screening, 15 were included for full-text review (11 from July-August, 4 from December 2021). After assessment for relevance, three met the inclusion criteria (from the July-August search). From the grey literature searches, 137 results were retrieved. After title and abstract screening, 81 full text grey literature articles were further screened and 61 met the inclusion criteria. The final set of included articles for this Evidence Brief were three articles from the indexed literature plus 61 articles from the grey literature.

The literature included emergency plans, reports, guidelines, standards, toolkits, evaluations and journal articles. The grey literature articles were produced by government organizations at various levels as well as relevant public health and global health agencies such as the WHO, United Kingdom’s National Health Services (NHS) and the United States of America’s Federal Emergency Management Agency (FEMA).

Most of the hot wash and debrief information was found within a public health emergency plan or outbreak management plan (n=27). The majority focused on general public health emergencies/major incidents (n=27). Other articles focused on the influenza pandemic (n=8), COVID-19 (n=6), H1N1 (n=6), as well as Anthrax, Severe Acute Respiratory Syndrome (SARS), communicable diseases and infectious diseases. Across the final set of articles, approximately half provided process details (n=31).

Two articles described discussion-based tabletop hot wash exercises within the North America context.

Eleven real-world examples of hot washes or debriefs (implemented) were identified from the indexed and grey literature. The public health events or contexts were: H1N1, SARS, COVID-19, and a pandemic influenza. For example, hot debriefs were conducted during the decommissioning of United Kingdom Regional Flu Response centres to identify lessons learned related to the H1N1 pandemic.

Selected real-world examples are included throughout the Evidence Brief to illustrate hot wash or debrief components. The examples range from small components of an implemented hot wash or debrief to larger scale considerations.

Timing of a Hot Wash or Debrief

Most articles did not provide a specific timeline for when a hot wash or debrief should be conducted. Instead, many mentioned “soon after” a public health emergency/incident/outbreak or when the emergency is deemed over. This is to ensure information and experiences about the emergency response are still fresh in an individual’s mind. One article noted having an internal debrief by the end or after the first wave of an emergency. Similarly, the articles describing simulations reported the importance of completing a hot wash or debrief at the end of a public health emergency planning tabletop exercise, informing roles and responsibilities for future emergency planning work.
Six articles did report details about timing for initiating a hot wash and/or debrief (n=6). Overall, a hot wash or debrief is suggested to be done within one week of de-escalation, no later than two weeks, or between one and four weeks if more than one type of debrief is being conducted. When multiple debriefs are conducted for an ongoing event, they usually occur at key milestones. In addition, if an internal and external debrief is being conducted, the internal debrief generally takes place prior to the larger recovery debrief to ensure lessons learned within a team/organization are captured and possibly acted upon immediately.

The WHO suggests the duration of debriefs range from a few minutes to a few hours.

**Real World:**

While the real-world examples may note important calendar dates, they did not describe details about optimal timing for undertaking a debrief or hot wash. Consistent with the overall body of evidence the real-world examples report that a hot wash or debrief should occur immediately following the response. Two articles mention conducting a debrief during an outbreak. For the duration of a debrief, 60-90 minutes was noted.

**Participants and Roles**

The included articles report that all personnel who were part of, or familiar with, the entire emergency event or response should be involved in the hot wash or debrief. Participants can therefore range from key officials within an organization, external partners, to technical experts such as an epidemiologist. The involvement of public health in a hot wash or debrief was explicit in several resources.

**Coordinator and Facilitator Roles**

Coordination of a hot wash or debrief is important, and the literature suggests it is necessary to assign the role. The coordinator ensures that a hot wash or debrief takes place, determines who will manage the assessment, contributes to the terms of reference (if required) and coordinates the assessment as a whole. The coordinator title varies across the included evidence (e.g., Incident Manager, Incident Commander). In some articles, the coordination role for a hot wash or debrief is performed by more than one person.

A facilitator is another specific role reported in the hot wash and debrief articles. The role may be undertaken by an internal or external facilitator, depending on the context. A facilitator from outside the organization and indirectly involved with the event may have a more objective lens. Examples of facilitators for an external debrief reported were the Ministry of Health, police or fire services. For internal debriefs, the articles suggest a hot wash or debrief can be facilitated by a key person within the organization as they can obtain initial feedback that may require immediate action.
Real World:

Stakeholder involvement among the real-world examples included anyone involved in the response,\(^4\) from front-line staff and public health employees,\(^{44,57,58,64,65}\) to local, regional, provincial or national government officials.\(^{64,65}\) For example, in Ontario, the Simcoe Muskoka Public Health Unit responded to two waves of pH1N1, the second wave response involving immunization. A series of debriefing meetings were completed at various levels including at the team, program, executive team and provincial level, focused on the second wave incident response period. The debrief meetings gathered perspectives on lessons learned about their local pandemic response and recommendations for changes to their pandemic plan and also informed pandemic plan reviews at the provincial level.\(^{64}\) A second real-world example from California described how attendees at a Contra Costa Health Services debrief for the H1N1 pandemic ranged from Public Health, the Sheriff’s Office of Emergency Services and the American Red Cross.\(^{65}\)

Standard Procedures and Guidance

We identified eleven articles that were explicit about utilizing a standard debrief practice. These were either guidelines,\(^{2,53,60,61,67}\) standards,\(^{35,49}\) toolkits,\(^{40,41}\) frameworks,\(^{36}\) or protocols published by regional Public Health Units (PHUs) or public health organizations\(^{50}\).

Two of the guidance articles were Canadian. Fraser Health Authority (British Columbia) reported that their Stand Down protocol, which included conducting post-outbreak debriefs, was based on the organization’s Infection Prevention and Control best practice guidelines.\(^{50}\) The Public Health Agency of Canada (PHAC) guidelines are based on their core competencies. The core competencies state that for policy and program planning, implementation and evaluation, the manager/supervisor is to arrange a debriefing session after a public health emergency to ensure that lessons learned are captured and to evaluate the need for recovery intervention for the team.\(^{67}\)

An Emergency Preparedness and Response for an H1N1 audit conducted in June 2010 by PHAC noted that even though an informal or formal assessment or study such as a debrief or AAR occurred as part of the H1N1 recovery process, it would be beneficial to have more mechanisms in place. The mechanisms recommended included standardized approaches for processes such as hot washes, sharing reviews across organizational units, monitoring the implementation of recommended improvements, and archiving all reviews in a central repository so they are all easily accessible in the future.\(^{55}\)

Real World:

Two of the real-world examples included a framework or guideline. The first example noted the National Microbiology Laboratory (NML) emergency management program framework, which was developed after the 2003 SARS outbreak to provide a framework for responses to public health events. The emergency program framework includes a quality and continuous improvement component. A key factor of this component is ensuring that the NML implements lessons learned from all responses. It states, “Hot-wash discussions are conducted immediately following all responses. The goal of a hot-wash discussion is to bring together all the individuals who participated in a response to identify the strengths, weaknesses and challenges of the response so that opportunities for improvement can be identified and documented in an After Action Review.”\(^{4}(pg. 104)\)
The second example is from the United Kingdom and discussed the NHS Core Standards for Emergency Preparedness, Resilience and Response (EPRR). Under the Governance domain, the core standard for continuous improvement process notes: “the organisation has clearly defined processes for capturing learning from incidents and exercises to inform the development of future EPRR arrangements.”

**Hot Wash Steps and Materials**

The information extracted about hot wash or debrief preparation and steps is consistent across the included articles but lacks detail. The common steps for a hot wash/debrief process are: preparation; conducting the hot wash or debrief; writing a report of the findings; and applying the findings to inform the ongoing response activities and/or future emergency preparedness work. Several articles also described a process of recurring meetings if a response was ongoing.

Specific hot wash preparation and materials reported were: a summary of the public health event to share at the start of the debriefing process, debriefing instructions, ground rules, goals, agenda, terms of reference, use of a form/template, open-ended debriefing questionnaire, and the setting up of meetings (e.g., town hall). One article noted that a somewhat informal setting may allow open dialogue and that opportunities to learn should be evident. Preparation times for a hot wash and/or debrief were not identified within the included articles.

A form/template is a helpful guide that a facilitator can use to structure a hot wash. The form/template may have headers such as ‘List the top three organizational strengths’ or ‘List the top three items requiring improvement’. Organizations may also share with their participants an open-ended debriefing questionnaire. Providing a questionnaire (in advance and/or online) may be more feasible for those who cannot attend an in-person debrief meeting and is a way to optimize collection of all participants’ experiences.

Minutes from a hot wash and/or debrief are recommended to be recorded or scribed (e.g., Word document). The person leading the debrief or a project manager may be responsible for the minutes.

**Hot Wash or Debrief Discussion Questions**

The hot wash or debrief is intended to be a positive learning process that addresses organizational performance rather than a performance appraisal. The hot wash or debrief discussions generally focus on the management of the public health event. Common questions asked during a hot wash or debrief cover strengths, weaknesses, lessons learned and feedback/recommendations.

Examples of discussion questions:

1. What are the strengths of the response?
2. What are the weaknesses or opportunities for improvement?
3. What are the lessons learned?
4. Any feedback or recommendations for the emergency response?
Further questions frequently asked during a hot wash or debrief were identified:56

- What would you do again in a similar public health emergency?
- What would you not do again in a similar public health emergency?

In addition to the specific response, other important topics may also be part of the debrief discussion. Topics identified among the articles included: internal communications; the extent the emergency plan was implemented as developed (fidelity); the warning of, and informing of plans for the public or media as well as identifying any emergency response health and safety issues.23,67

Several articles also noted, when an external debrief is planned, any proceeding internal debriefs need to make sure the questions asked are the same so the findings from an organizations’ own teams are known prior to, and relatable to the larger discussion with external stakeholders.3,15,23,24,26

Reporting After a Hot Wash or Debrief

There is consistency across the included articles that a hot wash or debrief is followed by a written report. Different types of reports were described, including an outbreak report,24,60,67 formal report,42,46,54 evaluation report,28,44,58,64 post-operation/incident/activation report,3,22,26,28 and debrief report.6 Most of these report types have similar sections such as lessons learned, actions, recommendations and improvements that could be embedded into ongoing and future emergency management work.3,6,21,23,28,36,44,46,54,58,60,64,67

Other contextual information such as epidemiological evidence and laboratory analysis were evident in the outbreak reports.24,60 In terms of report sections, one resource described how a debrief report could have an aim, objectives, situation, planning process, the positive and negative observations and recommendations for improvement. Debrief reports can also be supplemented with a factual record of the event/incident, which could consist of the event’s timelines and when agencies were involved.23 In general, these reports are sent to the senior teams, Public Health Emergency Response teams, and local government officials.3,26,67

In addition to the report types noted above, the most common report/review completed after a hot wash and/or debrief is an AAR.4,5,10,11,15,18,29,34,35,37-41,43,52,57,66 An AAR is distinct from the debrief process, as the AAR is more in-depth and answers the additional question of “why” (i.e., why did some processes work well, while others did not).69 An AAR is important as it is usually not possible to systematically address the ‘why’ immediately after an event.66 Government agencies may develop the AAR as a legal document for lessons learned or a neutral third-party may capture the lessons learned from the AAR through a formal audit process.38,40 For more information about conducting an AAR, see the Rapid Review: Best Practices for Conducting In- and After-Action Reviews as part of Public Health Emergency Management.69

The lessons learned from a debrief are to support continuous improvement during recovery and to inform future emergency work.4,5,7,14-19,24,29,30,34,36,44,51 In terms of a timeline between the hot wash or debrief data collection and the completed report to share, one article noted that a debrief report is to be created within four weeks and the AAR within eight weeks of the incident.10
Real World:

The NHS England Core Standards for EPRR noted that organizations had updated their pandemic influenza arrangements by leveraging lessons identified from the 2009/10 pandemic which included local debriefings.49

Conclusions and Limitations

The concept and terms hot wash and debrief are relatively common in the PHEP field. However, very few research articles were located specifically on this topic and we found significant variation in the level of detail provided about utilization. The goal of this Evidence Brief was to outline some of the key components to undertake a hot wash or debrief in a sequential manner, along with some real-world examples related to public health outbreaks or emergencies. Among the 64 articles included, the consistent components identified were: timing, participants and roles, standards and guidance, hot wash steps and materials, discussion questions and post-hot wash reporting.

This Evidence Brief contributes by integrating the best available evidence and provides a starting point for public health units planning a hot wash or debrief to inform their ongoing and/or future emergency preparedness efforts (see ‘Additional Resources’ for more information). One limitation was that few real-world examples were located to draw from, and they spanned just five countries: United Kingdom (UK), Ireland, New Zealand, United States of America (US) and Canada. Moving forward, a valuable contribution to the PHEP field is sharing information after real-world events to identify gaps, leading practices, and lessons learned. In addition, other sectors may also be worth exploring to determine if hot wash processes and elements can be adapted to the public health field. For example, health care was out of scope but hot washes and debriefs are routinely done within health care settings to improve patient safety and outcomes.70

In terms of guiding frameworks, we only located two from the search results. The NLM and NHS frameworks are US and UK based and focus on laboratory and health care hot wash or debrief practices, respectively.4,68 We suggest a common public health framework would provide a foundation for guidance and a more systematic approach for local public health units as well as a focus for future public health research that aims to better understand hot wash and debrief processes and impact. Canadian research from the PHEP context, conducted by PHO colleagues, describes a conceptual framework of essential elements for a resilient public health system aimed to promote readiness for emergencies.71 ‘Learning and evaluation’ is one element in this PHEP framework, described as timely assessments that are key to recovery. Key indicators corresponding to the framework were developed to measure the performance of public health organizations in PHEP. The two learning and evaluation indicators are framed around conducting a post-incident evaluation and also quality improvement through exercises and responses with a comprehensive plan in place.72
A hot wash/debrief facilitates reflection upon, identification of, communication about ongoing response efforts and recovery. Public health is positioned to bring together different partners and sectors (e.g., education, health protection, health care) to improve the health of our communities. The PHEP indicators could support monitoring of hot wash or debrief practices. Future research agendas could also be developed based on the PHEP framework, such as evaluation of the fidelity of emergency response plans, as well as exploration of its application in the context of COVID-19. The disruption to everyday life due to the COVID-19 pandemic is unprecedented. Where did public health succeed, how were decisions made, what needs to improve in the public health response to a public health emergency?

Implications for Practice

- Conducting a hot wash or debrief soon after a public health emergency response has ended is an important way for local PHUs and other health system stakeholders to have more time-sensitive discussions about their public health emergency response.

- There is a lot of variation in the literature in terms of how and when to undertake a hot wash or debrief after a public health emergency response. Many questions still remain with regard to a best practice or approach. This Evidence Brief provided practice examples and limited guidance documents or frameworks.

- Consider the main components identified in this Evidence Brief as a road map for undertaking a hot wash or debrief. For example, assign a hot wash coordinator role and ensure consistent discussion questions are asked for the internal and external debriefs.

- It is ideal to conduct the hot wash or debrief when the experiences are recent and ‘fresh’. Similarly, any reporting of the debrief findings is needed in a timely manner to inform ongoing or future public health emergency response efforts.

- Hot wash and debriefs can support the process of recovery and ‘building back better’ by informing ongoing emergency responses and preparedness for future public health incidents and emergencies.

- Using a common evidence-based framework across the hot wash and debrief area would provide a foundation for consistent approaches and research, which in turn would foster greater understanding about the hot wash and debrief processes and their impact in PHEP.

- To understand the application nuances and impact of hot wash and debrief strategies during and after the COVID-19 pandemic, robust research and sharing information after real world events is essential to advancing PHEP knowledge and practice in this context.

- See the Additional Resources list for links to more information.
## Additional Resources

Grey literature resources include tools and resources to use throughout the hot wash and debrief process. See Table 1 for details.

### Table 1. Resources to guide organizations, leadership or teams through the hot wash or debrief process

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
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<tbody>
<tr>
<td>Agency for Healthcare Research and Quality (AHRQ)</td>
<td>A guide to support team-based strategies and tools to enhance team performance and patient safety, which includes a section on reviewing debriefing and includes a checklist to support this process.</td>
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<tr>
<td>Pocket Guide Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS)</td>
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<tr>
<td>Government of British Columbia (BC)</td>
<td>This webpage includes resources to support the debrief process including: task summary reporting templates, debriefing session report templates, and facilitated debrief resources.</td>
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<tr>
<td>Debrief After An Emergency</td>
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<tr>
<td>London Resilience Partnership Recovery Coordination Framework</td>
<td>The Framework is intended to be used as a guide for those involved in recovery co-ordination. The Framework includes a section on debriefing (Section 2.8) and provides a structure for recovery debriefing reporting (Section 2.9).</td>
</tr>
<tr>
<td>(Section 2.8 Evaluation, debriefing and collecting of lessons, and Section 2.9 Recovery Debrief Template)</td>
<td></td>
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<tr>
<td>New Zealand Ministry of Health National Health Emergency Plan</td>
<td>The plan builds on the experiences of preparing for, building resilience to, responding to and recovering from a range of hazards in New Zealand. Organization debriefings are included as an important planning consideration, and Appendix Nine includes information, principles and resources specific to organizational debriefing.</td>
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<tr>
<td>(Appendix Nine Organizational Debriefings)</td>
<td></td>
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<tr>
<td>Simcoe Muskoka District Health Unit</td>
<td>This report summarizes the coordinated response initiated by Simcoe Muskoka District Health Unit (SMDHU) in 2009 in response to the pH1N1 virus, guided by the health unit’s Pandemic Influenza Plan. Appendix A of this document summarizes debriefing process Simcoe-Muskoka utilized during this public health response, including the goals, key questions, and participants in the debriefing process.</td>
</tr>
<tr>
<td>Response to pH1N1 in Simcoe-Muskoka 2009 (Appendix A: pH1N1 Influenza Virus Response Incident Debrief)</td>
<td></td>
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<tr>
<td>U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA)</td>
<td>This form is to be used by a facilitator to conduct a Hot Wash exercise. This form helps to record the top three strengths and the top three items requiring improvement as observed during the exercise. Upon completion of the exercise, this form is combined with participant questionnaires, the completed after-action review, and attendance rosters.</td>
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<tr>
<td>Hot Wash Form</td>
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<tr>
<td>U.S. National Association of County and City Health Officials (NACCHO) Capacity-Building Toolkit for including Aging and Disability Networks in Emergency Planning (Module Nine)</td>
<td>The purpose of the Capacity-Building Toolkit for Including Aging and Disability Networks in Emergency Planning (hereafter, the “Toolkit”) is to serve as a resource to guide the aging and disability networks in increasing their ability to plan for and respond to public health emergencies and disasters. Module Nine of the Toolkit covers recovery and includes resources on the hot wash process.</td>
</tr>
</tbody>
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References


Conducting a Hot Wash or Debrief: Common Components for Public Health


44. Richardson E, Medical Officer of Health (Public Health Services). Information report to: Mayor and members; Board of Health. Re: Fall pandemic H1N1 influenza preparedness BOH09028 (city wide) [Internet]. Hamilton, ON: Public Health Services; 2009 [cited 2021 Aug 12]. Available from: http://www2.hamilton.ca/NR/rdonlyres/1FAB7215-CACE-4A4D-ABA0-FD3369ECD283/0/Sep28BOH09028FallPandemicH1N1InfluenzaPreparedness.pdf


Citation

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