McMaster University | HEALTH FORUM

COVID-END COVID-19 Evidence Network to support Decision-making ... in Canada

COVID-19 Living Evidence Profile #4

(Version 1: 14 May 2021)

Question

What went well and what could have gone better in the COVID-19 response in Canada, as well as what will need to go well in future given any available foresight work being conducted?

Background to the question

With increasing numbers of Canadians getting vaccinated each day, the time to examine the response to the COVID-19 pandemic while it is still fresh in the minds of policymakers and stakeholders is quickly approaching. Answers to questions about what could have been done better and what was done well are necessary to allow us to learn from both the missteps and the successes in the COVID-19 responses that were implemented during the pandemic. This reflexive lens will help to ensure that Canada is well positioned for future waves of the pandemic, for any future pandemics, and for future public-health challenges that share characteristics with this one. We have used the framework below to organize lessons learned from evidence documents, opinion pieces that meet one or more explicit criteria (as described in Appendix 1), and the experiences of Canadian provinces and territories throughout the pandemic as captured in reports and other analyses made available by federal and provincial governments and their associated agencies.

Organizing framework

- **Type of response**
  - Cross-cutting responses (which provides a 'way in' to bigger issues like cross-sectoral governance, integrated data systems, and the research infrastructure that can be leveraged)
  - Public-health measures
  - Clinical management
  - Health-system arrangements
  - Economic and social responses

Box 1: Our approach

We identified research evidence addressing the question by searching the COVID-END inventory of best evidence syntheses, the COVID-END guide to key COVID-19 evidence sources (which includes several databases containing COVID-19-specific single studies, such as COVID-19+ and L*VE), EMBASE, and select additional grey-literature sources in the 5 to 11 May 2021 period. We identified Canadian jurisdictional experiences by searching federal and provincial jurisdiction-specific sources of evidence by hand searching government and government agency websites.

We searched primarily for empirical studies (including those published in the peer-reviewed literature, as pre-prints and in the 'grey' literature) and opinion pieces (specifically those that justify the position(s) taken in one or more ways described in Appendix 1). We also searched for full systematic reviews (or review-derived products such as overviews of systematic reviews), rapid reviews, protocols for systematic reviews, titles/questions for systematic reviews or rapid reviews that have been identified as either being conducted or prioritized to be conducted.

In this first edition, we did not appraise the methodological quality of empirical studies deemed to be highly relevant, but we were prepared to appraise (using AMSTAR) the methodological quality of full systematic reviews and rapid reviews deemed to be highly relevant, had we found any.

This living evidence profile was prepared in the equivalent of three days of a 'full-court press' by all involved staff, and will continue to be updated once per month to provide evidence updates that can support the development of lessons learned from policy approaches implemented during the COVID-19 pandemic.

- **Level of government**
  - Federal (including pan-Canadian organizations)
  - Provincial/territorial
  - Municipal
- **Types of policy instruments**
  - Legal and regulatory (e.g., acts or regulations that divide up public-health functions or keep them together)
  - Economic (e.g., public expenditure, public ownership, and contracts)
  - Voluntary (e.g., standards and guidelines, formalized partnerships, and less formalized networks)
  - Information and education (e.g., communications, combating misinformation, and supports to implementation)
- **Equity considerations**

What we found

We identified 42 evidence documents, of which we deemed 23 to be highly relevant, including:
- one protocol for reviews that is underway;
- 15 single studies; and
- seven opinion pieces that met one or more explicit criteria.

We outline lessons learned from the most highly relevant evidence documents and from the jurisdictional scans in narrative form below. This is accompanied by Table 1, which provides more details about key findings from each of the identified evidence documents and from the government reports and analyses captured in the jurisdictional scans. We also outline the type and number of all documents that were identified in Table 2.

For this living evidence profile, we had planned to designate evidence documents as highly relevant only when they provided explicit lessons learned during the pandemic that were grounded in empirical evidence. We did not plan to consider documents to be highly relevant when they simply provided data that could be used to derive lessons learned but were not (e.g., studies that examined the distribution of the burden of COVID-19 on racialized communities or how infection rates changed in relation to the timing of public-health measures), or when the document authors identified (say in the discussion section of the document) potential implications for doing things better or differently, but these implications were not based on the data provided in the report. However, this distinction was difficult to operationalize consistently and we plan to do additional work on this before completing the first update in mid-June. Once we can reliably make such distinctions, we plan to provide a more robust synthesis of the key lessons learned at the level of thematic areas and not simply at the level of individual documents.

For those who want to know more about our approach, we provide a detailed summary of our methods in Appendix 1. In addition, we provide detailed insights from the highly relevant evidence documents in Appendix 2 (including their relevance to the categories in the organizing framework, key findings, and when they were conducted or published). We also provide detailed summaries of reports and assessments of policies implemented from Canadian provinces and territories in Appendix 3. Documents excluded at the final stages of reviewing are provided in Appendix 4.

Key findings from highly relevant evidence documents

Cross-cutting responses

One primary study found that most Canadians reported strongly approving of the government's response to and communication about the COVID-19 pandemic in March 2020. (i.e., the month in which COVID-19 was declared a global pandemic). In addition, one opinion piece provided examples of what went well in the COVID-19 response at the federal level, including:

- an early and decisive response to the pandemic that managed to avoid overwhelming acute-care settings in provincial and territorial health systems;
- the federal government intervening to ensure the availability of personal protective equipment to ensure shortages in select provinces were quickly remedied; and
- residents and businesses largely respecting the direction provided by public-health officials at the federal level.

The same opinion piece noted some areas where the response could have been improved, including:

- lack of timely release of national guidelines for managing cases in long-term care homes;
- lack of national data-collection standards, including for surveillance data by income level and race);
- backlogs in testing and rigid testing criteria, which challenged our ability to understand the full epidemiological picture of the pandemic;
- lack of human resources to undertake contact tracing, which hampered our ability to limit spread; and
- limited supports available for those experiencing housing insecurity and homelessness, and including these considerations in public-health guidelines.

Public-health measures

At the federal level, one primary study found that most news releases and communications aligned with the tone and timing of messages from Chief Medical Officers of Health and changing epidemiological status of the pandemic. Furthermore, four primary studies that focused on British Columbia and Ontario reported key aspects that went well with their respective COVID-19 responses, which included:

- British Columbia being the first province to enact the most rigorous public-health measures, which was even before the pandemic declaration by the WHO, with the other provinces implementing measures following the declaration;
- implementing rapid testing, public-health measures (e.g., visitor restrictions, cohorting, single-site restriction for staff), external assistance from infection-prevention and control support teams, adequate access to personal protective equipment, team-based approaches, and coordinated communication between support teams in long-term care homes, which were essential to controlling and managing COVID-19 outbreaks in these homes in British Columbia;
- using a virtual-education program called the Elderly Long-Term Care COVID-19 to deliver new best practices for healthcare delivery by healthcare providers in long-term care homes in Ontario; and
- the vast majority of respondents (93.5%) involved in the hospital-based responses reported that they believed that the implementation of the Infection Prevention and Control (IPAC) SWAT team improved the management of COVID-19 outbreaks at long-term care homes in Ontario.

With respect to what could have been improved, two primary studies focused on the long-term care sector in British Columbia and Ontario, and noted specific areas where the outbreak-management response could have been stronger, including:

- improving coordination and engagement with long-term care system leaders;
- reducing the delay in identifying cases in long-term care homes;
- implementing public-health measures effectively;
- addressing harms related to public-health measures (e.g., isolating residents and the impact on their mental health); and
- improving communication between support (e.g., infection control) and management teams.

In addition, one opinion piece described how existing systemic inequities that affect Indigenous communities in northern Manitoba were exacerbated during the pandemic and limited the ability to adhere to public-health recommendations. To help improve the response within Indigenous communities, the same opinion piece recommended that future guidance should include the voices of the Indigenous communities, and that appropriate funding should be allocated to address challenges that have been compounded during the pandemic.

Health-system arrangements

At the federal level, one opinion piece concluded that many of the issues central to outbreaks in the long-term care sector are long-standing and require re-examining health-system arrangements following the pandemic, which may include:

- addressing labour-force challenges;
- improving regulations focused on working conditions, ownership and employer practices; and
- upgrading physical structures of long-term care homes in Canada.

Three next steps were identified in a stakeholder dialogue designed to systematically elicit stakeholder views on identifying and harnessing the potential of technology in long-term care across Canada, both in general and in relation to COVID-19:

- harnessing technologies that enable person-centred care and support in long-term care;
- implementing policy and organizational processes in the sector that support making small yet rapid changes that are centred on residents, caregivers and families; and
- using funding models that enable ways of doing things differently.

One primary study evaluating change to the operation of Canadian cancer-treatment centres during the first wave of the pandemic, found that outreach programs may be needed in the coming months and years to catch up on the backlog of cancer screening, and to reduce delays in the diagnosis and treatment of cancer patients in Canada.

At the provincial level, five studies examining the province of Ontario's response to COVID-19 outbreaks in long-term care homes found evidence of the success of three programs that were implemented in long-term care homes or hospitals, including:

- collaborations between long-term care homes and acute-care hospitals in managing COVID-19 outbreaks;
- mobilizing infection prevention and control (IPAC) teams to assess IPAC preparedness in several long-term care and retirement homes, and providing education and training on IPAC practices along with contingency planning support to help the homes manage outbreaks and prevent them in the future; and

- a virtual education program for educating providers in long-term care homes on time-sensitive and rapidly evolving information throughout the pandemic.

However, the five studies also identified how approaches could have been improved, including:

- better engagement with leaders in the long-term care sector to plan a more coordinated pandemic response that is feasible to implement;
- earlier implementation and enforcement of policies designed to limit nursing-home staff from interacting with multiple sites to reduce staff's mobility and risk of infection for staff and residents; and
- delayed response to protecting residents in long-term care homes as compared to British Columbia where actions such as implementing a single-site working policy, standardizing staff wages, providing additional support for homes in outbreak, and requiring IPAC, testing and screening measures were taken quickly.

Economic and social responses

One opinion piece noted that the Canada Emergency Response Benefit and expansions to unemployment insurance programs have been valuable in supporting women economically during the pandemic.

Based on lessons learned regarding the negative impact the pandemic and associated responses have had on women in the economy, two opinion pieces proposed the following options for advancing women's participation and inclusion in the economy moving forward:

- mandating intersectional gender-based 'plus' analyses in policy and program development; and
- bolstering supports including affordable childcare (particularly for essential workers) and income supports for those who do not qualify for the Canada Emergency Response Benefit.

Another opinion piece found that lower childcare fees have been associated with a lesser degree of withdrawal of children from childcare during the pandemic. Based on this finding, the piece points to the importance of considering the childcare sector as an essential service during the national recovery and considering ways to reduce the burden of childcare on parents.

Key findings from the jurisdictional scan

Cross-cutting responses

At the federal level, the Public Health Agency of Canada was found to have responded early to daily reports from the Global Public Health Intelligence Network despite the shortcomings of the report in not considering the pandemic risk. The Public Health Agency of Canada was found to have efficiently communicated information related to the risk of COVID-19 to provincial health officials. Despite this, the Auditor General of Canada reported that pandemic preparedness could be improved through:

- improvements in health surveillance information to promote timely risk assessments of pandemic threats; and
- updated and tested pandemic-response plans and guidance.

At the provincial level the Auditor General of Ontario released a six-part report that describes in detail Ontario's COVID-19 response. Select cross-cutting lessons include that:

- lessons and strategies from the SARS outbreak were not implemented prior to the COVID-19 pandemic, and lessons learned from the previous waves of the pandemic have not been applied consistently;
- communication with external stakeholders was inconsistent and not timely;
- there is a need for timely communication of information about the number of travellers entering Ontario given that it was viewed that there was limited or inaccurate information from the federal government early in the pandemic; and
- there is a need to improve communication between support (e.g., infection control) and management teams.

Public-health measures

At the federal level, the Chief Public Health Officer of Canada's report highlighted that the Canadian healthcare system responded well to the first wave of the pandemic due to the increased public-health measures and approaches to increase system capacity undertaken by provinces and territories between April and August 2020.

With respect to specific sectors, an evaluation by the Canadian Institute for Health Information (CIHI) highlighted that there was greater variation in the public-health measures implemented in long-term care homes across provinces and territories than in other OECD countries. The evaluation found that countries such as Australia, which implemented specific measures targeted at long-term care homes at the same time as their stay-at-home orders and closures were put in place, had fewer infections and deaths compared to Canada. Given this, the evaluation pointed to the need for sector-specific responses alongside more general public-health measures.

The Auditor General of Canada reported that border-control measures could be improved through:
- reviews by the Canada Border Services Agency (CBSA) of the decisions made by border-services officers to consistently apply exemptions for essential workers; and
- reviews of systems and processes of verifying compliance with mandatory quarantine, including the processes for Public Health Agency of Canada (PHAC) as they did not always meet the targets it set to verify whether travellers were following mandatory 14-day quarantine upon entering Canada.

At the provincial level, the Auditor General of Ontario released a six-part report that details Ontario's COVID-19 response. Select lessons needed to be addressed in the future include:
- timely decisive actions and full exercise of powers by the Chief Medical Officer of Health of Ontario;
- improved coordination and operational role by Public Health Ontario in the overall provincial response;
- agreement and consistency in management and operations among public-health units;
- timely modernization of public-health information systems; and
- scaled up race-based data collection.

In addition, an evidence brief prepared by Public Health Ontario examining the economic impacts of the public-health measures in response and recovery during and after COVID-19 recommends:

- a data-driven, regional or provincial approach (instead of a reactive and local approach) to support a sustainable transition from response to recovery as vaccination rates increase in Ontario;
- lockdown strategies that maintain a moderate lockdown level are more effective than oscillating between strict and mild lockdowns according to published modelling studies cited in the brief;
- early action with stringent public-health measures can be less costly for the economy than multiple less-intense, shorter duration lockdowns; and
- basic income for individuals affected by lockdowns should be in place.

Health-system arrangements

At the federal level, a survey conducted by Statistics Canada indicated that efforts to increase the supply of infection-prevention and control equipment were successful by the second wave of the pandemic with results showing that respirators were always available for more than 60% of healthcare providers who required them when treating patients.

A Canadian Institute for Health Information's analysis of pandemic data from the first wave (1 March 2020 to 31 August 2020) found that long-term care residents across Canada had fewer physician visits and opportunities for hospital transfers, had to wait longer to be discharged back to their homes, and had fewer visits from family when compared to the same period in 2019. Lessons learned on improving care provided in long-term care homes that could be implemented at the provincial level, include:

- increasing staff levels and retention programs for long-term care workers;
- enhancing home inspection and enforcement processes;
- improving accountability among staff within each home and across the provincial long-term care sectors; and
- increasing communication and coordination with other parts of the heath system including primary care and acute care.

At the provincial level, many of the lessons learned identified were for Ontario. However, one evaluation of the effects of the COVID-19 pandemic on mental health in Saskatchewan found the uptake of online/phone supports was lower than anticipated, resulting in a significant number of people with existing mental health disorders no longer being treated.

In Ontario, four government reports had lessons learned to address deficiencies in the province's response to COVID-19. The Auditor General of Ontario's Special Report on Outbreak Planning and Decision-Making provided nine recommendations with 29 action items to address:

- the diminished role of public-health expertise at the Ontario Health Command Table that was often cited as complex and confusing;
- the significant leadership changeover, outdated emergency plans, lack of involvement, inadequate communications and record-keeping, and lack of sufficient staff to implement a provincial response structure that was demonstrated by Ontario's Provincial Emergency Management Office; and
- the insufficient amount of scientific expert advice during decision-making.

The other three reports addressed long-term care homes. While best practices were reported as being applied in some long-term care homes, numerous approaches were identified that could have

been improved. Two reports (the Ontario Long-term Care COVID-19 Commission and Auditor General of Ontario's Special Report on Pandemic Readiness and Response in Long-Term Care) included specific recommendations to address both long-standing issues in the long-term care sector as well as the unintended consequences of the pandemic response on long-term care staff and residents. In addition, the Ontario Patient Ombudsman provided four recommendations based on complaints received from patients, family members and caregivers during the pandemic:

- ensuring backstops and contingency plans are available to ensure sufficient staff;
- allowing visitations from a limited number of essential caregivers;
- improving communication between patients, residents and their families and caregivers; and
- enhancing whistleblower protection for healthcare workers who bring forward concerns in good faith.

Clinical management

At the provincial level, Ontario Health released recommendations on optimizing care during COVID-19 and on regional healthcare delivery during COVID-19 based on earlier waves. Recommendations included:

- conducting virtual visits when possible and providing in-person care only when necessary;
- using comprehensive IPAC approaches when in-person care is provided;
- making appropriate PPE available to staff;
- assessing human resources and ensuring adequate staffing;
- improving service delivery through local, regional, provider and patient/client collaboration;
- monitoring the level of COVID-19 and adapting service delivery as necessary;
- communicating regularly with patients/clients and caregivers; and
- adopting a strategy for ethical prioritization of patient/client care activities.

Economic and social responses

At the federal level, financial supports and benefits appear to have supported the financial resilience of many Canadians, and need to maintain flexibility but have tight controls. Specifically:

- a report by Statistics Canada highlighted that the financial resilience of Canadians has improved as the pandemic has progressed and that this is likely in part due to financial supports from the Canadian government;
- a report by the Auditor General of Canada on the Canada Emergency Response Benefit (CERB) found that the program design process was conducted robustly with full considerations of its cost and the need for flexibility to best serve Canadian residents affected financially by the pandemic;
- the same report emphasized the importance of ongoing analyses to ensure the program maintains flexibility as the pandemic progresses, several pre-existing controls built into the program, and the need to finalize and implement post-payment verification; and
- the Auditor General also conducted an audit of the Canada Emergency Wage Subsidy (CEWS) program that emphasized the need for tighter controls and more accurate assessment procedures.

Table 1: Highlights from highly relevant evidence documents and experiences

Response type	Lessons from evidence documents	Lessons from government reports and analyses

Cross-cutting responses	*Lessons for the federal level*
	• A primary study conducting a comparative analysis of policy responses in three countries found that decentralized decision-making in Canada between the federal and provincial levels was associated with fragmented responses and unequal epidemiological success across provinces and territories
	  ○ Greater centralization of pandemic preparations and planning can support a more coordinated response (last updated September 2020)
	• A survey of G7 country communications and responses conducted in March 2020 found most Canadians strongly approved of the government's response, felt the communication was very or fairly good, and reported trust in future government decisions (last updated November 2020)
	• One opinion piece by the Canadian Public Health Association reviewing Canada's initial response to the pandemic identified four areas that went well:
	  ○ Early and decisive response to the pandemic managed to avoid overwhelming the acute healthcare system
	  ○ The federal government intervening to ensure the availability of personal protective equipment ensured shortages in select provinces were quickly remedied
	  ○ Residents and businesses largely respected the direction provided by public health
	  ○ Income supports have helped to address the needs of the employed and unemployed (last updated February 2021)
	• The same opinion piece noted some areas where the response could have been improved, including:
		Lessons for the federal level
		• The Auditor General of Canada reported that the pandemic preparedness could have been improved through:
		  ○ Improvements in health surveillance information to promote timely risk assessments of pandemic threats
		  ○ Updated and tested pandemic response plans and guidance
		Lessons for the provincial level
		• The Office of the Auditor General of Ontario released a six-part report that describes in detail Ontario's COVID-19 response: 1) Emergency Management in Ontario; 2) Outbreak Planning and Decision-Making; 3) Laboratory Testing, Case Management and Contact Tracing; 4) Management of Health-Related COVID-19 Expenditures; 5) Pandemic Readiness and Response in Long-term Care; and 6) Personal Protective Equipment [soon to be released], and select lessons include:
		  ○ Lessons and strategies from the SARS outbreak were not implemented prior to the COVID-19 pandemic, and lessons learned from the previous waves of the pandemic have not been applied consistently
		  ○ Communication with external stakeholders was inconsistent and not timely
		  ○ The need for timely communication of information about the number of travellers entering Ontario given that it was viewed that there was limited or inaccurate information from the federal government early in the pandemic
		• The Auditor General of Prince Edward Island has requested a full examination of the provincial government's response to COVID-19, which will be released in August 2021

	○ Lack of timely release of national guidelines for managing cases in long-term care homes ○ Lack of national data-collection standards resulting in inconsistencies in how surveillance data is reported, particularly as they relate to reporting on income levels and race-based data ○ Backlogs in testing and rigid testing criteria challenged understanding the full epidemiological picture ○ Lack of human resources to undertake contact tracing limited further containment of the virus ○ Limited supports available for those experiencing housing insecurity and homelessness, and including these considerations in public-health guidelines (last updated February 2021)	
Public-health measures	*Lessons for the federal level* • A qualitative study reported that most news releases and communications aligned with the tone and timing of messages from Chief Medical Officers of Health and changing epidemiological status of COVID-19 (i.e., prescriptive and conveyed appropriate recommendations and mandates) (last updated September 2020) • An opinion piece by the Canadian Centre for Policy Alternatives (a non-partisan research institute) described the challenges of applying public-health guidelines in First Nations communities, which were primarily due to existing inequities in access to water and housing (last updated May 2020) • An opinion piece by the Canadian Centre for Policy Alternatives described the challenges of applying public-health guidelines in First Nations communities and recommended that future guidance should include the voices of the Indigenous communities, and that appropriate funding should be allocated to address challenges	*Lessons for the federal level* • Statistics Canada reported that implementation of physical-distancing guidelines during the pandemic led to increased outdoor activity, including road closures in favour of pedestrian and cyclist use and park visitation, as it was crucial to optimizing mental health • CIHI's evaluation of COVID-19's impact on long-term care found that provincial-level recommendations included implementing mandatory infection-control practices, PPE and training provision, response planning with rapid testing and contact tracing strategies, and reducing crowds in LTC homes • CIHI's report comparing Canada and other countries' pandemic experience in the long-term care sector found that countries that implemented mandatory prevention measures, stay-at-home orders, and closures of public places had fewer COVID-19 infections and deaths in LTC • A Statistics Canada report indicated that children's learning activities varied based on household income and parental-engagement levels

	that have been compounded during the pandemic. (last updated May 2020) *Lessons for the provincial level* • A primary study that compared non-pharmaceutical interventions used by Canadian governments found that British Columbia was the first province to enact the most rigorous measures before the pandemic declaration by the WHO, whereas the other provinces implemented measures following the declaration (last updated August 2020) • A primary study about best practices of COVID-19 outbreak management in long-term care homes in British Columbia found that rapid testing, implementation of public-health measures (e.g., visitor restrictions, cohorting, single-site restriction for staff), external assistance from infection-prevention and control support teams, adequate access to personal protective equipment, team-based approaches, and coordinated communication between support teams were essential to control and manage COVID-19 outbreaks (last updated March 2021) • A primary study evaluated a virtual education program called the Elderly-Long-Term Care (COE-LTC) COVID-19, and found that it is useful tool to deliver new best practices for healthcare delivery by healthcare providers in long-term care (last updated February 2021) • A primary study analyzed survey results from individuals involved in the hospital-based Infection Prevention and Control (IPAC)-SWAT team, and found that 93.5% of respondents felt the team improved the management of COVID-19 outbreaks at long-term care homes in Ontario (last updated Feb 2021) • An economic modelling study reported that a rebound in household spending and GDP growth	○ Lower-income households may lack access to personal computers for children's learning activities, and parental engagement may be affected by competing work obligations • The Auditor General of Canada found that emergency orders to prohibit entry of foreign nationals were quickly implemented by the Canada Border Service Agency, and PHAC did not meet its target to verify arriving travellers completed mandatory 14-day quarantine ○ Reviewing the decisions made by border-service officers and improving systems and processes of verifying compliance to mandatory quarantine can address gaps in border-control measures • The Chief Public Health Officer of Canada's report highlighted that Canada's healthcare system was protected due to increased public-health measures and healthcare capacity undertaken by provinces and territories between April and August 2020 *Lessons for the provincial level* • An evidence brief on the economic impacts due to public-health measures in response and recovery during and after COVID-19 published by Public Health Ontario recommends: ○ A data-driven, regional or provincial approach (instead of a reactive and local approach) to support a sustainable transition from response to recovery as vaccination rates increase in Ontario ○ Lockdown strategies that maintain a moderate lockdown level are more effective than oscillating between strict and mild lockdowns according to published modelling studies cited in the brief ○ Early action with stringent public-health measures can be less costly for the economy than multiple less-intense, shorter duration lockdowns ○ Basic income for individuals affected by lockdowns should be in place

	may increase in 2021 following the impacts of social distancing from 2020 (last updated March 2020)
	• An economic modelling study reported that Canada's economy will expand by 5.8% by the end of 2021 and 4.0% in 2022 due to vaccine roll-out and gradual reopening of the economy (last updated March 2021)
	• A cross-sectional survey that assessed the preparedness of Ontario's long-term care sector found that there were concerns regarding the feasibility of implementing public-health measures
	• A cross-sectional survey that assessed the preparedness of Ontario's long-term care sector stated the need for better engagement with long-term care system leaders to coordinate better pandemic responses (last updated October 2020)
	• A primary study about best practices of COVID-19 outbreak management in long-term care homes in British Columbia reported that reducing the delay in identifying cases, implementing control measures, addressing harms related to isolating residents, addressing staff shortages, and improving communication between support teams were areas of future improvement (last updated March 2021)
	• A modelling study compared trends in COVID-19 cases in Canada and Italy and found that it is imperative to take immediate action by implementing a comprehensive strategy consisting of multiple public-health interventions (last updated March 2020)
		• An evaluation based on modelling data assessing the impact of social-distancing policies in British Columbia found that social interaction was reduced to 30% of normal levels and returning to 80% and 60% of pre-COVID-19 social interactions and physical distancing would result in significant and steady increases in cases, respectively
		• A recovery plan by the Government of British Columbia assessed that 62% of total jobs lost were restored by August 2020 as businesses were allowed to reopen
		• A survey conducted by the Government of Saskatchewan reported that 17% of residents expressed confusion over COVID-19 public-health orders and restrictions
		• The Office of the Auditor General of Ontario released a six-part report describing areas that delayed Ontario's COVID-19 response, to address:
		  ○ The insufficient exercise of powers by the Chief Medical Officer of Health of Ontario and delays in early decisive actions
		  ○ The lack of coordination and diminished role by Public Health Ontario in overall provincial response, leading to confusion on roles and responsibilities among local medical officers of health
		  ○ The variations in management and operations among public-health units, delays in modernizing public-health information systems and lack of race-based information collection and consideration in decision-making
		• The Institut national de santé publique du Québec released preliminary data analysis showing that provision of one dose of mRNA vaccines reduced COVID-19 cases among LTC residents, with significant reductions in case numbers observed 28 days post-vaccination and 95% reduction in COVID-19 related deaths in March 2021 compared to December 2020

		• Preliminary data shows a significant reduction in COVID-19 cases among healthcare workers as vaccination roll-out expanded to this group

Clinical management	No evidence documents were found addressing lessons learned from clinical management of COVID-19	*Lessons for the provincial level*
		• Ontario Health released recommendations on optimizing care during COVID-19 according to lessons learned from Ontario's first wave that included:
		  ○ Providing care to all types of patients and clients
		  ○ Avoid deferring emergency, urgent, and time-sensitive care
		  ○ Emphasize equitable and person-centred approaches with full continuum of care that engages patients and their care partners
		  ○ Improve oversight and coordination of care activities at regional/sub-regional levels and increase collaboration with health and social services
		  ○ Accelerate services to reduce backlogs
		  ○ Continue testing, contact tracing and isolating
		  ○ Integrate health equity considerations
		• Ontario Health also released recommendations for regional healthcare delivery during COVID-19, including for outpatient care, primary care, home and community care, and for supplying PPE based on requirements from previous waves of COVID-19 that included:
		  ○ Conducting virtual visits when possible and providing in-person care only when necessary
		  ○ Comprehensive IPAC approaches should be taken when in-person care is provided
		  ○ Making appropriate PPE available to staff
		  ○ Assessing human resources and ensuring adequate staffing
		  ○ Local, regional, provider and patient/client collaboration to improve service delivery
		  ○ Monitor the level of COVID-19 and adapt service delivery as necessary
		  ○ Communicate regularly with patients/clients and caregivers

		○ Adopt a strategy for ethical prioritization of patient/client care activities
Health-system arrangements	*Lessons for the federal level* • Three next steps were identified in a stakeholder dialogue designed to systematically elicit stakeholder views on identifying and harnessing the potential of technology in long-term care across Canada, both in general and in relation to COVID-19 ○ Harnessing technologies that enable person-centred care and support in long-term care ○ Implementing policy and organizational processes in the sector that support making small yet rapid changes that are centred on residents, caregivers and families ○ Using funding models that enable ways of doing things differently • A study evaluating the changes to the operation of cancer treatment centres across Canada during the first wave of the pandemic found that cancer screening reduced significantly because of a reduction in the availability of practitioners and measures to limit screenings ○ Providing telemedicine as a substitute for in-person cancer screening was found to have many limitations and therefore was not an effective solution ○ Outreach programs may be needed in the coming months and years to catch up on the backlog of cancer screenings and reduce delays in diagnoses and treatment (published 28 February 2021) • An opinion piece from the Centre for Policy Alternatives examined the conditions that were central to the crisis experienced in long-term care homes across Canada, which included labour force challenges, punitive regulations focused on physical structures and workers rather than working	*Lessons for the federal level* • Canadian Institute for Health Information's analysis of pandemic data from the first wave of the COVID-19 pandemic (March 1 to August 31, 2020) concluded that long-term care residents across Canada received fewer physician visits and opportunities for hospital transfers, had to wait longer to be discharged back to their homes, and had fewer visits from family when compared to the same period in 2019 ○ The analysis found that there was also a significant drop in new admissions to long-term care homes ○ Recommendations to improve the long-term care response across provinces and territories included increasing staff levels and retention programs for long-term care workers, improving home inspection and enforcement processes, improving accountability among staff within each home and system-wide, and increasing communication and coordination across all parts of the system • A survey conducted by Statistics Canada indicated that improvements were made in providing infection-prevention and control equipment and support to Canadians working in healthcare settings by the second wave of the pandemic ○ The survey results demonstrated that respirators were always available on the job for more than 60% of respondents who required them, and more than half of the respondents said that they received formal IPAC training and were supported by their employers when they were sick and needed to stay home *Lessons for the provincial level* • An evaluation of the effects of the COVID-19 pandemic on mental health in Saskatchewan found that the uptake of online/phone supports was lower than anticipated,

	conditions, ownership and employer practices, positioning of LTC and residential care homes outside of what is included in the Canada Health Act, and deficiencies in the physical structures of LTC homes (published April 2020)
	Lessons for the provincial level
	• A primary study comparing the approaches of British Columbia and Ontario in long-term care homes found that British Columbia responded faster than Ontario with actions that included a single-site working policy, standardization of staff wages, support for homes in outbreak through specialized response teams regardless of governance or facility ownership, a universal masking requirement from the outset, the setting of a single case as the outbreak threshold, and implementing testing and screening for all asymptomatic residents (last updated 23 November 2020)
	  ○ The same study also found that British Columbia had stronger links between long-term care and public health (last updated 23 November 2020)
	• A cross-sectional study assessing the preparedness of Ontario's long-term care sector for the COVID-19 pandemic from a clinician perspective found that while communication and implementation of the province's recommendations was evident in the long-term care sector, concerns about feasibility of implementing the recommendations were raised by clinicians
	  ○ long-term care clinicians identified a need for better engagement with long-term care leaders to plan a more coordinated pandemic response (published 22 October 2020)
	• One observational study found that collaboration between a nursing home and an acute-care hospital
		resulting in a significant number of people with existing mental health disorders no longer being treated
		• The Auditor General of Ontario's Special Report on Outbreak Planning and Decision-Making provided nine recommendations with 29 action items to address:
		  ○ The diminished role of public-health expertise at the Ontario Health Command Table that was often cited as complex and confusing
		  ○ The significant leadership changeover, outdated emergency plans, lack of involvement, inadequate communications and record-keeping, and lack of sufficient staff to implement a provincial response structure that was demonstrated by Ontario's Provincial Emergency Management Office
		  ○ The insufficient amount of scientific expert advice during decision-making
		• The Auditor General of Ontario's Special Report on Pandemic Readiness and Response in Long-Term Care described 16 key recommendations with 55 action items to address:
		  ○ The LTC sector's facility, staffing, and infection-prevention and control issues that existed before the pandemic
		  ○ The disconnect between long-term care and other care services
		  ○ The unintended consequences on long-term care staff and residents caused by the pandemic response
		  ○ Unclear communication, lack of enforcement and oversight that affected containment of COVID-19
		• The Ontario Long-term Care COVID-19 Commission report found that the province's lack of pandemic preparedness (e.g., no simulations for a pandemic or tracking of PPE supplies in LTC), poor leadership, and the existing poor state of the long-term care sector (e.g., insufficient trained workforce and improper home infrastructure) led to the current devastation

	in Toronto, Ontario was effective at managing a large COVID-19 outbreak early in the pandemic ○ Key features of the collaboration included building trust, having a robust clinical and operations team, and a non-hierarchal structure to working with nursing home staff (published May 2020) • An observational study assessing changes to the mobility of long-term care home staff in Ontario both before and after the implementation of a one-site policy found that mobility of nursing home staff reduced significantly after the policy was implemented, where nursing home staff with a connection to another home fell by 70.3% ○ The reduction of staff mobility should be a focus of risk-reduction efforts during a state of emergency (26 January 2021) • The effectiveness of a virtual education program for healthcare providers of long-term care residents in Ontario during the pandemic was evaluated in a study which found that the ECHO Care of the Elderly-Long-Term Care: COVID-19 program increased confidence amongst participants in providing clinical care, promoting integration of knowledge in clinical care, and promoting knowledge dissemination of best practices ○ The study concluded that the program can be an innovative tool to educate providers in long-term care homes and provide time-sensitive and rapidly evolving information (published February 2021) • One study reported on the impact of an acute-care hospital's Infection Prevention and Control SWAT team (IPAC-SWAT) that was mobilized to several long-term care and retirement homes in Ontario to assess the homes' IPAC preparedness and manage outbreaks	○ Best practices that were reportedly applied in some LTC settings included decisive and effective leadership, support for staff, pandemic planning, robust IPAC practices, and relationships with other health partners • The Ontario Patient Ombudsman provided four key recommendations based on 250 complaints related to long-term care homes during the COVID-19 pandemic: ○ Backstops and contingency plans for all healthcare providers ○ Visitation policy changes ○ Dedicated resources for communication ○ Enhanced whistleblower protection • A report from Northwood Quality-improvement Review Committee in Nova Scotia identified key drivers for the largest nursing home outbreak in the province and 17 recommendations for the local and provincial leadership to be acted on in the short (three months or less) and the long term (more than three months) • Nova Scotia's Department of Health and Wellness and Nova Scotia Health Authority published a report on long-term care Infection Prevention and Control (IPAC) teams during the first wave of the COVID-19 pandemic ○ Recommendations and actions should be formalized to continue through subsequent waves of the pandemic

	○ The study found that after the IPAC-SWAT team implemented intervention strategies in the LTC and retirement homes, the majority of the staff in the homes found that their ability to manage an outbreak improved, and they believed that routine huddles and discussions helped improve the site's ability to manage ○ The intervention strategies used included an initial assessment using staff interviews, education and training on COVID-19 transmission and IPAC practices, routine follow-up visits and outbreak meetings, post-outbreak management to assist with reopening, visitor policies, contingency planning, second wave readiness assessments, and the implementation of IPAC champions to promote sustainability of best IPAC practices ○ The interventions proved to be effective given that after 80 days following cessation of outbreaks, no new COVID-19 transmission occurred in the settings with previous cases (published 22 February 2021)	
Economic and social responses	*Lessons for the federal level* • An opinion piece from the Canadian Centre for Policy Alternatives notes that the Canada Emergency Response Benefit and expansions to unemployment insurance programs have been valuable in supporting women economically (last updated March 2021) • A joint opinion piece from the Canadian Centre for Policy Alternatives, Canadian Women's Foundation, and Ontario Nonprofit Network as well as another opinion piece from the Canadian Centre for Policy Alternatives highlight the negative impact the pandemic and associated responses (such as the closure of childcare centres) have had on the participation of women in the economy	*Lessons for the federal level* • Statistics Canada published a report highlighting that the financial resilience of Canadians has improved as the pandemic has progressed, in part due to financial supports from the Canadian government and financial institutions as well as consumer behaviour changes • A report by the Auditor General of Canada on the Canada Emergency Response Benefit (CERB) found that, despite the drastically shortened time period available for the design process (a few hours or overnight compared to other processes that are conducted over many months), the program design process was conducted robustly with full considerations of its cost and the need for flexibility to best serve Canadian residents facing financial impacts from the pandemic

	○ The joint opinion piece proposes advancing women's participation and inclusion in the economy by mandating intersectional gender-based 'plus' analyses in policy and program development (last updated September 2020) ○ The opinion piece from the Canadian Centre for Policy Alternatives points to a number of areas where additional supports are needed, including affordable childcare (particularly for essential workers) and income supports for those who do not qualify for CERB (last updated March 2021) • An opinion piece from the Canadian Centre for Policy Alternatives found that lower childcare fees (such as those found in Quebec) have been associated with a lesser degree of withdrawal of children from childcare during the pandemic when compared to other provinces with higher fees ○ This opinion piece points to the importance of considering the childcare sector as an essential service during the economic recovery from the pandemic, and considering ways to reduce the burden of childcare on parents	○ The report highlighted several pre-existing controls vital to the successful roll-out of the CERB, including automated pre-payment in existing systems, Social Insurance Number confirmation, confirmation that applicant was not deceased, confirmation of applicant age, and confirmation that applicant was not in a correctional facility ○ The report recommended that Employment and Social Development Canada and the Canada Revenue Agency (CRA) finalize and implement their plans for post-payment verification of the CERB • The Auditor General also conducted an audit of the Canada Emergency Wage Subsidy (CEWS) program that found that although the CRA delivered wage subsidy payments quickly, it lacked tighter controls and sub-annual earnings to efficiently assess applications • The report made several recommendations including that a full economic evaluation of the CEWS program be conducted and published, tax compliance efforts for GST/HST be strengthened, automated validations using unique identifiers be used, and targeted audits of the CEWS be conducted using business intelligence information as it becomes available • An economic analysis of the impact of travel restrictions during the pandemic concluded that the longer travel restrictions remain in place, the greater their impact on the economy, and that lifting travel restrictions was necessary for the recovery of the tourism industry and the broader economy *Lessons for the provincial level* • The Office of the Auditor General of Manitoba is in the process of conducting an audit of educational approaches for K-12 education during COVID-19

Table 2: Overview of type and number of documents related to lessons learned from the COVID-19 pandemic

Type of document	Total (n= 41)*	Cross-cutting responses (n=6)	Public-health measures (n=16)	Clinical management (n=3)	Health-system arrangements (n=14)	Economic and social responses (n=7)
Full systematic reviews	-	-	-	-	-	-
Rapid reviews	2	-	1	-	2	-
Protocols for reviews that are underway	1	-	1	-	-	-
Titles/questions for reviews that are being planned	-	-	-	-	-	-
Single studies that provide additional insight	31	5	14	3	13	2
Opinion pieces	8	1	2	-	1	5

*Some documents were tagged in more than one category so the column total does not match the total number of documents.

Waddell KA, Wilson MG, Bain T, Bhuiya A, Al-Khateeb S, Sharma K, DeMaio P, Lavis JN. COVID-19 living evidence profile #4 (version 4.1): What went well and what could have gone better in the COVID-19 response in Canada, as well as what will need to go well in future given any available foresight work being conducted? Hamilton: McMaster Health Forum, 14 May 2021.

To help health- and social-system leaders as they respond to unprecedented challenges related to the COVID-19 pandemic, the McMaster Health Forum is preparing rapid evidence profiles like this one. This rapid evidence profile is funded by the Public Health Agency of Canada. The opinions, results, and conclusions are those of the McMaster Health Forum and are independent of the funder. No endorsement by the Public Health Agency of Canada is intended or should be inferred.

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COVID-19 Evidence Network to support Decision-making ... in Canada

>>Contact us
c/o McMaster Health Forum
1280 Main St. West, MML-417
Hamilton, ON, Canada L8S 4L6
+1.905.525.9140 x 22121
forum@mcmaster.ca

>> Find and follow us
COVID-END.org
@COVID_E_N_D