

## **COVID-19 Living Evidence Profile #1**

(Version 4: 26 February 2021)

### **Question**

What is known about anticipated COVID-19 vaccine roll-out elements?

### **Background to the question**

The roll-out of the COVID-19 vaccine is arguably one of the largest health-system initiatives ever conducted. As such, there are many activities that vaccine roll-out plans will need to consider, which we summarize in the framework below. We use this framework to organize key findings from evidence documents and experiences from other countries and from Canadian provinces and territories in this fourth version of our living evidence profile (LEP). We have not made any changes to the framework since the first version of our LEP.

### **Organizing framework**

- **Securing and distributing a reliable supply of vaccines and ancillary supplies** (e.g., needles, diluents)
  - National purchasing
  - Delivery to country
  - Inventory management within country
  - Ordering within country
  - Distribution within country and to administration sites (including whether direct from centralized distributor to administering location and whether redistribution is allowed)
  - Storage and handling within country (e.g., cold-chain requirements and related supplies such as liquid nitrogen)
- **Allocating vaccines and ancillary supplies equitably**
  - Approaches to developing and adjusting allocation rules (e.g., citizen- and stakeholder-engagement processes)

### **Box 1: Our approach**

We identified new research evidence addressing the question by searching the COVID-END [inventory of best evidence syntheses](#) and the COVID-END [guide to key COVID-19 evidence sources](#) in the 22-25 February 2021 period. We updated the jurisdictional experiences by searching jurisdiction-specific sources of evidence listed in the same COVID-END guide to key COVID-19 evidence sources, and by hand searching government and stakeholder websites. We selected eight countries (Australia, China, France, Germany, Israel, New Zealand, the U.K., and the U.S.) that are advanced in their thinking and/or experiences with the roll-out of the COVID-19 vaccine.

We searched for guidelines that were developed using a robust process (e.g., GRADE), full systematic reviews (or review-derived products such as overviews of systematic reviews), rapid reviews, protocols for systematic reviews, and titles/questions for systematic reviews or rapid reviews that have been identified as either being conducted or prioritized to be conducted. Single studies were only included if no relevant systematic reviews were identified.

We appraised the methodological quality of full systematic reviews and rapid reviews using AMSTAR. Note that quality appraisal scores for rapid reviews are often lower because of the methodological shortcuts that need to be taken to accommodate compressed timeframes. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems or to broader social systems.

This update of the living evidence profile was prepared in the equivalent of two days of a ‘full-court press’ by all involved staff, and will continue to be updated twice a month to provide evidence updates that can support COVID-19 vaccine roll-out.

- Allocation rules (to priority populations, including those listed below, as well as to ‘lower levels’ in a federation and/or to providers who can reach priority populations)
  - Front-line healthcare workers
  - Residents in long-term care homes and other congregate-care settings
  - People at increased risk of severe COVID-19 (e.g., older and/or frail adults, those with chronic health conditions)
  - Essential workers (beyond front-line healthcare workers) and/or those in work environments that put them at elevated risk (e.g., food processing and transit)
  - Children (school aged)
  - Migrant workers
  - People in social environments that put them at elevated risk for COVID-19 (e.g., Black, Indigenous and other people of colour; those with low socio-economic status and/or living in crowded and poorly ventilated housing; and those living in communities with outbreaks)
  - People who have already had confirmed COVID-19
  - Mass public
  - People for whom vaccine safety and effectiveness has not yet been established (e.g., children under the age of 12 or 15, women who are pregnant or breastfeeding, immunocompromised, those with autoimmune conditions, those experiencing long episodes of COVID-19)
  - People at significant risk for severe allergic reaction
- Ensuring equity (including whether and how access through private means can be achieved by those not initially prioritized)
- **Communicating vaccine-allocation plans and the safety and effectiveness of vaccines**
  - Target of intervention
    - General public
    - High-risk groups (see above list)
    - Individuals who are hesitant about or opposed to vaccination
  - Delivery of the intervention
    - By whom (e.g., health worker, research expert, teacher, business leader, government leader, community leader, citizen champion, media)
    - Frequency (e.g., daily, weekly)
    - Duration (i.e., how much or for how long)
    - Modality of delivery (e.g., social media, text, email, telephone, radio, television, face-to-face by video, face-to-face in person)
  - Content of messaging
    - Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 (including duration of protection) and protection against transmission (and other factors that may contribute to vaccine acceptance and hesitancy)
    - Information about novel vaccine platforms (e.g., mRNA), current vaccine options (e.g., number of vaccines available in a country, number of doses required of any given vaccine), prioritized populations, and behaviours after vaccination
    - Information (for health workers) about vaccine-administration protocols
    - Myths and misinformation about vaccines
    - Risk-mitigation efforts (including complementary public-health measures used at time of vaccination)
    - Anticipated timing of when all those who want a vaccine will have been vaccinated

- **Administering vaccines in ways that optimize timely uptake**
  - With what explicit effort to leverage existing health-system arrangements (e.g., vaccination systems and primary-care practices/community health centres)
  - Where
    - Community-based health settings (e.g., mobile clinics and pharmacies)
    - Other community settings (e.g., schools, workplaces, shelters, community centres, Indigenous community hubs, and unconventional spaces like drive-through lots and arenas or tents)
    - Primary-care settings (e.g., family doctor offices, nursing stations, community health centres)
    - Acute care (e.g., hospitals)
    - Long-term care homes
    - Public-health offices/centres
    - Other (e.g., private clinics, prisons)
  - With what appointment/scheduling and screening support, changes to physical spaces and patient flows through these spaces, and changes to hours of operation
  - With what post-vaccination observation period and what physical distancing, personal protective equipment, sanitation and other public-health measures
  - By whom (e.g., nurses, public-health workers, retired health workers) and with what changes to remuneration (e.g., increased vaccine-administration fee code)
  - With what partnerships to reach early populations of focus (e.g., among Black, Indigenous and people of color (BIPOC), and Indigenous leaders)
  - With what broader, complementary health interventions (e.g., flu vaccination and routine immunization, ongoing public-health measures)
  - With what second-dose provisions (e.g., from same manufacturer and from same or later supply than original dose)
  - With what second-dose reminders
  - With what reporting requirements (e.g., vaccine supply, expiration dates, temperature excursion, and uptake) and supporting immunization information systems (e.g., vaccine registries and COVID-19 apps) and broader healthcare information systems (e.g., EHRs)
  - With what safety monitoring requirements (e.g., adverse events)
  - With what injury-compensation program (for vaccine recipients) and liability immunity (for vaccine distributors, planners and administering staff)
- **Surveillance, monitoring and evaluation, and reporting**
  - Documenting vaccine-related opinions (e.g., vaccine acceptance and hesitancy)
  - Documenting vaccine status (e.g., for number of doses received and for use in cross-border travel and work-related migration)
  - Documenting adverse events and follow-up
  - Identifying sources of vaccine hesitancy
  - Monitoring supply safety (e.g., expiration dates, temperature excursion)
  - Identifying and measuring performance indicators (particularly those adjusted from standard vaccine programs)
  - Infrastructure to enable surveillance, monitoring and evaluation (e.g., patient-held records, electronic health records or reporting systems, online vaccination registries, COVID-19 apps)

### **What we found**

We identified 37 new evidence documents since the last update of this LEP, of which we deemed 12 to be highly relevant. The newly added highly relevant evidence documents are:

- eight new guidelines developed using a robust process (e.g., GRADE);
- three new guidelines developed using some type of evidence synthesis and/or expert opinion; and
- one new single study that provides additional insight.

This LEP also includes evidence documents from the previous version that we deemed to still be highly relevant, for a total of 82 highly relevant documents.

We outline insights from the most salient newly identified 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 newly identified evidence documents and new insights from the jurisdictional scans. In Table 2, we provide findings from still-relevant evidence documents and jurisdictional scans from the previous version of our LEP. We also outline the type and number of all documents that were identified in Table 3.

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 all evidence documents identified from the updated searches in this LEP version in Appendix 2a, and all highly relevant documents that were identified in previous versions in Appendix 2b (including their relevance to the categories in the organizing framework, key findings, and when they were conducted or published), detailed summaries of COVID-19 vaccine roll-out plans from other countries in Appendix 3, and from Canadian provinces and territories in Appendix 4. Documents excluded at the final stages of reviewing are provided in Appendix 6. These appendices are provided in a [separate document](#).

### **Key findings from highly relevant evidence documents**

Five guidelines from the World Health Organization (WHO), three guidelines from the European Centre for Disease Prevention and Control (ECDC) and one single study provide the most salient insights. The rest of the highly relevant evidence documents are profiled in detail in Table 1.

The guidelines from the WHO provide:

- [the COVID-19 vaccine introduction and deployment costing tool \(CVIC tool\)](#) to help governments, partners and other stakeholders estimate the cost of COVID-19 vaccine procurement and service delivery;
- a process for [national deployment and vaccination plan for COVID-19 vaccines \(NDVP\) development, submission and review](#), which should be used in conjunction with the [standard review form](#) and the [considerations for forming a regional COVID-19 review committee](#);
- an overview of [key activities and considerations to achieve high acceptance and uptake of COVID-19 vaccines](#), which includes a [communication-planning template](#);
- recommendations on how to put [community engagement](#) at the centre of strategies for the COVID-19 vaccine roll-out;
- a [COVID-19 vaccine safety guidance manual](#) for countries to develop the preparedness plans for COVID-19 vaccine safety; and
- recommendations that [long-term care facilities should be a high priority](#) for receiving the vaccine and that local health authorities should develop deployment plans for vaccines in them, as well as a set of tools to identify the intentions for, drivers of and barriers to receiving COVID-19 vaccines.

The first and most comprehensive ECDC guideline provides an updated [overview of national COVID-19 vaccination roll-out across the EU/EEA countries](#), including new insights and challenges about the implementation of national deployment plans. In relation to securing and distributing vaccines, most EU/EEA countries have adequate storage and management of vaccines, with 20 countries stating that health authorities are leading and coordinating the deployment of vaccines. In relation to vaccine allocation, all EU/EEA countries prioritized population groups with a higher chance of acquiring COVID-19 and/or developing severe disease (e.g., healthcare and front-line workers and elderly people). Moreover, the guideline states that 21 countries are using electronic immunization registries to monitor both individual- and population-level vaccine uptake, including vaccine uptake and adverse events. The two additional guidelines from ECDC provide [updated metrics](#) for the COVID-19 vaccine roll-out within EU/EEA countries (e.g., total numbers vaccinated), and details about the [establishment of a task force and electronic systems to support logistics management and vaccine registries](#).

Lastly, one of the included single studies describes [key characteristics of 26 candidate COVID-19 vaccines](#), including efficacy levels, dosing regimens, storage requirements, prices, production capacities in 2021, and stocks reserved for low-income and middle-income (LMIC) countries.

### **Key findings from the jurisdictional scan**

We identified several new insights based on the experiences with the roll-out of the COVID-19 vaccine in eight countries (Australia, China, France, Germany, Israel, New Zealand, the U.K., and the U.S.), as well as all provinces and territories in Canada.

In terms of securing and distributing a reliable supply of vaccines and ancillary supplies, we found that:

- vaccine manufacturing capacity of the Pfizer-BioNTech and Moderna vaccines will be increasing quickly in the coming weeks to supply the millions of doses procured by multiple countries that have approved their vaccines (e.g., Australia, France, Germany, New Zealand, U.K., and U.S.);
- Canada has recently (as of 26 February 2021) [approved the AstraZeneca COVID-19 vaccine](#);
- the Government of Canada and provinces and territories are continuing to procure more of the ancillary supplies needed for mass vaccinations; and
- Manitoba has signed a deal with Providence Therapeutics to procure two million doses of its vaccine that is currently in the first phase of human trials.

In terms of allocating vaccines and ancillary supplies equitably and administering vaccines in ways that optimize timely uptake, we found that:

- countries and Canadian provinces continue to revise their vaccine roll-out plans and release details on priority groups included in vaccination phases;
- based on vaccination plans released so far, Canadian provinces with smaller populations (e.g., Northwest Territories and Yukon) will have their entire populations vaccinated well before those with larger populations (e.g., Ontario and Quebec);
- a variety of vaccination locations are being introduced and expanded across Canadian provinces, including vaccination supersites, clinics staffed by healthcare workers, congregate-living facilities, and clinics in Indigenous communities; and
- more provinces are planning to introduce and expand the use of online tools and telephone services for scheduling vaccination appointments, as well as to expand the criteria for who can administer the vaccine to increase the vaccination workforce.

In terms of surveillance efforts and communicating vaccine allocation plans and the safety and effectiveness of vaccines, we found that:

- the U.S. has documented the most COVID-19 vaccines doses distributed and administered of any of the countries assessed, and Israel has reported the largest percentage of the population receiving at least the first dose of COVID-19 vaccine (51.5% as of 22 February 2021);
- in light of the recent launch of its vaccine roll-out, Australia has launched a series of educational videos on COVID-19 vaccines with subtitles translated in multiple languages to ensure effective communication of the information; and
- a panel of French citizens is helping to inform the national government in France about concerns and queries posed by French citizens about COVID-19 vaccination.

**Table 1: Highlights from new highly relevant evidence documents and experiences**

COVID-19 vaccine roll-out activities	New evidence	New experiences
<p>General/cross-cutting insights</p>	<ul style="list-style-type: none"> <li>• A WHO guideline provides <a href="#">the COVID-19 vaccine introduction and deployment costing tool (CVIC tool)</a> to help governments, partners, and other stakeholders estimate the introductory and deployment cost of COVID-19 vaccine procurement and service delivery, before detailed planning can take place               <ul style="list-style-type: none"> <li>○ These costs include central activities, international and domestic logistics, service delivery, and demand generation and communications</li> <li>○ The tool focuses on operational costs and selected capital expenditures</li> </ul> </li> <li>• A second WHO guideline outlines the step-by-step process for <a href="#">national deployment and vaccination plan for COVID-19 vaccines (NDVP) development, submission and review</a>, which should be used in conjunction with:               <ul style="list-style-type: none"> <li>○ The <a href="#">standard review form</a>, which enables countries to prepare their NDVPs for the review process and supports regions in conducting a consistent and uniform assessment</li> <li>○ <a href="#">Considerations for forming a regional COVID-19 review committee</a>, which provides insight on how these committees can be established and conduct the review process for NDVPs</li> </ul> </li> <li>• Interim guidance from WHO provides an overview of <a href="#">key activities and considerations to achieve high acceptance and uptake of COVID-19 vaccines</a>, including the following aspects:               <ul style="list-style-type: none"> <li>○ Coordination and planning</li> <li>○ Implementation of mass-media plan</li> <li>○ Social media monitoring and misinformation management</li> <li>○ Crisis communications</li> <li>○ Advocacy and stakeholder engagement</li> <li>○ Community engagement and social mobilization</li> <li>○ Capacity building</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• As vaccine manufacturing capacity for COVID-19 vaccines continues to expand around the globe, countries are currently ramping up or planning to ramp up their vaccination efforts by procuring large volumes of vaccines and ancillary supplies, adding vaccination locations to reach communities, increasing the vaccination workforce, and providing information to the public on the safety and efficacy of approved vaccines and processes for scheduling vaccination appointments</li> </ul>

	<ul style="list-style-type: none"> <li>○ Monitoring, learning and evaluation</li> <li>● The same guidance includes a <a href="#">communication-planning template</a> from WHO which provides countries with an outline of communication activities that should be considered when introducing COVID-19 vaccines, with relevant categories such as target audience, budget breakdown, timelines and responsibilities</li> <li>● Additional interim guidance from WHO provides recommendations about how to put <a href="#">community engagement</a> at the centre of strategies for the COVID-19 vaccine roll-out, including tips and discussion topics about vaccine delivery and demand creation, as well as guiding steps to ensure a safe and community-centred approach when conducting community-engagement activities</li> <li>● The <a href="#">COVID-19 vaccine safety guidance manual</a> from WHO provides countries with recommendations on preparedness plans for COVID-19 vaccine safety in their overall vaccine-introduction plans, including nine modules: <ul style="list-style-type: none"> <li>○ Description and general safety considerations for implementation of COVID-19 vaccines</li> <li>○ Stakeholders in COVID-19 vaccine-safety surveillance</li> <li>○ Establishing surveillance systems in countries using COVID-19 vaccines</li> <li>○ Monitoring and responding to adverse events following immunization</li> <li>○ Monitoring and responding to adverse events of special interest</li> <li>○ Safety data-management systems, methods of post-introduction evaluation and assessing performance in countries using COVID-19 vaccines</li> <li>○ Engaging with the pharmaceutical industry for COVID-19 vaccine-safety surveillance</li> <li>○ Regulatory reliance and work sharing</li> <li>○ COVID-19 vaccine-safety communication</li> </ul> </li> <li>● One guideline from the European Centre for Disease Prevention and Control provides an updated <a href="#">overview of national COVID-19 vaccination roll-out across the EU/EEA countries</a>, including new insights into some of the critical</li> </ul>	
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	<p>aspects and challenges they are experiencing with the implementation of national deployment plans</p> <ul style="list-style-type: none"> <li>○ All 30 EU/EEA countries have initiated national vaccination campaigns, with 26 countries declaring that vaccination is not mandatory</li> <li>○ As of 29 January 2021, 21.5 to 100% of doses distributed have been administered across the EU/EEA countries</li> <li>○ Most of the EU/EEA countries are administering Pfizer-BioNTech, Cormirnaty, and Moderna vaccines</li> <li>○ Most countries will not extend the time between the first and second dose (14 countries), while other countries are still undecided</li> <li>○ All EU/EEA countries prioritized population groups with a higher chance of acquiring COVID-19 and/or developing severe disease (e.g., healthcare and front-line workers and elderly people), with some including other essential public workers such as police, firefighters and teachers</li> <li>○ Most EU/EEA countries have adequate storage and management of vaccines, with 20 countries stating that health authorities are leading and coordinating the deployment of vaccines</li> <li>○ Electronic immunization registries to monitor both individual and population-level vaccine uptake are used in 21 countries, with five countries utilizing an ad-hoc electronic system, four countries using electronic immunization cards, and one country recording them manually</li> <li>○ Information on which vaccine product and when it was administered are important data elements, in addition to recording any adverse event following immunization</li> <li>○ Challenges to roll-out include shortage of equipment (e.g., needles and syringes), misinformation about the vaccine, monitoring systems with consolidated data, logistical challenges, and limited vaccine supply</li> <li>○ Extensive coordination between national and local authorities and multidisciplinary participation is required to enable the vaccine roll-out</li> </ul>	
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	<ul style="list-style-type: none"> <li>• One single study describes <a href="#">key characteristics of 26 candidate COVID-19 vaccines</a>, including efficacy levels, dosing regimens, storage requirements, prices, production capacities in 2021, and stocks reserved for low-income and middle-income (LMIC) countries <ul style="list-style-type: none"> <li>○ The four dimensions of effective global immunization include development and production, affordability, allocation and deployment</li> <li>○ The vaccines produced by Johnson &amp; Johnson are likely easier to deploy in LMIC countries and resource-restrained settings given that it only needs to be refrigerated and is one-dose only</li> <li>○ Diverse options of vaccines that can be administered are likely needed to control the pandemic</li> </ul> </li> </ul>	
<p>Securing and distributing a reliable supply of vaccines and ancillary supplies (e.g., needles, diluents)</p>	<p><i>Distribution within country and to administration sites</i></p> <ul style="list-style-type: none"> <li>• Interim guidance from WHO recommends that long-term care facilities and local health authorities should conduct <a href="#">timely communications and plans to determine the logistics of how the COVID-19 vaccines will be deployed</a> in their jurisdictions</li> </ul>	<p><i>National purchasing</i></p> <ul style="list-style-type: none"> <li>• Recent efforts to procure vaccines include: <ul style="list-style-type: none"> <li>○ The Hong Kong Special Administrative Region (HKSAR) government has secured <a href="#">a total of 22.5 million doses</a> of COVID-19 vaccines, enough to cover Hong Kong's 7.5-million population</li> <li>○ <a href="#">Over \$66 million has been allocated</a> by the New Zealand government to support the roll-out of COVID-19 vaccines, including purchasing supplies to vaccinate the population and providing support to the Pacific countries</li> <li>○ <a href="#">Pfizer-BioNTech</a> announced that the U.S. government purchased an additional 100 million doses of the Pfizer-BioNTech COVID-19 Vaccine (bringing the total to 300 million)</li> </ul> </li> <li>• Canada has recently (as of 26 February 2021) <a href="#">approved the AstraZeneca COVID-19 vaccine</a></li> <li>• Recent procurement activities include: <ul style="list-style-type: none"> <li>○ The province of <a href="#">Manitoba directly signing a deal to procure</a> up to two million doses of a vaccine (that is currently in the first phase of human trials) being developed by Providence Therapeutics</li> <li>○ Manitoba also <a href="#">procuring 400 shipping containers</a> for transporting vaccines, 200 specialized freezers and fridges,</li> </ul> </li> </ul>

		<p>and <a href="#">more than 80,000 syringes</a> to enable the extraction of six doses per vial of the Pfizer-BioNTech vaccine</p> <ul style="list-style-type: none"> <li>○ Efforts being made to secure COVID-19 vaccine storage equipment (freezers, fridges, power generators) for <a href="#">Saskatchewan First Nations communities</a></li> </ul> <p><i>Delivery to country</i></p> <ul style="list-style-type: none"> <li>● On 15 February 2021, both <a href="#">Australia</a>, and <a href="#">New Zealand</a> received their first shipments of the Pfizer-BioNTech vaccine</li> <li>● Within the <a href="#">first quarter</a> of 2021, Germany expects to receive between 11 and 13 million doses of the Pfizer-BioNTech vaccine and two million Moderna vaccine doses</li> <li>● <a href="#">Moderna</a> announced that it expects to deliver 100 million doses of its vaccine to the U.S. by March 2021 and an additional 100 million doses by the end of May 2021</li> <li>● Canada’s vaccine program slowed between <a href="#">18 January 2021 and 14 February 2021</a> when production issues limited shipments to fewer than 350,000 doses</li> <li>● As of 24 February 2021, Canada has received <a href="#">2,003,810 vaccines</a> from Pfizer-BioNTech and Moderna manufacturers, and <a href="#">81.4% of doses</a> delivered to Canada have been administered</li> <li>● The <a href="#">Public Health Agency of Canada</a> says it expects more than 640,000 doses combined from Pfizer-BioNTech and Moderna the week of 24 February 2021, which would be the largest number of deliveries in a single week</li> </ul> <p><i>Ordering within country</i></p> <ul style="list-style-type: none"> <li>● As of 23 February 2021, China has <a href="#">granted conditional market approval to two domestically developed vaccines</a> and now has 16 COVID-19 vaccines undergoing clinical trials, six of which have entered phase-3 clinical trials</li> </ul> <p><i>Distribution within country and to administration sites</i></p> <ul style="list-style-type: none"> <li>● The vehicles transporting COVID-19 vaccines in China will <a href="#">be exempted from tolls</a> until 31 December 2021</li> </ul>
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		<ul style="list-style-type: none"> <li>• The <a href="#">Government of Canada</a> continues to distribute the Pfizer-BioNTech and Moderna vaccines to provinces and territories on a weekly basis</li> </ul> <p><i>Storage and handling within country</i></p> <ul style="list-style-type: none"> <li>• Nova Scotia now has <a href="#">10 cold-storage sites</a> from which eight clinics across the province receive the vaccines on a rotational basis</li> </ul>
<p>Allocating vaccines and ancillary supplies equitably</p>	<p><i>Allocation rules</i></p> <ul style="list-style-type: none"> <li>• Interim guidance from the WHO recommends that <a href="#">long-term care facilities (LTCFs) should be a high priority</a> for COVID-19 vaccine deployment, and the initial high-priority targets for immunization should be health workers (including those working in LTCFs and the private sector), older people and those with underlying health conditions</li> </ul>	<p><i>Allocation rules</i></p> <ul style="list-style-type: none"> <li>• Australia recently specified in its vaccine rollout plan that <a href="#">those younger than 16 years of age</a> will be eligible to be vaccinated for the Pfizer-BioNTech vaccine only in Phase 3</li> <li>• China is aiming to vaccinate the eligible population as widely as possible and <a href="#">gradually build an immune barrier within the whole population</a> to control the epidemic</li> <li>• The <a href="#">Ministry for Solidarity and Health</a> in France recommends that individuals who have previously contracted COVID-19 wait at least three months, and preferably six months, prior to receiving a single dose of the COVID-19 vaccine</li> <li>• <a href="#">Germany</a> and <a href="#">France</a> released additional details about the priority groups within their phased vaccine-roll-out plans</li> <li>• Several changes and updates have been reported on vaccine roll-out plans in Canadian provinces: <ul style="list-style-type: none"> <li>○ <a href="#">Ontario</a>, <a href="#">New Brunswick</a> and <a href="#">Nunavut</a> released details on the priority groups that will be included in their phased vaccine roll-outs, and Alberta released its <a href="#">plan for Phase 2 vaccinations</a>, targeted to begin in April 2021</li> <li>○ The Saskatchewan Ministry of Health <a href="#">announced</a> that additional healthcare workers have been added to the priority list in Phase 1, including individuals who will be directly involved in delivering COVID-19 vaccinations in Phase 2 of the roll-out</li> <li>○ In Nunavut, if individuals miss their first-dose appointment and do not belong to the community scheduled to receive doses, they will be <a href="#">asked to wait until the next supply</a> of vaccines is shipped to Nunavut</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ As of 19 February 2021, first doses of COVID-19 vaccines are available in the Northwest Territories to the majority of adults 18 years and older</li> <li>○ Starting 1 March 2021, <a href="#">all residents of the Yukon will be eligible</a> to receive the COVID-19 vaccine</li> </ul> <p><i>Ensuring equity</i></p> <ul style="list-style-type: none"> <li>● As of <a href="#">9 February 2021</a>, 11,800 vaccine doses had been allocated to First Nations communities in Manitoba, and a time-limited <a href="#">clinic in Winnipeg was opened to provide vaccination</a> for First Nations health-care workers, knowledge keepers and traditional healers</li> <li>● <a href="#">Operation Remote Immunity</a> was launched in Ontario to vaccinate adults in 31 fly-in First Nations communities and Moosonee in Northern Ontario</li> <li>● In <a href="#">Quebec</a>, one companion of a person 85 years of age or older will be able to be vaccinated at the same time if the companion is 70 years of age or older and provides care to their partner at least three days per week</li> </ul>
Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	<ul style="list-style-type: none"> <li>● No new evidence identified</li> </ul>	<p><i>Delivery of the intervention</i></p> <ul style="list-style-type: none"> <li>● The Australian government’s Department of Health released educational material (e.g., videos) on COVID-19 vaccines in <a href="#">multiple languages</a> (Arabic, Italian, Hindi, Korean, Russian and Spanish) with translated subtitles</li> <li>● In France, a citizen panel consisting of 35 citizens <a href="#">was announced</a> to collate the concerns and queries posed by the public and present them to the national government</li> <li>● As of 10 February 2021, the province of Manitoba had 225 phone-line agents and plans to expand to 300 agents in March, as well as implement online self-service booking</li> </ul> <p><i>Content of the messaging</i></p> <ul style="list-style-type: none"> <li>● The Centre for Effective Practice in Ontario has put together <a href="#">resources for understanding vaccine hesitancy</a> in Black and First Nations, Inuit and Métis communities</li> </ul>
Administering vaccines in ways	<ul style="list-style-type: none"> <li>● No new evidence identified</li> </ul>	<i>Where</i>

<p>that optimize timely uptake</p>		<ul style="list-style-type: none"> <li>• Vaccines will be administered to long-term care home residents in Australia in an estimated <a href="#">240 aged-care facilities in over 190 regions</a></li> <li>• <a href="#">New Zealand began vaccinating its border workers</a> in Aotearoa on 20 February 2021 and in Wellington on 22 February 2021</li> <li>• Vaccinations recently began in various locations in several Canadian provinces <ul style="list-style-type: none"> <li>○ starting 19 February 2021, Alberta Health Services (AHS) began vaccinating residents in retirement centres, lodges, supportive living, and other congregate-living facilities with people aged 75 and older</li> <li>○ vaccinations are taking place in Saskatchewan’s long-term care homes, communities in the far north, and vaccination sites approved by the Saskatchewan Health Authority</li> <li>○ Manitoba vaccination <a href="#">supersites</a> are in operation and there are plans to expand to up to 13 supersites (including two planned openings in March)</li> <li>○ Three more <a href="#">clinics</a> have opened in Nova Scotia to vaccinate healthcare workers</li> <li>○ Vaccinations are being administered in Inuit communities in Labrador to anyone <a href="#">17 years of age and older with priority given to healthcare workers and seniors</a></li> <li>○ In Nunavut, individuals must <a href="#">receive the second dose of the COVID-19 vaccine in the same location</a> as where they received the first dose</li> </ul> </li> <li>• Future plans for opening vaccination sites in provinces include: <ul style="list-style-type: none"> <li>○ 172 vaccination sites across <a href="#">B.C.</a> and mobile clinics in self-contained vehicles for some rural communities and home-bound residents</li> <li>○ The opening of the <a href="#">first mass immunization clinic</a> in Saskatchewan in April 2021 and 230 vaccination clinics in 180 communities throughout rural, urban and northern Saskatchewan</li> <li>○ Fixed vaccination sites for <a href="#">staff working in personal-care homes and congregate-living settings</a> in Manitoba</li> </ul> </li> </ul>
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		<ul style="list-style-type: none"> <li>○ In Ontario, Toronto Public Health launched a ‘<a href="#">proof of concept</a>’ <a href="#">immunization clinic</a> to test and adjust non-hospital vaccination plans ahead of mass vaccination</li> <li>○ A clinic in New Brunswick’s Madawaska Maliseet First Nation and additional clinics in other First Nation communities opening shortly after</li> <li>○ The first of thirteen vaccination clinics in Mi’kmaq communities across Nova Scotia <a href="#">starting the week of March 1st</a></li> <li>○ The first <a href="#">community-based clinic</a> in Nova Scotia where individuals over the age of 80 not living in long-term care facilities will receive their vaccination</li> <li>○ Community health nurses in P.E.I. will begin running clinics at <a href="#">Lennox Island First Nation</a> at the end of February and beginning of March</li> </ul> <p><i>With what appointment/ scheduling and screening support, changes to physical spaces and patient flows through these spaces, and changes to hours of operation</i></p> <ul style="list-style-type: none"> <li>● Provinces in Canada continue to use a variety of tools to support the scheduling of vaccinations by eligible groups, including online booking tools (<a href="#">Alberta</a>, <a href="#">P.E.I.</a>) call centres (<a href="#">Manitoba</a>, P.E.I.), and issuing letters by mail with booking information (<a href="#">Nova Scotia</a>)</li> </ul> <p><i>By whom and with what changes to remuneration</i></p> <ul style="list-style-type: none"> <li>● More provinces are expanding the criteria for who can work as immunizers (<a href="#">Manitoba</a>, <a href="#">B.C.</a>, <a href="#">P.E.I.</a>)</li> </ul> <p><i>With what partnerships to reach early populations of focus</i></p> <ul style="list-style-type: none"> <li>● <a href="#">Local vaccination service sites</a> in the U.K. are being run by a mixture of primary-care networks and community pharmacies</li> </ul> <p><i>With what second-dose provisions</i></p> <ul style="list-style-type: none"> <li>● The <a href="#">vaccination campaign</a> in the U.K. to reach as many people as possible was boosted by a shift in policy in early January which prioritized the first dose of a vaccine, with a second dose up to 12 weeks later</li> </ul>
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<p>Surveillance, monitoring and evaluation, and reporting</p>	<p><i>Documenting vaccine-related opinions</i></p> <ul style="list-style-type: none"> <li>• One WHO interim guidance document provides <a href="#">four tools to understand intentions for receiving COVID-19 vaccines</a> among prioritized populations, including three steps (plan, investigate, and act)</li> </ul> <p><i>Identifying sources of vaccine hesitancy</i></p> <ul style="list-style-type: none"> <li>• One WHO interim guidance document contains a set of tools (surveys, interview guides and related tools) to support the gathering and use of quality data on <a href="#">the drivers and barriers to COVID-19 vaccine uptake</a></li> </ul> <p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> <li>• One guideline from the European Centre for Disease Prevention and Control provides an <a href="#">updated metrics for COVID-19 vaccine roll-out within EU/EEA countries</a> as of 21 February 2021</li> <li>• One guideline from the European Centre for Disease Prevention and Control states that EU/EEA countries described their deployment plans and cross-government arrangements, such as <a href="#">establishing a task force and electronic systems to support logistics management and vaccine registries</a>, and they had the opportunity to compare their vaccination roll-out with an ideal vaccine deployment (“stress test”) in order to identify gaps and the robustness of their current efforts</li> </ul>	<p><i>Documenting vaccine status</i></p> <ul style="list-style-type: none"> <li>• As of 9 February 2021, <a href="#">40.5 million doses</a> of COVID-19 vaccine have been administered in China</li> <li>• As of 19 February 2021, France has administered over <a href="#">3,668,000 vaccines</a>, with 2,535,436 individuals having received their first dose and 1,132,918 having been administered the second dose</li> <li>• As of <a href="#">21 February 2021</a>, Germany has administered over 5.3 million vaccine doses and an estimated 4.2% of the entire population of Germany has been vaccinated</li> <li>• As of 22 February 2021, <a href="#">51.5% of Israel's population has received at least one dose</a> of COVID-19 vaccine (which includes 89.9% of adults aged 60 years and older)</li> <li>• As of <a href="#">24 February 2021</a>, more than 17.9 million people in the U.K. have had a first vaccine dose and more than 642,000 have had a second dose</li> <li>• As of <a href="#">22 February 2021</a>, 75.2 million doses of COVID-19 vaccinations have been distributed in the U.S., according to the CDC, and 64.2 million doses have been administered</li> <li>• As of 24 February 2021, Canada has received <a href="#">2,003,810 vaccines</a> from Pfizer-BioNTech and Moderna manufacturers and <a href="#">81.4% of doses</a> delivered to Canada have been administered</li> <li>• Most provinces in Canada continue to update information on the number of vaccine doses administered on their government websites</li> </ul> <p><i>Documenting adverse events and follow-up</i></p> <ul style="list-style-type: none"> <li>• Public Health Ontario has published a list of <a href="#">adverse events of special interest for COVID-19 vaccination surveillance</a></li> </ul> <p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> <li>• Information from the <a href="#">Australian Immunisation Register</a> is routinely uploaded to the Enterprise Data Warehouse (EDW) <ul style="list-style-type: none"> <li>○ De-identified data from the EDW will be transferred to the Vaccine Data Solution software that helps to monitor the coverage and logistics of the COVID-19 vaccine roll-out</li> </ul> </li> </ul>
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**Table 2: Key findings from highly relevant documents identified in previous versions related to one or more COVID-19 vaccine roll-out elements**

COVID-19 vaccine roll-out activities	Evidence from previous versions	Experiences from previous versions
General/cross-cutting insights	<ul style="list-style-type: none"> <li>• Two WHO guidelines provide insights across the organizing framework               <ul style="list-style-type: none"> <li>○ The <a href="#">Vaccine Introduction Readiness Assessment Tool</a> is intended to be used by ministries of health as a roadmap for countries to plan for COVID-19 vaccine introduction</li> <li>○ Another guideline is designed to <a href="#">help countries develop their national COVID-19 vaccine deployment and plans</a> in many aspects</li> </ul> </li> <li>• A <a href="#">guideline from the American College of Obstetricians and Gynecologists</a> (ACOG) recommends that:               <ul style="list-style-type: none"> <li>○ Pregnant and breastfeeding women should be offered the COVID-19 vaccine;</li> <li>○ A conversation between pregnant women and their clinical teams should include the potential efficacy of the vaccine, the safety of the vaccine for the pregnant patient and the fetus, and other prevention measures such as hand washing, physical distancing, and wearing a mask; and</li> <li>○ Vaccination of pregnant women may occur in any clinical setting and non-clinical community-based vaccination sites such as schools and community centres</li> </ul> </li> <li>• A guideline from the WHO provides interim <a href="#">recommendations for use of the Moderna mRNA-1273 vaccine against COVID-19</a>, including recommendations for:               <ul style="list-style-type: none"> <li>○ Use of the vaccine in specific populations, including those for whom supportive evidence is available and those for whom there is limited or no evidence available for use</li> <li>○ Administration, considerations for modifications, and co-administration with other vaccines</li> </ul> </li> <li>• The same guideline indicated that there is no evidence for the need of a booster dose after the two-dose vaccine or about the interchangeability of Moderna mRNA-1273 vaccine with other mRNA vaccines</li> </ul>	<ul style="list-style-type: none"> <li>• Vaccine rollout plans have been developed in all countries that focus on vaccinating priority populations using a phased approach</li> <li>• The vaccine supply of countries is dependent on manufacturing capacity within countries and/or external manufacturers, timing of vaccine approvals by national vaccine regulators, and the quantity of appropriate storage equipment and supplies for vaccine distribution and administration</li> <li>• To facilitate mass vaccinations, countries are launching mobile and community-based clinics as well as upscaling their health workforce to ensure that all individuals in their populations will have access to a COVID-19 vaccine</li> </ul>

	<ul style="list-style-type: none"> <li>• One single study identified and analyzed <a href="#">12 specific factors contributing to the success of Israel’s vaccine roll-out in its initial phase</a>, which broadly relate to: <ul style="list-style-type: none"> <li>○ Long-standing characteristics of Israel which are extrinsic to healthcare, such as Israel’s small size in terms of both area and population</li> <li>○ Long-standing health-system features, such as a tradition of effective cooperation (particularly during national emergencies) between government, health plans, hospitals, and emergency care providers</li> </ul> </li> <li>• Specific features of the COVID-19 vaccination effort in Israel, such as the mobilization of special government funding for vaccine purchase and distribution</li> </ul>	
<p>Securing and distributing a reliable supply of vaccines and ancillary supplies (e.g., needles, diluents)</p>	<p><i>National purchasing</i></p> <ul style="list-style-type: none"> <li>• A U.S. CDC guideline describes <a href="#">several considerations related to securing and distributing a reliable supply of vaccines</a></li> <li>• One single study reveals that international institutions, governments and vaccine manufacturers need to <a href="#">plan for sufficient vaccine production and negotiate affordable prices for low- and middle-income countries</a></li> <li>• Another single study calls for <a href="#">equitable sharing globally by indicating that high-income countries have secured more than half of the vaccine doses</a></li> </ul> <p><i>Delivery of vaccines at a country level</i></p> <ul style="list-style-type: none"> <li>• One single study calls for <a href="#">strengthening national and international vaccine-supply chains</a> to ensure the efficient distribution and administration for remote communities, and to avoid vaccine wastage</li> </ul> <p><i>Vaccine distribution within country and to administration sites</i></p> <ul style="list-style-type: none"> <li>• A WHO guideline provides <a href="#">a five-step decision-making framework for implementing mass-vaccination campaigns</a> for the prevention of vaccine-preventable diseases and high-impact diseases</li> <li>• A European CDC guidelines reports that the <a href="#">COVID-19 vaccine will be provided free of charge in most countries</a></li> <li>• A guideline from the Health Information and Quality Authority guideline from Ireland stresses <a href="#">how vaccination-</a></li> </ul>	<p><i>National purchasing</i></p> <ul style="list-style-type: none"> <li>• All countries assessed have finalized advance purchasing agreements with vaccine developers to secure COVID-19 vaccine doses as they become available, and some have even secured additional procurement agreements (in many occasions with multiple companies that have developed or are currently developing COVID-19 vaccines)</li> <li>• Given its advancement in its domestic vaccine roll-out, China is making efforts to assist developing countries in securing COVID-19 vaccines by offering its vaccines to countries directly or through COVAX</li> <li>• <a href="#">Ancillary supplies</a> were mass ordered by France prior to the arrival of the COVID-19 vaccine</li> <li>• The Government of Canada established <a href="#">advance purchasing agreements</a> with seven companies that have developed or are currently developing COVID-19 vaccines to secure enough doses for all Canadians who wish to be vaccinated</li> <li>• Following the approval of the Pfizer-BioNTech vaccine label change by <a href="#">Health Canada</a>, the Government of Canada ordered 64 million special syringes to extract the additional dose of the Pfizer-BioNTech vaccine</li> <li>• A total of <a href="#">75 million immunization supplies</a> and <a href="#">422 freezers</a> have been purchased by the Government of Canada (e.g.,</li> </ul>

	<p><a href="#">site location (and no or low vaccination costs) can contribute to equitable access</a></p>	<p>syringes, needles, gauze, and sharps containers) to be distributed to provinces</p> <p><i>Delivery to country</i></p> <ul style="list-style-type: none"> <li>• In general, delivery of COVID-19 vaccines to countries is being facilitated by the vaccine manufacturers through the use of shipping carriers like DHL and FedEx</li> <li>• For France, the Pfizer-BioNTech vaccine is moved from the production plant to one of 11 private platforms capable of storing the vaccine at -80°C</li> <li>• The National Operations Centre has 14 vaccine delivery sites across Canada and is being assisted by FedEx Express Canada and Innomar Strategies with distribution</li> <li>• Canada experienced vaccine shortages for four weeks, with no Pfizer-BioNTech vaccine being received during the week of 25 January 2021 and delays in dose shipments of the Moderna vaccine</li> <li>• As a result of Health Canada’s approval of the Pfizer-BioNTech vaccine label change from five doses to six doses, shipments of the Pfizer-BioNTech vaccine doses may change going forward</li> </ul> <p><i>Inventory management within country</i></p> <ul style="list-style-type: none"> <li>• Israel received permission from the Pfizer-BioNTech to repackage doses of its vaccine into tens or hundreds per shipment (instead of 1,000 per shipment) to avoid waste and create safer mobilization of doses to remote areas</li> <li>• China has established and implemented whole-process traceability systems for COVID-19 vaccines</li> <li>• The Government of Canada established an immunization National Operations Centre within the Public Health Agency of Canada to manage COVID-19 vaccine delivery and collaboration with provinces and territories</li> <li>• Manitoba maintains a <a href="#">complex data set</a> to link vaccine deliveries with inventory levels and known appointments</li> </ul> <p><i>Ordering within country</i></p>
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		<ul style="list-style-type: none"> <li>• Both Alberta and Ontario have published guidelines describing the requirements for storing and handling the Pfizer-BioNTech and Moderna vaccines</li> <li>• Eight storage sites in Nova Scotia have been developed with ultra-low freezers to store vaccines safely</li> </ul>
<p>Allocating vaccines and ancillary supplies equitably</p>	<p><i>Approaches to developing and adjusting allocation rules</i></p> <ul style="list-style-type: none"> <li>• A U.S. guideline provides a <a href="#">recommended approach for national, state, tribal, local and territorial levels that is guided by four ethical principles</a> (maximize benefits and minimize harms; promote justice; mitigate health inequities; and promote transparency) which should be accompanied by additional considerations based on science (e.g., safety and efficacy) and feasibility of implementation (e.g., storage and handling)</li> <li>• One single study identified <a href="#">public perceptions in relation to allocation priorities for the COVID-19 vaccine</a> and found that in addition to prioritizing health workers and those at risk for contracting COVID-19 or developing severe symptoms, participants emphasized the need to prioritize a broad range of other essential workers and to those of low socio-economic status</li> </ul> <p><i>Allocation rules</i></p> <ul style="list-style-type: none"> <li>• A U.S. CDC guideline updated the <a href="#">interim vaccine-allocation recommendations</a> for COVID-19 vaccination program planning and implementation in federal, state and local jurisdictions</li> <li>• A medium-quality rapid review emphasized that <a href="#">COVID-19 vaccines must be administered in accordance with the priority groups that have been established</a> to uphold the ethical integrity of the process</li> <li>• A low-quality rapid review indicated that most U.S. medical centres will <a href="#">offer COVID-19 vaccination to pregnant or breastfeeding women based on the shared decision-making principle</a>, but organizations in the U.K. consider pregnancy and breastfeeding to be contraindications for the vaccine</li> </ul>	<p><i>Approaches to developing and adjusting allocation rules</i></p> <ul style="list-style-type: none"> <li>• The New Zealand Ministry of Health is <a href="#">working in partnership with the Māori and Pacific neighbours</a> to plan for their roll-out programs</li> <li>• The <a href="#">Government of British Columbia</a> has reportedly been working closely with the Provincial Health Services Authority, First Nations Health Authority, Health Emergency Management BC, Canadian Red Cross and Canadian Armed Forces to prepare a system that is ready to distribute all vaccine types as they become available</li> <li>• The Government of Yukon is working closely with First Nation governments, NGOs, <a href="#">closely with First Nation governments, NGOs, community leaders, and community health centres</a> to reach all Yukoners</li> </ul> <p><i>Allocation rules</i></p> <ul style="list-style-type: none"> <li>• Aside from minor differences in policies, most countries, including Canada, prioritize healthcare workers and long-term care residents, along with some other at-risk populations (e.g., older adults, individuals with chronic conditions, at-risk adults in Indigenous communities), and in some cases others such as immunocompromised individuals and select caregivers</li> <li>• Other prioritized groups for vaccination in some countries include border workers (New Zealand), those who plan to work or study in countries with medium or high risk of COVID-19 infection (China and Israel), other congregate facility residents and staff (Canada), and those who work in ship piloting, aviation, public transport, fresh markets, and healthcare settings (China)</li> <li>• New Zealand prepared three different <a href="#">scenarios for vaccine roll-out</a> based on the level of transmission present within the country at the time of the roll-out</li> </ul>

	<ul style="list-style-type: none"> <li>• A guideline (from the European Academy of Allergy and Clinical Immunology) recommends that COVID-19 vaccines should be administered to <a href="#">patients with allergies who do not have a history of allergic reactions to vaccine components</a></li> <li>• However, one single study from the U.K. revealed that 32.6% of respondents were <a href="#">concerned that the government's priority list made no reference to Black, Asian and minority ethnic groups</a></li> </ul> <p><i>Ensuring equity</i></p> <ul style="list-style-type: none"> <li>• A guidance document from the WHO proposed <a href="#">a values framework for COVID-19 vaccine allocation and prioritization</a>, which consists of six core principles: 1) human well-being; 2) equal respect; 3) global equity; 4) national equity; 5) reciprocity; and 6) legitimacy</li> <li>• Two single studies provided additional insights about the disparities in the availability and distribution of COVID-19 vaccines due to limited vaccine production, supply capacity, and market forces in <a href="#">developing countries</a> and <a href="#">low- and middle-income countries</a></li> </ul>	<ul style="list-style-type: none"> <li>• As more vaccines are approved and become available, some countries have adjusted their allocation rules to recommend that certain vaccines be administered to specific priority groups <ul style="list-style-type: none"> <li>○ <a href="#">French authorities</a> have recommended the Pfizer-BioNTech and Moderna vaccines for individuals 65 years and older and those with comorbidities, while the Astra-Zeneca vaccine will be administered to those 50 to 64 years old and to professionals in the health sector aged 18 to 64</li> <li>○ Germany's <a href="#">Permanent Vaccination Commission</a> recommends that individuals 65 years and younger should be vaccinated with the Oxford-AstraZeneca vaccine</li> </ul> </li> <li>• Aside from minor differences in policies (e.g., Saskatchewan prioritizing long-term care residents over 50 years of age living in remote areas in addition to residents over 70), all provinces in Canada generally follow the National Advisory Committee on Immunization (NACI) recommendations and roll-out plans are relatively consistent across the country</li> <li>• Residents of British Columbia are eligible to receive vaccinations in Yukon <a href="#">if they typically receive healthcare in the territory</a></li> </ul> <p><i>Ensuring equity</i></p> <ul style="list-style-type: none"> <li>• In its guidance for COVID-19 vaccinations in Canada, NACI <a href="#">recommended</a> that at-risk adults in Indigenous populations be among the first priority groups to be vaccinated in provinces and territories</li> </ul>
<p>Communicating vaccine-allocation plans and the safety and effectiveness of vaccines</p>	<p><i>Target of the intervention</i></p> <ul style="list-style-type: none"> <li>• A WHO guideline provides <a href="#">behavioural insights related to drivers of vaccine acceptance and uptake</a> with a focus on the drivers of vaccine uptake including: 1) an enabling environment; 2) social influences; and 3) motivation</li> <li>• Some of the evidence focused on communication interventions targeting the general public or community opinion leaders to <a href="#">ensure evidence-based information is being relayed to the general public</a></li> <li>• It was also emphasized that communication interventions should be <a href="#">tailored to mitigate inequalities, particularly to Black, Asian and minority ethnic groups</a> who have higher</li> </ul>	<p><i>Target population</i></p> <ul style="list-style-type: none"> <li>• Countries have used (or are recommending the use of) strategies to tailor information about COVID-19 and how to book vaccination appointments for culturally and linguistically diverse groups and at-risk populations (Australia, Germany, U.K., Israel), engaging the public and stakeholders through local partnerships (U.K., U.S.), and having medical experts assist with information dissemination to the public (Australia)</li> <li>• The <a href="#">Mosques and Imams National Advisory Board</a> in the U.K. is leading a campaign to reassure its faithful that COVID-19 vaccinations are safe and compatible with Islamic practices</li> </ul>

rates of infection, morbidity and mortality, as well as [unvaccinated or under-vaccinated populations](#)

- Evidence was also found about the [importance of targeting healthcare professionals](#) (who should be educated about the vaccine prior to the initiation of any vaccination program) and ensuring that [healthcare workers have the opportunity, skills and information to effectively communicate](#) with patients and support vaccine-related decisions
- A high-quality rapid review proposes that [future vaccination-messaging campaigns for the public](#) should ensure clear communication about vaccine eligibility and availability, and the engagement of target groups
- A single study found the majority of participants used [traditional media to obtain information](#) on the COVID-19 vaccine, but that there is an opportunity for social-media platforms to reduce vaccine hesitancy
- A guideline from WHO updated the risk communication and community-engagement strategy to cover anticipated COVID-19 related events, and proposes [four objectives for people-centred and community-led approaches](#) to improve trust and social cohesion, and reduce negative impacts of COVID-19
- Four single studies discussed COVID-19 vaccination intention and uptake among different populations, which found:
  - Low COVID-19 vaccine uptake among healthcare workers in Saudi Arabia and recommended to [scale up targeted public-health communication efforts](#)
  - [News of a variant strain and case escalation](#) could reduce COVID-19 vaccine hesitancy
  - [Exposure to misinformation reduced the intent to accept a vaccine](#) relative to exposure to factually correct information
  - [Components of persuasive messaging had no significant effects](#) on COVID-19 vaccination attitudes and intention

*Delivery of the intervention*

- Indigenous Services Canada (ISC) is developing resources to guide vaccination delivery, messaging and education of indigenous populations

*Delivery of intervention*

- Countries are using several modalities for communicating vaccine-allocation plans, including government websites, online FAQs and other online tools, social media and SMS messages on mobile devices, press releases, radio, public Q&A sessions with experts, and engaging the public and stakeholders through local partnerships
- Efforts have been made in Israel to increase vaccine uptake by publicizing vaccination [endorsements from political and religious leaders](#)
- The Ministry of Public Security of China has deployed [a national campaign to combat vaccine-related crimes](#), including manufacture and sale of fake vaccines related fraud activities
- Current priority and eligible population groups in Israel [receive text messages from their health maintenance organizations \(HMO\)](#) about information on booking an appointment (either by phone or through the HMO online portal)
- The Government of Australia will be promoting an [educational campaign](#) on its COVID-19 vaccination program
- [Preparation is underway](#) in New Zealand for a public awareness and reassurance campaign centred around vaccine safety that will include paid advertising
- In December 2020, the Public Health Agency of Canada [required](#) that federal, provincial and territorial governments provide ongoing access to comprehensive, clear and accurate information about COVID-19 vaccines and immunization plans through partnerships with First Nations, Inuit and Metis leaders, health professionals and other relevant stakeholders
- Communication modalities used by provincial governments in Canada include FAQs (all provinces), news releases (Saskatchewan, Yukon), radio (Yukon), public Q&A sessions (Nunavut) and social media (Yukon and Nova Scotia)

- A high-quality rapid review indicates that [messages delivered in mixed-media campaigns in communities and hospitals](#) could improve vaccine uptake
- A medium-quality rapid review indicated that [communication of reliable, frequent, and tailored information about vaccines](#) should be shared with community members through multiple platforms, including social media, traditional media, and providers, and providers must be educated about vaccines and provided with appropriate training to increase provider vaccine recommendations to patients
- However, a high-quality systematic review found that [interventions involving risk messages](#) were found to have no effect on the intention of participants to vaccinate, their behaviour towards vaccines, and their perception of the severity of the disease

*Content of messaging*

- One guideline developed using a robust process emphasized that [eligible groups who understand why vaccination is particularly important for them are more likely to be vaccinated](#), and that professionals should address any misconceptions about it
- A high-quality rapid review indicates that [messages that provide information about virus risks, vaccine benefits and safety, and address vaccine misunderstandings](#) could improve vaccine uptake
- A medium-quality rapid review shows that [vaccine hesitancy is universal across countries](#) and is typically manifested in the preference to wait to be vaccinated or to reject vaccination altogether, and the most cited reasons for vaccine hesitancy or refusal included fear of side effects, safety, and effectiveness, as well as the expedited development of the COVID-19 vaccines, perceived political interference, and misinformation
- It is recommended that [confidence in the COVID-19 vaccines can be improved](#) by emphasizing transparency and compliance with scientific standards throughout the vaccine development and approval processes, and that

- Manitoba has released an [interactive vaccine queue calculator](#) for residents to understand their place in the vaccine priority line
- Nunavut has created [cash prize incentives](#) for residents who choose to get vaccinated
- In the Northwest Territories, local health [personnel will be made available to community residents](#) to answer questions about the vaccine before mobile-vaccine clinics arrive

*Content of messaging*

- Common themes of the messaging on the websites of most countries and Canadian provinces include details on vaccine roll-out plans (including timelines for vaccinating priority groups), safety and efficacy of approved vaccines, vaccine options, possible adverse events following immunization, and updates on the number of vaccine doses received and administered
  - In addition to the above, China's CDC [provides](#) information on vaccine-administration protocols, contraindications, vaccine transportation and storage, monitoring and documentation, and risk-mitigation efforts
- Alberta Health Services has a [COVID-19 immunization booking webpage](#) that is regularly updated with information about how eligible residents can book a vaccine appointment
- Quebec's Ministry of Health maintains a website dedicated to [demystifying beliefs regarding the risks of vaccination](#)
- [Details on who is eligible to book an appointment](#) during each phase of the vaccine roll-out is available on the Government of Prince Edward Island website

	<p>communication strategies use positive cues to vaccinate through engagement with loved ones and family members, and trusted figures like doctors and religious leaders</p> <ul style="list-style-type: none"> <li>• One single study indicated that effective public-health communication strategies should be <a href="#">tailored to counter vaccine misinformation</a></li> </ul>	
<p>Administering vaccines in ways that optimize timely uptake</p>	<p><i>With what explicit effort to leverage existing health-system arrangements</i></p> <ul style="list-style-type: none"> <li>• A European CDC guideline developed using a robust process recommends <a href="#">using pre-existing vaccination structures and delivery services</a> in the models for the roll-out of COVID-19 vaccines</li> <li>• A low-quality rapid review noted that <a href="#">leveraging community-based teaching methods and community partnerships</a> for greater vaccination uptake by hard-to-reach populations</li> <li>• Another low-quality rapid review provided a <a href="#">framework for operationalizing programs to increase vaccine coverage</a>, including increasing vaccinator capacity and training, and synergistically re-integrating immunization services</li> <li>• A guideline (from the Johns Hopkins Center for Health Security and Texas State University Department of Anthropology) recommends <a href="#">enhancing vaccination by home visits, preparing educational materials, training vaccinators, and fostering partnerships with government, health departments, and the media</a></li> <li>• A guideline from the WHO indicates that there is <a href="#">no evidence for the need of a booster dose after the two-dose vaccine or about the interchangeability of Moderna mRNA-1273 vaccine with other mRNA vaccines</a></li> </ul> <p><i>Where</i></p> <ul style="list-style-type: none"> <li>• One medium-quality full systematic review found that <a href="#">school and childcare centre-located vaccination programs</a> were beneficial for vaccination rates and outcomes, and a low-quality full systematic review highlighted <a href="#">the benefits of vaccination requirements for childcare, school, and college attendance</a></li> </ul>	<p><i>With what explicit effort to leverage existing health system arrangements</i></p> <ul style="list-style-type: none"> <li>• Most countries and Canadian provinces and territories are currently (or planning to) leverage existing health-system arrangements to administer COVID-19 vaccines in settings such as hospitals, general-practice clinics, pharmacies, and vaccination centres</li> </ul> <p><i>Where</i></p> <ul style="list-style-type: none"> <li>• For large-scale vaccinations, some countries are using venues in the community such as football stadiums (the U.K.), pharmacies (France), and/or mobile clinics for rural and remote areas (Israel, the U.K.)</li> <li>• In Australia, the Pfizer-BioNTech vaccines will only be administered at <a href="#">Hospital/Pfizer Hubs</a> and the <a href="#">Oxford-AstraZeneca vaccine</a> will be administered at general practitioner-led respiratory clinics, select general practices, state-run vaccination clinics, and Aboriginal Controlled Community Health Centres</li> <li>• In China, <a href="#">vaccination sites</a> are set up in the health service centres, township health centres or general hospitals in the jurisdictions</li> <li>• Vaccines are administered in Germany in <a href="#">vaccination centres and in care facilities</a> by mobile teams during the centralized vaccination phases</li> <li>• In Canada, several provinces are planning to open vaccination clinics in local communities to make vaccines more accessible to residents and Indigenous communities <ul style="list-style-type: none"> <li>○ In B.C., the first phase of COVID-19 vaccine administration, which is of the priority populations, is occurring at public-health clinics</li> <li>○ <a href="#">Focused Immunization Teams and Pop-up Clinics</a> in Manitoba will each administer less than 5% of daily doses in</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Another medium-quality full systematic review found that <a href="#">using an immunization information system was effective for increasing vaccination rates</a></li> <li>• A low-quality rapid review found <a href="#">three models for vaccination delivery in non-healthcare settings</a>: social-distancing clinics, drive-through vaccination clinics, and mini-mobile teams</li> <li>• One single study indicated <a href="#">a heavy-lift UAV quadcopter can expand COVID-19 vaccine delivery to Indigenous people living in villages impeded by rugged terrain</a></li> </ul> <p><i>By whom</i></p> <ul style="list-style-type: none"> <li>• A medium-quality full systematic review found that <a href="#">allowing pharmacists to administer influenza vaccinations</a> had small positive effects on vaccination rates, which was increased with greater autonomy</li> <li>• A low-quality rapid review discussed <a href="#">the recruitment of individuals with or without medical backgrounds and training approaches</a></li> <li>• One guideline from Public Health England, developed using some type of evidence synthesis and/or expert opinion, <a href="#">recommends changes to the Human Medicines Regulations</a> to permit non-registered healthcare professionals to administer the COVID-19 vaccine with assigned training</li> </ul> <p><i>With what partnerships to reach early populations of focus</i></p> <ul style="list-style-type: none"> <li>• One low-quality rapid review discussed <a href="#">setting up familiar and accessible vaccination sites, community-based teaching methods and community partnerships</a> for hard-to-reach populations</li> <li>• Another rapid review also focused on efforts through <a href="#">culturally specific education campaigns and engagement of stakeholders and community partners</a></li> <li>• One medium-quality full systematic review discussed <a href="#">the education of clinicians and parents to reduce vaccination pain, fear and distress</a></li> <li>• A guideline from the allergy centres in Germany provides guidance on <a href="#">allergological risk assessment regarding COVID-19 vaccination</a></li> </ul>	<p>the second quarter of 2021, and a ‘<a href="#">Vaxport</a>’, which is scheduled to open on 1 March 2021, will provide immunization for residents of remote Indigenous communities</p> <ul style="list-style-type: none"> <li>○ In Yukon, there are <a href="#">14 mobile clinics</a> scheduled to visit rural and remote communities across the Yukon for vaccine administration</li> <li>○ Prototype community clinics will be created in Nova Scotia beginning in February 2021 to increase access to vaccinations for vulnerable communities</li> <li>○ Prince Edward Island is on track to have all individuals living and working in community-care and long-term care facilities fully vaccinated by 16 February 2021</li> </ul> <p><i>With what appointment/ scheduling and screening support, changes to physical spaces and patient flows through these spaces, and changes to hours of operation</i></p> <ul style="list-style-type: none"> <li>• France requires an <a href="#">appointment</a> to be made for COVID-19 vaccination at a select vaccination centre</li> <li>• Vaccination scheduling systems are being implemented in several Canadian provinces <ul style="list-style-type: none"> <li>○ Alberta Health Services has an <a href="#">online booking tool</a> for eligible healthcare workers to book immunization appointments</li> <li>○ <a href="#">A scheduling system is being developed</a> in Saskatchewan for easy online access to vaccine appointments, and a toll-free telephone line will be operational in March 2021 to allow residents to book appointments</li> <li>○ Starting 4 February 2021, commercial truck drivers and rotational workers in P.E.I. will receive <a href="#">phone calls from Health PEI</a> to set up appointments to be vaccinated</li> <li>○ Individuals in Nunavut must book an appointment with their local health centre in order to be vaccinated</li> </ul> </li> </ul> <p><i>With what post-vaccination observation period and what physical distancing, personal protective equipment, sanitation and other public-health measures</i></p>
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	<p><i>With what second-dose provisions</i></p> <ul style="list-style-type: none"> <li>• One guideline (from the U.S. CDC) developed using some type of evidence synthesis and/or expert opinion stating that <a href="#">adults should complete their second vaccination with the same vaccine product as the first dose</a></li> </ul> <p><i>With what safety monitoring requirements</i></p> <ul style="list-style-type: none"> <li>• One low-quality rapid review proposed <a href="#">several considerations for safety monitoring</a>, including establishing a separate waiting area for post-vaccination monitoring, training staff, educating patients, administering to patients with a known history of adverse reactions, monitoring patient flow and clinic layout</li> </ul>	<ul style="list-style-type: none"> <li>• In China, recipients of the vaccine should stay for 30 minutes, and if there is a suspected adverse reaction, immediately report to the vaccination institution and seek medical advice       <ul style="list-style-type: none"> <li>○ Post-vaccination, mask-wearing is recommended along with other protective measures such as hand hygiene, ventilation, and social distancing need to be maintained</li> </ul> </li> <li>• In Germany, an individual who suffers damage from the COVID-19 vaccine will <a href="#">receive care in accordance with the Federal Supply Act</a></li> <li>• In Israel, individuals are monitored for at least 15 minutes after vaccination or 30 minutes for individuals with history of anaphylaxis, and <a href="#">adverse-event reporting was conducted electronically</a></li> </ul> <p><i>By whom and with what changes to remuneration</i></p> <ul style="list-style-type: none"> <li>• Resources provided for health professionals involved in vaccine roll-outs in the countries assessed range from accredited training modules (Australia) to 24/7 call centres to provide guidance and vaccine shipment information (Israel)</li> <li>• In France, the Pfizer-BioNTech vaccine is only to be administered by nurses and physicians</li> <li>• Israel's Ministry of Health <a href="#">recruited community-based nurses, physicians, paramedics and EMTs</a> to administer the vaccine</li> <li>• Vaccinators in New Zealand will be sourced from non-practising nurses, doctors or pharmacists, final-year medical, nursing or pharmacy students, and other health professionals who have vaccinations within their scope</li> <li>• To increase workforce capacity for administering COVID-19 vaccines, a few Canadian provinces (Manitoba, Quebec, New Brunswick) have developed online training to expand the scope of practice for some healthcare professionals while others (Nova Scotia) have called on retired health professionals to assist with administration</li> <li>• The Saskatchewan government intends for vaccines to be administered by physicians, nurse practitioners, and pharmacists in Phase 2 of its rollout</li> </ul>
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Surveillance, monitoring and evaluation, and reporting	<p><i>Documenting vaccine status</i></p> <ul style="list-style-type: none"> <li>• One WHO guideline that was developed using a robust process, focuses on the <a href="#">Vaccine Introduction Readiness Assessment Tool</a>, which includes a framework and a set of recommended indicators for countries to self-monitor their readiness progress for COVID-19 vaccines</li> </ul> <p><i>Documenting adverse events and follow-up</i></p> <ul style="list-style-type: none"> <li>• A guideline states that the U.K. will <a href="#">identify 'safety signals' related to adverse events from COVID-19 vaccination</a>, and</li> </ul>	<p><i>Documenting vaccine status</i></p> <ul style="list-style-type: none"> <li>• Countries continue to ramp up their vaccination roll-outs, with administered doses ranging from 2.3 million in France as of 9 February 2021 to 31 million in China as of 3 February and 42.4 million doses in the U.S as of 8 February 2021</li> <li>• The number of total doses administered in Canadian provinces range from nearly 400,000 in Ontario as of 9 February 2021 and more than 260,000 in Quebec as of 8 February 2021, to 8,828 doses administered in Prince Edward Island as of 6 February 2021</li> </ul>

	<p>has established a surveillance mechanism for vaccination in pregnancy</p> <ul style="list-style-type: none"> <li>• A guideline from the allergy centres in Germany states that <a href="#">reports of severe allergic reactions</a> regarding COVID-19 vaccination can be made using an online questionnaire</li> </ul> <p><i>Identifying sources of vaccine hesitancy</i></p> <ul style="list-style-type: none"> <li>• A low-quality rapid review (not yet publicly available) identified a series of associated factors that can influence the willingness to receive a COVID-19 vaccine</li> <li>• Two protocols for reviews that are underway aim to explore the <a href="#">hesitancy rate</a> for COVID-19 vaccination and <a href="#">factors associated</a> with COVID-19 vaccine uptake; and one protocol focuses on the <a href="#">barriers to vaccine acceptance in racial and ethnic minorities</a></li> <li>• A single study found that <a href="#">previous vaccine history could be an indicator to best predict COVID-19 vaccine acceptance</a></li> </ul> <p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> <li>• A guideline from the European CDC that was developed using a robust process <a href="#">recommends using electronic immunization registries</a> to help monitor vaccine safety, efficacy, coverage and acceptance</li> <li>• A guideline states that the U.K. will link <a href="#">the Second Generation Surveillance System and the National Immunisation Management System</a> to monitor vaccine effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• A mobile application “<a href="#">Health Kit</a>” was developed in China for checking individuals’ vaccination status</li> <li>• The <a href="#">Quebec Vaccination Registry</a> is an electronic database that keeps track of all persons receiving vaccines in Quebec and all vaccines received by Quebec residents who may be out of the province</li> <li>• Vaccinated individuals in New Brunswick receive a <a href="#">record of immunization</a></li> </ul> <p><i>Documenting adverse events and follow-up</i></p> <ul style="list-style-type: none"> <li>• The Public Health Agency of Canada will monitor adverse reactions through several pre-existing mechanisms <ul style="list-style-type: none"> <li>○ Canada Vigilance Program</li> <li>○ Canadian Adverse Events Following Immunization Surveillance System</li> <li>○ Immunization Monitoring Program ACTive (IMPACT) network</li> <li>○ Canadian Immunization Research Network</li> <li>○ Canadian Vaccine Safety Network</li> <li>○ Special Immunization Clinics Network</li> </ul> </li> <li>• <a href="#">Alberta's Immunization Regulation</a> requires health practitioners to report immunizations electronically to Alberta Health within a week</li> <li>• Health professionals in Ontario and Quebec are required to report adverse events to local public-health units who will investigate and provide support</li> </ul> <p><i>Identifying and measuring performance indicators</i></p> <ul style="list-style-type: none"> <li>• Through its surveillance efforts, Israel has seen a 41% drop in confirmed COVID-19 and 31% drop in hospitalizations from mid-January to early February in individuals aged 60 years and older</li> <li>• As of 17 January 2021, Israel’s Ministry of Health and Pfizer signed an agreement <a href="#">to share anonymized medical-record data between hospitals or health plans and research entities</a> in order to measure vaccine roll-out and immunity</li> </ul>
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		<p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> <li>• Several countries are utilizing national immunization registers and electronic health records to enable surveillance, monitoring and evaluation of COVID-19 vaccinations (Australia, China, Israel, U.K., U.S.)</li> <li>• New or additional surveillance systems or indicators have been developed in some countries (Australia, Germany, New Zealand, China, U.S, France) specific for COVID-19 to monitor vaccine roll-out program implementation       <ul style="list-style-type: none"> <li>○ Australia developed a monitoring program for COVID-19 through a partnership with <a href="#">Accenture</a></li> <li>○ In Germany, the Robert Koch Institute and Paul Ehrlich Institute will lead the surveillance and evaluation efforts for COVID-19 including app-based cohort studies and long-term hospital-based case-control studies</li> <li>○ New Zealand is in the process of replacing their <a href="#">National Immunisation Register</a> with the National Immunisation Solution to better support COVID-19 rollout by allowing health workers to record vaccinations more efficiently</li> <li>○ The CDC in the U.S. expanded safety monitoring systems that utilize a smartphone-based, post-vaccine health checker called <a href="#">V-safe</a> which uses text messaging and web surveys from CDC to check in with vaccine recipients as well as provide second dose reminders if needed</li> </ul> </li> <li>• Post-marketing surveillance of COVID-19 vaccine administration in Canada will be undertaken by the Public Health Agency and Health Canada through a number of surveillance programs</li> <li>• In addition to recording, storing and managing COVID-19 vaccination records, Saskatchewan and the Yukon both use an immunization administration system (Panorama), which also provides reminders for second-dose follow-ups</li> </ul>
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**Table 3: Overview of type and number of documents related to one or more COVID-19 vaccine roll-out elements\***

Type of document	Total (n=167)**	Securing and distributing a reliable supply of vaccines and ancillary supplies (n=10)	Allocating vaccines and ancillary supplies equitably (n=21)	Communicating vaccine-allocation plans and the safety and effectiveness of vaccines (n=46)	Administering vaccines in ways that optimize timely uptake (n=27)	Surveillance, monitoring and evaluation, and reporting (n=18)
Guidelines developed using a robust process (e.g., GRADE)	50	7	15	13	6	9
Full systematic reviews	10	0	0	5	5	0
Rapid reviews	18	0	3	6	7	2
Guidelines developed using some type of evidence synthesis and/or expert opinion	31	3	6	3	10	9
Protocols for reviews that are underway	15	0	1	2	0	12
Titles/questions for reviews that are being planned	-	-	-	-	-	-
Single studies that provide additional insight	43	5	10	16	5	7

\*The table includes all newly identified evidence documents and all highly relevant evidence documents identified in previous versions of this LEP that continue to be deemed highly relevant.

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

Wilson MG, Bain T, Wang Q, Al-Khateeb S, Bhuiya A, Alam S, DeMaio P, Gauvin FP, Ahmad A, Drakos A, Sharma K, Whitelaw S, Lavis JN. COVID-19 living evidence profile #1 (version 1.4): What is known about anticipated COVID-19 vaccine roll-out elements? Hamilton: McMaster Health Forum, 26 February 2021.

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**>> Contact us**

c/o McMaster Health Forum  
1280 Main St. West, M5M1-4I7  
Hamilton, ON, Canada L8S 4L6  
+1.905.525.9140 x. 22121  
forum@mcmaster.ca

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COVID-END.org  
@COVID\_E\_N\_D