

COVID-19 Living Evidence Profile #1

(Version 5: 16 March 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). In this version, we added – within the ‘allocating vaccines and ancillary supplies equitably’ part of our organizing framework – a new category for dosing rules (e.g., number, timing of second dose, and potential for second dose to be a different vaccine).

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**

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 8 – 11 March 2021 period. We updated 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.

- Approaches to developing and adjusting allocation rules (e.g., citizen- and stakeholder-engagement processes)
- 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
- Dosing rules (number, timing of second dose, and potential for second dose to be a different vaccine)
- 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 42 new evidence documents since the last update of this LEP, of which we deemed 10 to be highly relevant. The newly added highly relevant evidence documents are:

- three new guidelines developed using a robust process (e.g., GRADE);
- one new rapid review;
- four new guidelines developed using some type of evidence synthesis and/or expert opinion; and
- two new single studies 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 92 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 5. These appendices are provided in a [separate document](#).

Key findings from highly relevant evidence documents

The highly relevant evidence documents included in this LEP address one or more of the following four key areas of current focus in the vaccine roll-out (of which many cut across multiple domains of the organizing framework):

- adjusting plans for allocating vaccines equitably;
- supporting a range of front-line health workers to communicate about and administer vaccines;
- adjusting public-health guidance for people who are fully vaccinated; and
- monitoring the COVID-19 vaccine roll-out (including vaccination intentions).

First, we found a highly relevant guideline and single study with insights about adjusting plans for allocating vaccines equitably. The guideline provides recommendations on [COVID-19 vaccine provision to pregnant people](#). In addition, the single study found that [a three-month dose interval may be advantageous](#) when vaccine supplies are limited. As noted in the section below with key findings from the jurisdictional scan, this finding is being used in Canada to accelerate the vaccination schedule to get more people a single dose by the end of June 2021.

Second, guidelines from WHO provide resources to support front-line health workers to communicate about and administer vaccines. The first guideline provides health workers with [a flow diagram for COVID-19 vaccination communication](#), and the second provides a [COVID-19 vaccine checklist](#) to help front-line health workers prepare and complete a vaccination session.

Third, we found three guidelines from the U.S. CDC that provide public-health guidance for people who have been vaccinated, with recommendations that are specific for [healthcare settings](#) and [non-healthcare settings](#), and that provide the [background rationale and evidence for these recommendations](#).

Lastly, an interim guideline from WHO, a medium-quality rapid review and a single study provide key findings in relation to monitoring the COVID-19 vaccine roll-out. A WHO guideline provides guidance about [monitoring COVID-19 vaccination](#), and multiple related tools and digital systems for data collection and analysis, such as home-based records (vaccination cards), facility-based records (immunization registers), health-management information systems (HMIS), electronic immunization registries (EIR), and logistics-management information systems (LMIS). Complementing this, the single study outlines how the U.S. is implementing [safety monitoring for COVID-19 vaccination](#) through a [vaccine adverse-event reporting system \(VAERS\)](#) and [v-safe](#) systems. Lastly, the rapid review summarizes [COVID-19 vaccination knowledge, attitudes and behaviours both specifically for the Canadian population and globally](#). Moreover, we found several single studies about vaccine hesitancy, but we classified these documents as being of medium relevance given that the rapid review provides a comprehensive synthesis on the topic (however, findings from these additional studies are summarized in Appendix 2a).

Key findings from the jurisdictional scan

We identified several new insights across each of the five domains of the organizing framework 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. We summarize these insights according to each domain of the framework below.

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

- rather than continue with the approach of having a portfolio of multiple vaccines, the New Zealand government has decided to make Pfizer-BioNTech the country's primary vaccine provider and has ordered enough Pfizer-BioNTech vaccines for its entire population to be fully vaccinated (the government is determining how to make use of other vaccines that it has already procured);
- China has put inactivated COVID-19 vaccine into mass production and has granted conditional market approval for four country-developed COVID-19 vaccines;
- China has also donated or is donating COVID-19 vaccines to 69 developing countries and is exporting its vaccines to 43 countries;
- the U.K. and the U.S. are ordering millions more doses of COVID-19 vaccines to be delivered later in the year in the event that they will be needed, with the U.S. indicating that all adults will be made eligible for the vaccine by 1 May 2021;
- COVID-19 vaccines in Germany are distributed from the federal government to wholesalers, then to pharmacies, and then to physician-run clinics;
- with its approval of the Oxford-AstraZeneca COVID-19 vaccine on 26 February 2021, Canada has authorized two manufacturers of the vaccine – Astra-Zeneca and Serum Institute of India – to deliver its pre-ordered 22 million doses of vaccine (the first delivery was received on 3 March

2021 from the Serum Institute of India, and the vaccine doses were shipped to Canadian provinces in the week of 8 March 2021); and

- the Janssen (Johnson & Johnson) vaccine was approved by Health Canada on 5 March 2021 and 10 million doses of the vaccine have been pre-ordered by the Government of Canada.

In terms of allocating vaccines and ancillary supplies equitably, we found that:

- the U.S. continues to lead in the number of COVID-19 doses administered (95.7 million as of 9 March 2021) while Israel nears having almost two-thirds of its population (58.2% as of 9 March 2021) vaccinated with at least one dose of COVID-19 vaccine;
- as vaccine supply has started to become more consistent in some countries, including Canada, priority groups for vaccinations are being expanded during phased vaccine roll-outs in countries and Canadian provinces;
- China will be launching a program to assist and secure vaccination for its citizens abroad with Chinese or foreign vaccines;
- vaccinations have begun for 100,000 Palestinians who work in Israel or are in Israeli settlements in the West Bank;
- on 3 March 2021, the National Advisory Committee on Immunization (NACI) issued new guidance for Canada advising that the time between shots for the Pfizer-BioNTech, Moderna, and Oxford-AstraZeneca vaccines be extended to four months, which will enable Canada to vaccinate and protect a larger proportion of the population more quickly;
- Canadian provinces have adjusted their vaccine roll-out plans to accommodate the administration of the Oxford-AstraZeneca vaccine to individuals under 65 years old, as well as the recommended extension for receiving second doses by NACI; and
- the Quebec Immunization Committee has recommended that COVID-19 vaccination should be offered to pregnant women, and in Manitoba, an emergency order is in force to enable Shared Health Manitoba to investigate and confirm the eligibility status of healthcare workers who have been vaccinated to prevent fraudulent activity.

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

- Germany has launched a COVID-19 vaccine-information campaign consisting of educational videos, posters and advertisements focused on raising awareness regarding priority populations;
- Australia has launched the second phase of its educational COVID-19 campaign, which included health professionals and researchers responding to public enquiries; and
- several countries and Canadian provinces continue to provide more information about the safety and efficacy of approved vaccines and how to get a vaccine, on their websites and through news conferences and social media.

In terms of administering vaccines in ways that optimize timely uptake, we found that:

- medical practices and pharmacies have been authorized in Australia, France and Germany to assist in vaccine administration, and university campuses and workplaces have been launched as vaccination sites in Israel;
- public-health directives are being introduced for fully vaccinated individuals, including:
 - Israel is no longer requiring fully vaccinated Israeli residents to quarantine after entering the country as of 7 March 2021, and the Ministry of Health is unveiling a “Green Pass” system that allows those who are fully vaccinated (defined as being one week after their last dose) and those recovered from COVID-19 to enter specific businesses and to attend certain events with a “green pass/certificate” and photo ID,

- China is planning to launch health certificates for international travellers that will declare a person's vaccination status or recent test results, and
- the U.S. CDC is releasing interim public-health recommendations on 8 March 2021 indicating that fully vaccinated people in the U.S. do not have to quarantine or be tested after known exposure if they are asymptomatic, and they may visit other fully vaccinated people and unvaccinated people at low-risk for severe COVID-19 from a single household without wearing masks or physical distancing;
- vaccination sites throughout Canadian provinces are expanding to more hospitals, mobile vaccination sites, pharmacies, primary-care settings, and community locations;
- most Canadian provinces have launched or will be launching an online booking tool or telephone service to allow individuals to book vaccine appointments; and
- Quebec's Immunization Committee has recommended that if the same vaccine for a patient's first and second doses is not available (or known), a similar type of vaccine (e.g., mRNA or viral vector) should be given, and the committee also advised that people with prior confirmed COVID-19 infection may only need one vaccine dose to develop sufficient immunity.

In terms of surveillance, monitoring and evaluation, and reporting, we found that:

- the Economic, Social and Environmental Council in France found that the primary reason for vaccine hesitancy/rejection among participants is the possibility of adverse side effects caused by the COVID-19 vaccine;
- in Saskatchewan and Manitoba, COVID-19 vaccination records can be accessed online, while in Alberta vaccinated individuals are provided with an immunization record by Alberta Health Services; and
- Ontario has begun voluntarily collecting socio-demographic data (including race, household income, linguistic profile) from those being vaccinated.

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

COVID-19 vaccine roll-out activities	New evidence	New experiences
General/cross-cutting insights	<ul style="list-style-type: none"> • Interim guidance from the WHO provides recommendations and considerations about monitoring COVID-19 vaccination and presents different tools and digital systems for collecting and analyzing COVID-19 vaccination data, such as home-based records (vaccination cards), facility-based records (immunization registers), health-management information systems (HMIS), electronic immunization registries (EIR), and logistics-management information systems (LMIS) • One WHO guideline provides the COVID-19 vaccine checklist to help front-line health workers prepare and complete a COVID-19 vaccination session at a fixed post or outreach session 	<ul style="list-style-type: none"> • As countries continue to ramp up their administration of COVID-19 vaccines, thought is being given to life post-vaccination, with actions being taken by governments to develop guidelines (U.S.) and ease restrictions (Israel) for fully vaccinated individuals
Securing and distributing a reliable supply of vaccines and ancillary supplies (e.g., needles, diluents)	<ul style="list-style-type: none"> • No new evidence identified 	<p><i>National purchasing</i></p> <ul style="list-style-type: none"> • New Zealand’s Prime Minister announced on 8 March 2021 that the government has decided to make Pfizer-BioNTech the country’s primary vaccine provider because of the high degree of efficacy of its vaccine, and the resulting simplification of the vaccine roll-out <ul style="list-style-type: none"> ○ An advance purchasing agreement has been signed with Pfizer-BioNTech for an additional 8.5 million vaccine doses to bring New Zealand’s total order to 10 million doses, enough for the country’s entire population to be fully vaccinated ○ The New Zealand government is still determining how to make use of other vaccines that it has already procured, and is considering delaying shipments to New Zealand until 2022 and donating surplus vaccines to other countries ○ The government may consider procuring a vaccine that is more easily transported as a “backup option” to make vaccines more accessible for rural communities • The U.K. has ordered more than 400 million doses of seven of the most promising vaccines and has announced a deal with an eighth biopharmaceutical company, CureVac, to

		<p>purchase 50 million doses of its vaccine to be delivered later this year if required</p> <ul style="list-style-type: none"> • Following the USDA’s emergency use authorization for the Johnson & Johnson vaccine on 27 February 2021, reports surfaced that the Biden administration plans to buy an additional 100 million doses of the Johnson & Johnson COVID-19 vaccine • On 26 February 2021, Canada approved the Oxford-AstraZeneca COVID-19 vaccine and has pre-ordered 22 million doses of the vaccine • On 5 March 2021, Canada approved the Johnson & Johnson COVID-19 vaccine and has pre-ordered 10 million doses of the vaccine <p><i>Delivery to country</i></p> <ul style="list-style-type: none"> • As of 7 March 2021, China has donated or is donating COVID vaccines to 69 developing countries and is exporting vaccines to 43 countries • Shipments of the Oxford-AstraZeneca vaccine have recently increased: <ul style="list-style-type: none"> ○ On 28 February 2021, 300,000 doses of the vaccine arrived in Australia ○ France will be receiving a shipment of 280,000 doses of the vaccine during the week of 15 March 2021 ○ 5.6 million doses of the vaccine are scheduled to be delivered to Germany by April 2021 ○ Canada received 500,000 doses of the vaccine from the Serum Institute of India on 3 March 2021 • As of 3 March 2021, over 10.3 million doses of Pfizer-BioNTech, Oxford-AstraZeneca, and Moderna vaccines have been delivered to Germany by manufacturers • As of 10 March 2021, Canada has received 3,182,510 vaccines from Pfizer-BioNTech, Moderna and Oxford-AstraZeneca manufacturers <ul style="list-style-type: none"> ○ The Public Health Agency of Canada says it is not expecting any new deliveries of the Oxford-AstraZeneca vaccine or the Johnson & Johnson vaccine until April 2021
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		<ul style="list-style-type: none"> ○ Shipments of the Pfizer-BioNTech and Moderna vaccines will continue to be delivered to Canada in the coming weeks <p><i>Ordering within country</i></p> <ul style="list-style-type: none"> ● As of 3 March 2021, China has put the Sinopharm inactivated COVID-19 vaccines into mass production and the output is expected to surpass one billion doses in 2021 ● As of 3 March 2021, China has granted conditional market approval to four self-developed COVID-19 vaccines and 17 Chinese vaccines have entered clinical trials <p><i>Distribution within country and to administration sites</i></p> <ul style="list-style-type: none"> ● COVID-19 vaccine distribution in Germany to medical practices is conducted with the following sequence: <ul style="list-style-type: none"> ○ Delivery from the federal government to wholesalers ○ Delivery from wholesalers to pharmacies ○ Delivery from pharmacies to physician clinics ● The Government of Canada has delivered shipments of all the Oxford-AstraZeneca vaccine doses received to all Canadian provinces, except Yukon, Northwest Territories and Nunavut, during the week of 8 March 2021
Allocating vaccines and ancillary supplies equitably	<p><i>Allocation rules</i></p> <ul style="list-style-type: none"> ● One guideline consolidates guidance issued by the U.S. Centers for Disease Control and Prevention, the American College of Obstetricians and Gynecologists, and the Society for Maternal-Fetal Medicine on COVID-19 vaccine provision to the pregnant population <p><i>Dosing rules</i></p> <ul style="list-style-type: none"> ● One single study found that a three-month dose interval may be advantageous compared to a program with a short dose interval to protect a larger number of individuals as soon as possible when vaccine supplies are limited 	<p><i>Approaches to developing and adjusting allocation rules</i></p> <ul style="list-style-type: none"> ● The New Zealand government is negotiating with its Pacific neighbours to determine their specific preferences for vaccines <p><i>Allocation rules</i></p> <ul style="list-style-type: none"> ● Australia allows unvaccinated individuals who were eligible to be vaccinated in a previous phase of their roll-out to remain eligible in subsequent phases ● As vaccine supply has started to become more consistent in some countries, priority groups for vaccinations are expanding: <ul style="list-style-type: none"> ○ Australia is scheduled to begin vaccinating adults aged 70 years and over, healthcare workers, adults with pre-existing conditions, front-line workers, and Aboriginal and Torres Strait Islander people on 22 March 2021 ○ Hong Kong expanded its priority groups on 8 March 2021 to include workers in the catering industry, tourism, public

		<p>transportation, property management, construction sites, and schools</p> <ul style="list-style-type: none"> ○ France expanded its priority groups as of 2 March 2021 to residents aged 60 years and older in migrant worker homes, individuals between the ages of 50 and 74 who are living with comorbidities, individuals who have previously contracted COVID-19, and pregnant or breastfeeding women ○ French authorities have recently changed their recommendations to allow at-risk pregnant women to receive the Pfizer-BioNTech and Moderna vaccines, and individuals between the ages of 65 and 74 with comorbidities to receive the Oxford-AstraZeneca vaccine ○ As of 24 February 2021, elementary school, childcare, and day care staff have been added to group 2 of Germany's phased roll-out ○ As of 3 February 2021, all residents in Israel aged 16 years and older became eligible for the COVID-19 vaccine ● The New Zealand government released its official COVID-19 vaccine roll-out plan on 10 March 2021 with four main groups for phased vaccination: <ul style="list-style-type: none"> ○ Group 1: Border and MIQ workers and their household contacts (began in February 2021) ○ Group 2: Front-line workers and people living in high-risk settings (began in February 2021) ○ Group 3: People who are at higher risk if they contract COVID-19 (anticipated to begin in May 2021) ○ Group 4: The remainder of the population (anticipated to begin in July 2021) ● Several Canadian provinces have also expanded their priority groups for vaccination <ul style="list-style-type: none"> ○ In British Columbia, people born in or before 1931 and Indigenous peoples born in or before 1956 can book a vaccine appointment as of 8 March 2021, and people born in or before 1936 and in or before 1941 will be able to book appointments within the next two weeks ○ The roll-out of vaccines in First Nations communities in Manitoba is expected to begin in mid-March and will
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		<p>prioritize communities at high-risk of floods, fires and other evacuation risks</p> <ul style="list-style-type: none"> ○ On 5 March 2021, additional details on Phase II groups in Ontario were released, which focus on prioritizing primarily age and risk (based on hot spots, specific health conditions, congregate care setting, essential caregivers, and those who cannot work from home) ○ In Phase III of Ontario’s vaccine roll-out, remaining Ontarians aged 16 and older can be vaccinated ○ As of 10 March 2021, the general population aged 70 years of age or older is able to book an appointment for vaccination in all public-health units in Quebec ○ For P.E.I.’s vaccine roll-out phases, Phase 2 (April to June 2021) will include adults 18 years of age and older and Phase 3 (summer to September 2021) will include all individuals requiring a second dose and youth 15 years of age and older when an appropriate vaccine for this age category becomes available ○ Newfoundland and Labrador’s Phase 2 (April to June 2021) will now include adults 60 years of age and older, adults who identify as First Nation, Inuit or Métis, adults in marginalized populations, first responders, front-line healthcare workers not immunized in phase 1, individuals 16-59 with medical conditions who could be at high risk if infected with COVID-19, individuals who travel in and out of the province for work, and front-line essential workers with direct contact with the public who cannot work from home; Phase 3 (July to September 2021) will include anyone in priority groups 1 and 2 who were not vaccinated and individuals 16-59 who have not been vaccinated ○ As of 5 March 2021, in Northwest Territories additional priority groups have been added for residents in Yellowknife, Hay River and Inuvik ● Canadian provinces have adjusted their roll-out plans to incorporate the arrival of the Oxford-AstraZeneca vaccine during the week of 8 March 2021
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		<ul style="list-style-type: none"> ○ Starting 10 March 2021, Albertans aged 50 to 64 and First Nations, Métis and Inuit individuals aged 35 to 49 will be eligible to receive the Oxford-AstraZeneca vaccine ○ Eligible groups in Saskatchewan who will be receiving the Oxford-AstraZeneca vaccine include individuals between the ages of 60 and 64 and priority healthcare workers ○ In Nova Scotia, the Oxford-AstraZeneca vaccine will be administered to individuals aged 63 and 64 starting 20 March 2021 ○ Starting 11 March 2021, individuals between the ages of 18 and 29 in P.E.I. who work in the food and beverage industry, including food delivery service, can register to receive the Oxford-AstraZeneca vaccine ● The Quebec Immunization Committee has recommended that vaccination for pregnant women should be offered, and does not recommend systematically offering the Oxford-AstraZeneca vaccine to people in Quebec with a very high risk of sickness and complications (for example, residents of long-term care homes and immunocompromised people) ● Once an individual becomes eligible for vaccination in Saskatchewan, they will continue to be eligible even if the province has moved on to a different phase of the roll-out <p><i>Dosing rules</i></p> <ul style="list-style-type: none"> ● As of 7 March 2021, a total of 86,369 COVID-19 vaccines have been administered to Australians ● As of 28 February 2021, over 52 million doses of COVID-19 vaccines have been administered in China ● As of 10 March 2021, France has administered over 6,425,000 vaccines doses, with 6.5% of the population receiving their first dose, and 3.1% of the population being fully vaccinated ● As of 10 March 2021, Germany has administered over 8.1 million vaccine doses, with 6.1% of the population receiving their first dose and 3.1% of the population being fully vaccinated ● As of 9 March 2021, more than 22.5 million people (58.2% of the population) in Israel have received at least one dose of COVID-19 vaccine, and more than one million people (45.5% of the population) have been fully vaccinated)
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		<ul style="list-style-type: none"> • As of 9 March 2021, more than 22.5 million people in the U.K. have had a first vaccine dose and more than one million have been fully vaccinated • The U.S. CDC reported that 127.9 million doses of COVID-19 vaccines have been distributed and 95.7 million doses have been administered in the U.S. as of 9 March 2021 • As of 10 March 2021, 81.8% of doses delivered to Canada have been administered <ul style="list-style-type: none"> ○ 2,020,056 first doses and 582,973 second doses of COVID-19 vaccine have been administered ○ 5.31% of the population has received at least one dose of COVID-19 vaccine • The number of vaccine doses administered within Canadian provinces ranged from 978,797 doses in Ontario to 343,381 doses in British Columbia to 24,412 doses in Yukon as of 10 March 2021 • As of 8 March 2021, all first doses as part of Operation Remote Immunity in Ontario had been administered (12,660 doses), and 2,664 second doses had been administered • As of 10 March 2021, residents 18 years and older in Nunavut became eligible to schedule a vaccination • The Government of Nunavut will not be releasing specific details about the level of vaccination in communities to prevent stigma • France maintains a second dose interval for the Pfizer-BioNTech vaccine of 21 days • According to Germany’s Standing Committee on Vaccination (STIKO), the Oxford-AstraZeneca vaccine requires two doses in a 12-week interval • On 3 March 2021, the National Advisory Committee on Immunization (NACI) issued new guidance for Canada advising that the time between shots for the Pfizer-BioNTech, Moderna, and Oxford-AstraZeneca vaccines be extended to four months in order to vaccinate, and hopefully protect, more people <ul style="list-style-type: none"> ○ British Columbia, Ontario, Quebec, Manitoba, Alberta, Saskatchewan, New Brunswick, and Newfoundland and
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		<p>Labrador have extended their second dose intervals to align with NACI’s recommendations</p> <p><i>Ensuring equity</i></p> <ul style="list-style-type: none"> • China will launch a "spring sprout" program to assist and secure vaccination for its citizens with Chinese or foreign vaccines <ul style="list-style-type: none"> ○ This program will include setting up vaccination stations in countries where conditions allow to administer Chinese vaccines to nationals living in surrounding countries • As of 8 March 2021, vaccination has begun for 100,000 Palestinians who work in Israel or are in Israeli settlements in the West bank, with efforts to vaccinate 1,000 people per day • Every person in New Zealand will be eligible for free vaccination regardless of their immigration status, and any information collected will not be used for immigration purposes • An emergency order under the Emergency Measures Act enables Shared Health Manitoba to investigate and confirm the eligibility status of healthcare workers who have been vaccinated <ul style="list-style-type: none"> ○ If people are found to have provided false information to get early vaccination, the order enables Shared Health to disclose this information to the individual’s employer, professional regulatory body, or law enforcement
<p>Communicating vaccine-allocation plans and the safety and effectiveness of vaccines</p>	<p><i>Delivery of the intervention</i></p> <ul style="list-style-type: none"> • One WHO guideline provides health workers with a flow diagram for COVID-19 vaccination communication, which can be carried out during a COVID-19 vaccination session, or prior to the vaccination event, in-person or via a virtual platform, at a group educational session, community meeting, or one-on-one interaction <p><i>Content of messaging</i></p> <ul style="list-style-type: none"> • The same WHO guideline outlines key messages to communicate during a COVID-19 vaccination session, including benefits of vaccination, common potential side effects and how to handle them, myths and misinformation about vaccines, and complementary public-health and social measures 	<p><i>Delivery of the intervention</i></p> <ul style="list-style-type: none"> • On 1 March 2021, the second phase of Australia’s educational COVID-19 campaign was launched which included health professionals and researchers responding to public enquiries through a series of “Top 3 COVID-19 Vaccine Questions” • On 8 March 2021, a COVID-19 vaccine eligibility tracker was launched in Australia to help provide residents with a projected vaccination timeline • A public website discussing vaccine progress in the Yukon is now available to residents <p><i>Content of messaging</i></p> <p>The Government of Germany has launched a COVID-19 vaccine information campaign, “Germany Pulls Up Its Sleeves”, to help educate and inform the public</p>

		<ul style="list-style-type: none"> ○ The first phase of the campaign focuses on raising awareness regarding priority populations ○ The campaign consists of educational videos, posters and advertisements ● The New Zealand Ministry of Health has published information on its website about the safety, effectiveness and side effects of the Pfizer-BioNTech vaccine, how to get a vaccine (for border and MIQ workers), and what to expect at your vaccination ● The Quebec government has released a document and video with guidance for the general public on how to register for vaccination through the online portal <ul style="list-style-type: none"> ○ The Ministry of Health and Social Services has produced and released several videos about COVID-19 vaccine safety and the provincial vaccination campaign for the general public (in English and French) ● Nova Scotia, Prince Edward Island and Newfoundland and Labrador have added information sheets about the Oxford-AstraZeneca vaccine on their government websites ● A website is available to residents of Northwest Territories to access information about the Moderna vaccine, the vaccination schedule, and to book appointments online ●
<p>Administering vaccines in ways that optimize timely uptake</p>	<p><i>With what broader, complementary health interventions</i></p> <ul style="list-style-type: none"> ● One guideline from the U.S. CDC provides updated healthcare infection prevention and control recommendations in response to the COVID-19 vaccination in healthcare settings ● Another guideline from the U.S. CDC provides the first set of public-health recommendations for fully vaccinated people in non-healthcare settings ● One scientific brief from the U.S. CDC provides the background rationale and evidence for public-health recommendations for fully vaccinated people 	<p><i>With what explicit effort to leverage existing health-system arrangements</i></p> <ul style="list-style-type: none"> ● The New Zealand government has partnered with some Māori and Pacific NGOs to set up small community vaccination clinics in South Auckland to support the rollout of vaccines to household contacts of border and MIQ workers <p><i>Where</i></p> <ul style="list-style-type: none"> ● Over 4,500 accredited general practices will serve as administration sites during Australia’s vaccine roll-out, and the Australian Defense Force will provide additional personnel to assist with the vaccine roll-out in residential aged care facilities ● The Government of France has authorized both medical practices and pharmacies to assist in vaccine administration

		<ul style="list-style-type: none"> ○ Medical practices in France will be distributing over 1.6 million doses of the Oxford-AstraZeneca vaccine by 12 March 2021, and pharmacies will be distributing an initial delivery of 67,000 doses of the Oxford-AstraZeneca vaccine ● In April 2021, medical practices in Germany are scheduled to be delivery sites for vaccine administration ● As of 21 February, university campuses and workplaces have launched as vaccination sites in Israel ● Vaccination of the household contacts of border workers began on 9 March 2021 at the first large-scale COVID-19 vaccination clinic in New Zealand ● Administration of the Oxford-AstraZeneca vaccine will commence soon at a drive-thru location in Regina according to a 9 March 2021 press release of the Saskatchewan government ● Phase II will see vaccine administration in Ontario occur at municipally run vaccination sites, hospitals, mobile vaccination sites, pharmacies, clinics, primary-care settings, and community locations ● Ontario is launching a pilot program for community pharmacy-based vaccine administration in three public-health units in mid-March 2021 ● Within the month of March 2021, four more vaccine clinics will open in Nova Scotia ● During Phases 2 and 3 of P.E.I.'s vaccine roll-out, mobile clinics will launch in smaller communities and clinics could be set up within large businesses and community-based settings ● 25 pharmacies and family physician clinics in Nova Scotia and participating pharmacies in P.E.I. will be offering the Oxford-AstraZeneca vaccine in these provinces <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"> ● An online tool will be launched soon in New Zealand to help people find out when they will be eligible for vaccination
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		<ul style="list-style-type: none"> • Most Canadian provinces (British Columbia, Alberta, Saskatchewan, Quebec, Ontario, Nova Scotia, Prince Edward Island, Yukon) have launched or will be launching an online booking tool or telephone service to allow individuals to book vaccine appointments • Starting 10 March 2021, eligible Albertans will be able to book first dose appointments only in accordance with the province’s decision to extend the second dose interval to 16 weeks • Vaccination appointments in Alberta will open in stages by birth year for individuals eligible to receive the Oxford-AstraZeneca vaccine on 10 March 2021, and for individuals in group A of Phase 2 of Alberta’s roll-out plan on 15 March 2021 • Individuals in P.E.I. aged 18-29 who qualify for the Oxford-AstraZeneca vaccine can book their appointments directly through participating pharmacies • Individuals in Phase 1 of P.E.I.’s roll-out will be contacted directly to schedule their appointments, and individuals in Phase 2 will have the opportunity to pre-register in mid-March 2021, through an online registration portal or by calling the COVID-19 vaccination toll-free number <p><i>With what post-vaccination observation period and what physical distancing, personal protective equipment, sanitation and other public-health measures</i></p> <ul style="list-style-type: none"> • Vaccinated individuals in France are still required to respect and follow public-health measures (e.g., face mask and physical distancing) • Alberta’s immunization record provides post-vaccination care instructions, including a list of potential side effects, contact information for Health Link, and a reference to the COVID-19 Self-Assessment for Albertans if unusual side effects persist • Electronic and paper copies of COVID-19 immunization records are made available for vaccinated individuals in Saskatchewan
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		<ul style="list-style-type: none"> • The Quebec Immunization Committee is recommending that people in Quebec who have had severe reactions to other injections (that do not have common components with the COVID-19 vaccine) do not need specific pre-assessment, but should be monitored for 30 minutes following vaccination <ul style="list-style-type: none"> ○ The normal observation period following vaccination is 15 minutes <p><i>By whom and with what changes to remuneration</i></p> <ul style="list-style-type: none"> • On 10 March 2021, the Director-General of Health of New Zealand reported that more than 900 vaccinators have completed training to administer the Pfizer-BioNTech vaccine • Focused immunization teams have administered second doses to all personal-care home residents in Manitoba • As of 3 March 2021, 2,224 full-time equivalent staff were working in vaccination centres in Manitoba • To ensure a more timely approach to vaccinate a greater number of individuals in Phases 2 and 3, healthcare workers in Newfoundland and Labrador, including physicians and pharmacists, will assist with administering vaccines <p><i>With what broader, complementary health interventions</i></p> <ul style="list-style-type: none"> • As of 7 March 2021, fully vaccinated Israeli residents do not have to quarantine after entering the country, while unvaccinated individuals are required to isolate in designated hotels or in an alternate location using an electronic bracelet • China will launch health certificates for international travellers that will declare a person's vaccination status or recent test results • Israel's Ministry of Health unveiled a “Green Pass” system that allows fully vaccinated (one week after last dose) or those recovered from COVID-19 to enter specific businesses with a “green pass/certificate” and photo ID <ul style="list-style-type: none"> ○ Israeli residents with a “green pass/certificate” can attend cultural and sports events, gyms, exhibitions, hotels, tourist areas, and worship houses (with restrictions) ○ Failure to comply will result in a fine
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Surveillance, monitoring and	<p><i>Documenting vaccine-related opinions</i></p> <ul style="list-style-type: none"> • A medium-quality rapid review identified and summarized 135 studies on COVID-19 vaccination knowledge, attitudes, and 	<p><i>Documenting vaccine status</i></p> <ul style="list-style-type: none"> • Ontario has begun voluntarily collecting socio-demographic data from those being vaccinated

<p>evaluation, and reporting</p>	<p>behaviours of the Canadian and global population and found that intention to vaccinate varies between 54-75% in the Canadian context, and between 79-87% in the global context</p> <p><i>Documenting adverse events and follow-up</i></p> <ul style="list-style-type: none"> • One single study stated that two COVID-19 vaccines that received emergency use authorization (EUA) in the United States are undergoing safety monitoring during the initial implementation phases of the COVID-19 national vaccination program, using the vaccine adverse-event reporting system (VAERS) and v-safe <p><i>Identifying sources of vaccine hesitancy</i></p> <ul style="list-style-type: none"> • The same medium-quality rapid review identified that common factors positively associated with vaccination intention in Canada and globally include male gender, older age, higher education, adequate knowledge or health literacy, trust in experts and the government, and higher socio-economic status; factors associated with vaccine hesitancy or refusal include religious beliefs, vaccine safety and efficacy, and belief that the COVID-19 vaccine is unnecessary <p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> • The same single study stated that the U.S. is implementing two safety monitoring systems for COVID-19 vaccination: VAERS is a passive surveillance system for adverse events that accepts input from healthcare providers, vaccine manufacturers and the public; and v-safe is an active surveillance system that was established by CDC and allows participants to voluntarily self-enroll and receive smartphone text messages providing hyperlinks to web surveys about local injection site and systemic reactions 	<ul style="list-style-type: none"> ○ These data include race, household income, and linguistic profile <p><i>Identifying sources of vaccine hesitancy</i></p> <ul style="list-style-type: none"> • Insights gleaned by the Economic, Social and Environmental Council in France found that the possibility of adverse side effects caused by the COVID-19 vaccine is the primary reason for hesitancy/rejection among participants <p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> • The Government of Australia released a series of informative resources to aid residential aged care providers with the vaccine roll-out (e.g., monitoring and reporting) • A public form is available for health professionals and the general public in Australia to make enquiries related to COVID-19 vaccines • Alberta Health Services provides a COVID-19 Client Immunization Record for individuals who have been administered a COVID-19 vaccine in Alberta • In Saskatchewan, COVID-19 vaccination records are stored electronically on MySaskHealthRecord • Manitobans who have been vaccinated can access their individual immunization record online with their health card number and email address, and family doctors also have access to immunization records
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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"> • Two WHO guidelines provide insights across the organizing framework <ul style="list-style-type: none"> ○ The Vaccine Introduction Readiness Assessment Tool is intended to be used by ministries of health as a roadmap for countries to plan for COVID-19 vaccine introduction ○ Another guideline is designed to help countries develop their national COVID-19 vaccine deployment and plans in many aspects • A guideline from the American College of Obstetricians and Gynecologists (ACOG) recommends that: <ul style="list-style-type: none"> ○ Pregnant and breastfeeding women should be offered the COVID-19 vaccine; ○ 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 ○ Vaccination of pregnant women may occur in any clinical setting and non-clinical community-based vaccination sites such as schools and community centres • A WHO guideline provides interim recommendations for use of the Moderna mRNA-1273 vaccine against COVID-19, including recommendations for: <ul style="list-style-type: none"> ○ 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 ○ Administration, considerations for modifications, and co-administration with other vaccines • 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 	<ul style="list-style-type: none"> • 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 • Vaccine rollout plans have been developed in all countries that focus on vaccinating priority populations using a phased approach • 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 • 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

- One single study identified and analyzed [12 specific factors contributing to the success of Israel’s vaccine roll-out in its initial phase](#), which broadly relate to:
 - Long-standing characteristics of Israel which are extrinsic to healthcare, such as Israel’s small size in terms of both area and population
 - 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
- Specific features of the COVID-19 vaccination effort in Israel, such as the mobilization of special government funding for vaccine purchase and distribution
- A WHO guideline provides [the COVID-19 vaccine introduction and deployment costing tool \(CVIC tool\)](#) 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
 - These costs include central activities, international and domestic logistics, service delivery, and demand generation and communications
 - The tool focuses on operational costs and selected capital expenditures
- A second WHO guideline outlines the step-by-step 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](#), which enables countries to prepare their NDVPs for the review process and supports regions in conducting a consistent and uniform assessment
 - [Considerations for forming a regional COVID-19 review committee](#), which provides insight on how these committees can be established and conduct the review process for NDVPs
- Interim guidance from WHO provides an overview of [key activities and considerations to achieve high acceptance and uptake of COVID-19 vaccines](#), including the following aspects:
 - Coordination and planning
 - Implementation of mass-media plan
 - Social media monitoring and misinformation management

	<ul style="list-style-type: none"> ○ Crisis communications ○ Advocacy and stakeholder engagement ○ Community engagement and social mobilization ○ Capacity building ○ Monitoring, learning and evaluation ● The same guidance includes a communication-planning template 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 ● Additional interim guidance from WHO provides recommendations about how to put community engagement 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 ● The COVID-19 vaccine safety guidance manual 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"> ○ Description and general safety considerations for implementation of COVID-19 vaccines ○ Stakeholders in COVID-19 vaccine-safety surveillance ○ Establishing surveillance systems in countries using COVID-19 vaccines ○ Monitoring and responding to adverse events following immunization ○ Monitoring and responding to adverse events of special interest ○ Safety data-management systems, methods of post-introduction evaluation and assessing performance in countries using COVID-19 vaccines ○ Engaging with the pharmaceutical industry for COVID-19 vaccine-safety surveillance ○ Regulatory reliance and work sharing ○ COVID-19 vaccine-safety communication ● One guideline from the European Centre for Disease Prevention and Control provides an updated overview of national COVID-19 vaccination roll-out across the EU/EEA countries, including new 	
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	<p>insights into some of the critical aspects and challenges they are experiencing with the implementation of national deployment plans</p> <ul style="list-style-type: none"> ○ All 30 EU/EEA countries have initiated national vaccination campaigns, with 26 countries declaring that vaccination is not mandatory ○ As of 29 January 2021, 21.5 to 100% of doses distributed have been administered across the EU/EEA countries ○ Most of the EU/EEA countries are administering Pfizer-BioNTech, Cormirnaty, and Moderna vaccines ○ Most countries will not extend the time between the first and second dose (14 countries), while other countries are still undecided ○ 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 ○ 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 ○ 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 ○ Information on which vaccine product and when it was administered are important data elements, in addition to recording any adverse event following immunization ○ 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 ○ Extensive coordination between national and local authorities and multidisciplinary participation is required to enable the vaccine roll-out ● One single study 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 	
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	<ul style="list-style-type: none"> ○ The four dimensions of effective global immunization include development and production, affordability, allocation and deployment ○ The vaccines produced by Johnson & 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 ○ Diverse options of vaccines that can be administered are likely needed to control the pandemic 	
<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"> ● A U.S. CDC guideline describes several considerations related to securing and distributing a reliable supply of vaccines ● One single study reveals that international institutions, governments and vaccine manufacturers need to plan for sufficient vaccine production and negotiate affordable prices for low- and middle-income countries ● Another single study calls for equitable sharing globally by indicating that high-income countries have secured more than half of the vaccine doses <p><i>Delivery of vaccines at a country level</i></p> <ul style="list-style-type: none"> ● One single study calls for strengthening national and international vaccine-supply chains to ensure the efficient distribution and administration for remote communities, and to avoid vaccine wastage <p><i>Vaccine distribution within country and to administration sites</i></p> <ul style="list-style-type: none"> ● A WHO guideline provides a five-step decision-making framework for implementing mass-vaccination campaigns for the prevention of vaccine-preventable diseases and high-impact diseases ● A European CDC guidelines reports that the COVID-19 vaccine will be provided free of charge in most countries ● A guideline from the Health Information and Quality Authority guideline from Ireland stresses how vaccination-site location (and no or low vaccination costs) can contribute to equitable access ● Interim guidance from WHO recommends that long-term care facilities and local health authorities should conduct timely communications and plans to determine the logistics of how the COVID-19 vaccines will be deployed in their jurisdictions 	<p><i>National purchasing</i></p> <ul style="list-style-type: none"> ● Recent efforts to procure vaccines include: <ul style="list-style-type: none"> ○ The Hong Kong Special Administrative Region (HKSAR) government has secured a total of 22.5 million doses of COVID-19 vaccines, enough to cover Hong Kong's 7.5-million population ○ Over \$66 million has been allocated 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 ○ Pfizer-BioNTech 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) ● Canada has recently (as of 26 February 2021) approved the AstraZeneca COVID-19 vaccine ● Recent procurement activities include: <ul style="list-style-type: none"> ○ The province of Manitoba directly signing a deal to procure up to two million doses of a vaccine (that is currently in the first phase of human trials) being developed by Providence Therapeutics ○ Manitoba also procuring 400 shipping containers for transporting vaccines, 200 specialized freezers and fridges, and more than 80,000 syringes to enable the extraction of six doses per vial of the Pfizer-BioNTech vaccine ○ Efforts being made to secure COVID-19 vaccine storage equipment (freezers, fridges, power

		<p>generators) for Saskatchewan First Nations communities</p> <ul style="list-style-type: none"> • 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) • 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 • Ancillary supplies were mass ordered by France prior to the arrival of the COVID-19 vaccine • The Government of Canada established advance purchasing agreements 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 • Following the approval of the Pfizer-BioNTech vaccine label change by Health Canada, the Government of Canada ordered 64 million special syringes to extract the additional dose of the Pfizer-BioNTech vaccine • A total of 75 million immunization supplies and 422 freezers have been purchased by the Government of Canada (e.g., syringes, needles, gauze, and sharps containers) to be distributed to provinces <p><i>Delivery to country</i></p> <ul style="list-style-type: none"> • On 15 February 2021, both Australia, and New Zealand received their first shipments of the Pfizer-BioNTech vaccine • Within the first quarter of 2021, Germany expects to receive between 11 and 13 million doses of the
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		<p>Pfizer-BioNTech vaccine and two million Moderna vaccine doses</p> <ul style="list-style-type: none"> • Moderna 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 • Canada’s vaccine program slowed between 18 January 2021 and 14 February 2021 when production issues limited shipments to fewer than 350,000 doses • As of 24 February 2021, Canada has received 2,003,810 vaccines from Pfizer-BioNTech and Moderna manufacturers, and 81.4% of doses delivered to Canada have been administered • The Public Health Agency of Canada 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 • 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 • 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 • The National Operations Centre has 14 vaccine delivery sites across Canada and is being assisted by FedEx Express Canada and Innomar Strategies with distribution • 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 • 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
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		<p><i>Inventory management within country</i></p> <ul style="list-style-type: none"> • 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 • China has established and implemented whole-process traceability systems for COVID-19 vaccines • 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 • Manitoba maintains a complex data set to link vaccine deliveries with inventory levels and known appointments <p><i>Ordering within country</i></p> <ul style="list-style-type: none"> • Some countries that manufacture vaccines in country (Germany, the U.K., the U.S., and China) have repurposed existing capacity and invested in new vaccine manufacturing capacity to help expedite the production of vaccine • As of 23 February 2021, China has granted conditional market approval to two domestically developed vaccines and now has 16 COVID-19 vaccines undergoing clinical trials, six of which have entered phase-3 clinical trials <p><i>Distribution within country and to administration sites</i></p> <ul style="list-style-type: none"> • The vehicles transporting COVID-19 vaccines in China will be exempted from tolls until 31 December 2021 • The Government of Canada continues to distribute the Pfizer-BioNTech and Moderna vaccines to provinces and territories on a weekly basis
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		<ul style="list-style-type: none"> • All countries assessed have developed strategies and systems for managing distribution of vaccines as they are approved and become available, including for cold-chain requirements • In Israel, vaccines are repackaged and sent to national centres and subsequently repackaged in small boxes to ship three times a week to communities • In Germany, distribution of the Pfizer-BioNTech vaccine to federal states is based on the proportion of the population that reside in those regions • Once Pfizer-BioNTech vaccines arrive in France, they are then transported to pharmacies and institutional care facilities (e.g., long-term care) for use or delivered directly to one of 100 hospitals in the country that can safely store and administer them • Protocols have been established in Ontario to move the Pfizer-BioNTech vaccine so it can be used in long-term care and high-risk retirement home • In Newfoundland and Labrador, once a vaccine shipment arrives it is immediately distributed to regional health authority depots and then to communities where public-health nurses deliver the inoculations settings • Vaccines will be distributed to the Yukon and across Canada by the Immunization National Operation Centre for COVID-19 <p><i>Storage and handling within country</i></p> <ul style="list-style-type: none"> • Nova Scotia now has 10 cold-storage sites from which eight clinics across the province receive the vaccines on a rotational basis • The National Operations Centre within the Public Health Agency of Canada (PHAC) has developed vaccine storage and distribution capacity in the form of equipment, supplies and logistical coordination
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		<ul style="list-style-type: none"> • Both Alberta and Ontario have published guidelines describing the requirements for storing and handling the Pfizer-BioNTech and Moderna vaccines • Eight storage sites in Nova Scotia have been developed with ultra-low freezers to store vaccines safely
<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"> • A U.S. guideline provides a recommended approach for national, state, tribal, local and territorial levels that is guided by four ethical principles (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) • One single study identified public perceptions in relation to allocation priorities for the COVID-19 vaccine 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 <p><i>Allocation rules</i></p> <ul style="list-style-type: none"> • A U.S. CDC guideline updated the interim vaccine-allocation recommendations for COVID-19 vaccination program planning and implementation in federal, state and local jurisdictions • A medium-quality rapid review emphasized that COVID-19 vaccines must be administered in accordance with the priority groups that have been established to uphold the ethical integrity of the process • A low-quality rapid review indicated that most U.S. medical centres will offer COVID-19 vaccination to pregnant or breastfeeding women based on the shared decision-making principle, but organizations in the U.K. consider pregnancy and breastfeeding to be contraindications for the vaccine • A guideline (from the European Academy of Allergy and Clinical Immunology) recommends that COVID-19 vaccines should be administered to patients with allergies who do not have a history of allergic reactions to vaccine components 	<p><i>Approaches to developing and adjusting allocation rules</i></p> <ul style="list-style-type: none"> • The New Zealand Ministry of Health is working in partnership with the Māori and Pacific neighbours to plan for their roll-out programs • The Government of British Columbia 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 • The Government of Yukon is working closely with First Nation governments, NGOs, closely with First Nation governments, NGOs, community leaders, and community health centres to reach all Yukoners <p><i>Allocation rules</i></p> <ul style="list-style-type: none"> • Australia recently specified in its vaccine rollout plan that those younger than 16 years of age will be eligible to be vaccinated for the Pfizer-BioNTech vaccine only in Phase 3 • China is aiming to vaccinate the eligible population as widely as possible and gradually build an immune barrier within the whole population to control the epidemic • The Ministry for Solidarity and Health 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

- However, one single study from the U.K. revealed that 32.6% of respondents were [concerned that the government’s priority list made no reference to Black, Asian and minority ethnic groups](#)

Ensuring equity

- A WHO guidance document proposed [a values framework for COVID-19 vaccine allocation and prioritization](#), which consists of six core principles: 1) human well-being; 2) equal respect; 3) global equity; 4) national equity; 5) reciprocity; and 6) legitimacy
- 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 [developing countries](#) and [low- and middle-income countries](#)
- Interim WHO guidance recommends that [long-term care facilities \(LTCFs\) should be a high priority](#) 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

- [Germany](#) and [France](#) released additional details about the priority groups within their phased vaccine-roll-out plans
- Several changes and updates have been reported on vaccine roll-out plans in Canadian provinces:
 - [Ontario](#), [New Brunswick](#) and [Nunavut](#) released details on the priority groups that will be included in their phased vaccine roll-outs, and Alberta released its [plan for Phase 2 vaccinations](#), targeted to begin in April 2021
 - The Saskatchewan Ministry of Health [announced](#) 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
 - In Nunavut, if individuals miss their first-dose appointment and do not belong to the community scheduled to receive doses, they will be [asked to wait until the next supply](#) of vaccines is shipped to Nunavut
 - 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
 - Starting 1 March 2021, [all residents of the Yukon will be eligible](#) to receive the COVID-19 vaccine
- 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
- 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

		<p>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)</p> <ul style="list-style-type: none"> • New Zealand prepared three different scenarios for vaccine roll-out based on the level of transmission present within the country at the time of the roll-out • 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"> ○ French authorities 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 ○ Germany's Permanent Vaccination Commission recommends that individuals 65 years and younger should be vaccinated with the Oxford-AstraZeneca vaccine • 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 • Residents of British Columbia are eligible to receive vaccinations in Yukon if they typically receive healthcare in the territory <p><i>Ensuring equity</i></p> <ul style="list-style-type: none"> • As of 9 February 2021, 11,800 vaccine doses had been allocated to First Nations communities in Manitoba, and a time-limited clinic in Winnipeg was opened to provide vaccination for First Nations
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		<p>health-care workers, knowledge keepers and traditional healers</p> <ul style="list-style-type: none"> • Operation Remote Immunity was launched in Ontario to vaccinate adults in 31 fly-in First Nations communities and Moosonee in Northern Ontario • In Quebec, 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 • In its guidance for COVID-19 vaccinations in Canada, NACI recommended that at-risk adults in Indigenous populations be among the first priority groups to be vaccinated in provinces and territories
<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"> • A WHO guideline provides behavioural insights related to drivers of vaccine acceptance and uptake with a focus on the drivers of vaccine uptake including: 1) an enabling environment; 2) social influences; and 3) motivation • Some of the evidence focused on communication interventions targeting the general public or community opinion leaders to ensure evidence-based information is being relayed to the general public • It was also emphasized that communication interventions should be tailored to mitigate inequalities, particularly to Black, Asian and minority ethnic groups who have higher 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 	<p><i>Target population</i></p> <ul style="list-style-type: none"> • The Australian government’s Department of Health released educational material (e.g., videos) on COVID-19 vaccines in multiple languages (Arabic, Italian, Hindi, Korean, Russian and Spanish) with translated subtitles • In France, a citizen panel consisting of 35 citizens was announced to collate the concerns and queries posed by the public and present them to the national government • 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 • 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)

	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ 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 <p><i>Delivery of the intervention</i></p> <ul style="list-style-type: none"> • 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 <p><i>Content of messaging</i></p> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • The Mosques and Imams National Advisory Board in the U.K. is leading a campaign to reassure its faithful that COVID-19 vaccinations are safe and compatible with Islamic practices • Indigenous Services Canada (ISC) is developing resources to guide vaccination delivery, messaging and education of indigenous populations <p><i>Delivery of intervention</i></p> <ul style="list-style-type: none"> • 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
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	<ul style="list-style-type: none"> • 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 communication strategies use positive cues to vaccinate through engagement with loved ones and family members, and trusted figures like doctors and religious leaders • One single study indicated that effective public-health communication strategies should be tailored to counter vaccine misinformation 	<p>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</p> <ul style="list-style-type: none"> • 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) • 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 <p><i>Content of messaging</i></p> <ul style="list-style-type: none"> • The Centre for Effective Practice in Ontario has put together resources for understanding vaccine hesitancy in Black and First Nations, Inuit and Métis communities • 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 <ul style="list-style-type: none"> ○ 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
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		<p>updated with information about how eligible residents can book a vaccine appointment</p> <ul style="list-style-type: none"> • 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>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"> • A European CDC guideline developed using a robust process recommends using pre-existing vaccination structures and delivery services in the models for the roll-out of COVID-19 vaccines • A low-quality rapid review noted that leveraging community-based teaching methods and community partnerships for greater vaccination uptake by hard-to-reach populations • Another low-quality rapid review provided a framework for operationalizing programs to increase vaccine coverage, including increasing vaccinator capacity and training, and synergistically re-integrating immunization services • A guideline (from the Johns Hopkins Center for Health Security and Texas State University Department of Anthropology) recommends enhancing vaccination by home visits, preparing educational materials, training vaccinators, and fostering partnerships with government, health departments, and the media • A WHO guideline indicates 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 <p><i>Where</i></p> <ul style="list-style-type: none"> • One medium-quality full systematic review found that school and childcare centre-located vaccination programs were beneficial for vaccination rates and outcomes, and a low-quality full systematic review highlighted the benefits of vaccination requirements for childcare, school, and college attendance • Another medium-quality full systematic review found that using an immunization information system was effective for increasing vaccination rates 	<p><i>With what explicit effort to leverage existing health system arrangements</i></p> <ul style="list-style-type: none"> • 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 <p><i>Where</i></p> <ul style="list-style-type: none"> • Vaccines will be administered to long-term care home residents in Australia in an estimated 240 aged-care facilities in over 190 regions • New Zealand began vaccinating its border workers in Aotearoa on 20 February 2021 and in Wellington on 22 February 2021 • Vaccinations recently began in various locations in several Canadian provinces <ul style="list-style-type: none"> ○ 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 ○ 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 ○ Manitoba vaccination supersites are in operation and there are plans to expand to up to 13

	<ul style="list-style-type: none"> • A low-quality rapid review found three models for vaccination delivery in non-healthcare settings: social-distancing clinics, drive-through vaccination clinics, and mini-mobile teams • One single study indicated a heavy-lift UAV quadcopter can expand COVID-19 vaccine delivery to Indigenous people living in villages impeded by rugged terrain <p><i>By whom</i></p> <ul style="list-style-type: none"> • A medium-quality full systematic review found that allowing pharmacists to administer influenza vaccinations had small positive effects on vaccination rates, which was increased with greater autonomy • A low-quality rapid review discussed the recruitment of individuals with or without medical backgrounds and training approaches • One guideline from Public Health England, developed using some type of evidence synthesis and/or expert opinion, recommends changes to the Human Medicines Regulations to permit non-registered healthcare professionals to administer the COVID-19 vaccine with assigned training <p><i>With what partnerships to reach early populations of focus</i></p> <ul style="list-style-type: none"> • One low-quality rapid review discussed setting up familiar and accessible vaccination sites, community-based teaching methods and community partnerships for hard-to-reach populations • Another rapid review also focused on efforts through culturally specific education campaigns and engagement of stakeholders and community partners • One medium-quality full systematic review discussed the education of clinicians and parents to reduce vaccination pain, fear and distress • A guideline from the allergy centres in Germany provides guidance on allergological risk assessment regarding COVID-19 vaccination <p><i>With what second-dose provisions</i></p> <ul style="list-style-type: none"> • One guideline (from the U.S. CDC) developed using some type of evidence synthesis and/or expert opinion stating that adults should complete their second vaccination with the same vaccine product as the first dose <p><i>With what safety monitoring requirements</i></p> <ul style="list-style-type: none"> • One low-quality rapid review proposed several considerations for safety monitoring, including establishing a separate waiting area for 	<p>supersites (including two planned openings in March)</p> <ul style="list-style-type: none"> ○ Three more clinics have opened in Nova Scotia to vaccinate healthcare workers ○ Vaccinations are being administered in Inuit communities in Labrador to anyone 17 years of age and older with priority given to healthcare workers and seniors ○ In Nunavut, individuals must receive the second dose of the COVID-19 vaccine in the same location as where they received the first dose <ul style="list-style-type: none"> • Future plans for opening vaccination sites in provinces include: <ul style="list-style-type: none"> ○ 172 vaccination sites across B.C. and mobile clinics in self-contained vehicles for some rural communities and home-bound residents ○ The opening of the first mass immunization clinic in Saskatchewan in April 2021 and 230 vaccination clinics in 180 communities throughout rural, urban and northern Saskatchewan ○ Fixed vaccination sites for staff working in personal-care homes and congregate-living settings in Manitoba ○ In Ontario, Toronto Public Health launched a ‘proof of concept’ immunization clinic to test and adjust non-hospital vaccination plans ahead of mass vaccination ○ A clinic in New Brunswick’s Madawaska Maliseet First Nation and additional clinics in other First Nation communities opening shortly after ○ The first of thirteen vaccination clinics in Mi’kmaq communities across Nova Scotia starting the week of March 1st ○ The first community-based clinic in Nova Scotia where individuals over the age of 80 not living in long-term care facilities will receive their vaccination
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	<p>post-vaccination monitoring, training staff, educating patients, administering to patients with a known history of adverse reactions, monitoring patient flow and clinic layout</p>	<ul style="list-style-type: none"> • Community health nurses in P.E.I. will begin running clinics at Lennox Island First Nation at the end of February and beginning of March • 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.) • In Australia, the Pfizer-BioNTech vaccines will only be administered at Hospital/Pfizer Hubs and the Oxford-AstraZeneca vaccine will be administered at general practitioner-led respiratory clinics, select general practices, state-run vaccination clinics, and Aboriginal Controlled Community Health Centres • In China, vaccination sites are set up in the health service centres, township health centres or general hospitals in the jurisdictions • Vaccines are administered in Germany in vaccination centres and in care facilities by mobile teams during the centralized vaccination phases • 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"> ○ In B.C., the first phase of COVID-19 vaccine administration, which is of the priority populations, is occurring at public-health clinics ○ Focused Immunization Teams and Pop-up Clinics in Manitoba will each administer less than 5% of daily doses in the second quarter of 2021, and a ‘Vaxport’, which is scheduled to open on 1 March 2021, will provide immunization for residents of remote Indigenous communities ○ In Yukon, there are 14 mobile clinics scheduled to visit rural and remote communities across the Yukon for vaccine administration ○ Prototype community clinics will be created in Nova Scotia beginning in February 2021 to
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		<p>increase access to vaccinations for vulnerable communities</p> <ul style="list-style-type: none"> ○ 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 <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"> ● Provinces in Canada continue to use a variety of tools to support the scheduling of vaccinations by eligible groups, including online booking tools (Alberta, P.E.I.) call centres (Manitoba, P.E.I.), and issuing letters by mail with booking information (Nova Scotia) ● France requires an appointment to be made for COVID-19 vaccination at a select vaccination centre ● Vaccination scheduling systems are being implemented in several Canadian provinces <ul style="list-style-type: none"> ○ Alberta Health Services has an online booking tool for eligible healthcare workers to book immunization appointments ○ A scheduling system is being developed 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 ○ Starting 4 February 2021, commercial truck drivers and rotational workers in P.E.I. will receive phone calls from Health PEI to set up appointments to be vaccinated ○ Individuals in Nunavut must book an appointment with their local health centre in order to be vaccinated
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		<p>year medical, nursing or pharmacy students, and other health professionals who have vaccinations within their scope</p> <ul style="list-style-type: none"> • 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 • The Saskatchewan government intends for vaccines to be administered by physicians, nurse practitioners, and pharmacists in Phase 2 of its rollout • The province of Manitoba is actively recruiting healthcare and non-healthcare staff to work in immunization clinics, and a distributed model of doctors' offices and pharmacists is expected to administer 25% of daily doses in the second quarter of 2021 • Expanded healthcare professionals in Ontario are able to register and apply to participate in vaccination efforts via Ontario's Matching Portal <p><i>With what second dose provisions</i></p> <ul style="list-style-type: none"> • In both New Zealand and France, the second dose of the Pfizer-BioNTech vaccine will be administered after 21 days • In response to the vaccine-supply shortage in Canada, provinces have chosen to either set aside second doses for eligible residents in order to maintain the recommended vaccination interval (New Brunswick, Ontario), or administer first doses to as many residents as possible while extending the second-dose vaccination interval (Quebec, Alberta, Saskatchewan) <p><i>With what second-dose reminders</i></p>
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Surveillance, monitoring and evaluation, and reporting	<p><i>Documenting vaccine status</i></p> <ul style="list-style-type: none"> • One WHO guideline that was developed using a robust process, focuses on the Vaccine Introduction Readiness Assessment Tool, which includes a framework and a set of recommended indicators for countries to self-monitor their readiness progress for COVID-19 vaccines <p><i>Documenting adverse events and follow-up</i></p> <ul style="list-style-type: none"> • A guideline states that the U.K. will identify ‘safety signals’ related to adverse events from COVID-19 vaccination, and has established a surveillance mechanism for vaccination in pregnancy • A guideline from the allergy centres in Germany states that reports of severe allergic reactions regarding COVID-19 vaccination can be made using an online questionnaire <p><i>Identifying sources of vaccine hesitancy</i></p> <ul style="list-style-type: none"> • 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 • Two protocols for reviews that are underway aim to explore the hesitancy rate for COVID-19 vaccination and factors associated with COVID-19 vaccine uptake; and one protocol focuses on the barriers to vaccine acceptance in racial and ethnic minorities • A single study found that previous vaccine history could be an indicator to best predict COVID-19 vaccine acceptance • One WHO interim guidance document contains a set of tools (surveys, interview guides and related tools) to support the gathering 	<p><i>Documenting vaccine status</i></p> <ul style="list-style-type: none"> • As of 9 February 2021, 40.5 million doses of COVID-19 vaccine have been administered in China • As of 19 February 2021, France has administered over 3,668,000 vaccines, with 2,535,436 individuals having received their first dose and 1,132,918 having been administered the second dose • As of 21 February 2021, Germany has administered over 5.3 million vaccine doses and an estimated 4.2% of the entire population of Germany has been vaccinated • As of 22 February 2021, 51.5% of Israel's population has received at least one dose of COVID-19 vaccine (which includes 89.9% of adults aged 60 years and older) • As of 24 February 2021, 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 • As of 22 February 2021, 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 • As of 24 February 2021, Canada has received 2,003,810 vaccines from Pfizer-BioNTech and Moderna manufacturers and 81.4% of doses delivered to Canada have been administered

	<p>and use of quality data on the drivers and barriers to COVID-19 vaccine uptake</p> <ul style="list-style-type: none"> • One WHO interim guidance document provides four tools to understand intentions for receiving COVID-19 vaccines among prioritized populations, including three steps (plan, investigate, and act) <p><i>Infrastructure to enable surveillance, monitoring and evaluation</i></p> <ul style="list-style-type: none"> • A guideline from the European CDC that was developed using a robust process recommends using electronic immunization registries to help monitor vaccine safety, efficacy, coverage and acceptance • One guideline from the European Centre for Disease Prevention and Control provides an updated metrics for COVID-19 vaccine roll-out within EU/EEA countries as of 21 February 2021 • 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 establishing a task force and electronic systems to support logistics management and vaccine registries, 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 • A guideline states that the U.K. will link the Second Generation Surveillance System and the National Immunisation Management System to monitor vaccine effectiveness 	<ul style="list-style-type: none"> • Most provinces in Canada continue to update information on the number of vaccine doses administered on their government websites • 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 • 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 • A mobile application “Health Kit” was developed in China for checking individuals’ vaccination status • The Quebec Vaccination Registry 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 • Vaccinated individuals in New Brunswick receive a record of immunization <p><i>Documenting adverse events and follow-up</i></p> <ul style="list-style-type: none"> • Public Health Ontario has published a list of adverse events of special interest for COVID-19 vaccination surveillance • The Public Health Agency of Canada will monitor adverse reactions through several pre-existing mechanisms <ul style="list-style-type: none"> ○ Canada Vigilance Program ○ Canadian Adverse Events Following Immunization Surveillance System ○ Immunization Monitoring Program ACTIVE (IMPACT) network ○ Canadian Immunization Research Network ○ Canadian Vaccine Safety Network ○ Special Immunization Clinics Network
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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=215)**	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)	56	7	15	15	8	11
Full systematic reviews	11	0	0	5	5	1
Rapid reviews	19	0	3	6	7	3
Guidelines developed using some type of evidence synthesis and/or expert opinion	43	3	11	3	17	9
Protocols for reviews that are underway	18	0	1	2	0	15
Titles/questions for reviews that are being planned	-	-	-	-	-	-
Single studies that provide additional insight	68	7	11	18	5	27

*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 1.5): What is known about anticipated COVID-19 vaccine roll-out elements? Hamilton: McMaster Health Forum, 16 March 2021.

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