

COVID-19 Rapid Evidence Profile #23 (5 November 2020)

Question

What is known about anticipated COVID-19 vaccine-delivery program elements, and whether and how federated states are harmonizing these elements across constituent units of federations?

Background to the question

Anticipated vaccine-related variables that vaccine-delivery programs will need to accommodate:

- vaccine producers’
 - location
 - production platform (existing, modified or new)
 - supply chain
 - production capacity
 - delivery capacity (none, to Canada or to specific administration sites in Canada)
 - stockpile capacity
- vaccines’
 - safety and efficacy
 - second-dose requirements
 - available volumes
 - availability dates, including timing in relationship to influenza vaccination delivery
 - storage and handling requirements (traditional, modified or new, including whether the cold-chain requirements are refrigerated, frozen or ultra-cold)
 - surveillance considerations (traditional, modified or new, and data sharing between jurisdictions)
 - vaccine-dose packaging, including requirements for reconstitution with diluents or mixing with adjuvants

Vaccine-delivery program elements can be organized using the following framework, much of which aligns with the framework that is

Box 1: Our approach

We identified 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](#) between 2-5 November 2020. We also searched Health Systems Evidence (www.healthsystemsevidence.org) by searching for ‘vaccine’ using the filter for ‘public health’ (under health-system sectors). We identified jurisdictional experiences by searching jurisdiction-specific sources of evidence listed in the same COVID-END guide to key COVID-19 evidence sources. Jurisdictions were chosen because they are federations like Canada and hence must consider whether and how to harmonize program elements (Australia, Germany, Mexico, South Africa, Spain, Switzerland, U.K., and U.S.) or are other common comparators to Canada (France, Japan and New Zealand).

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 rapid evidence response was prepared in four days to inform next steps in evidence synthesis, guideline development and/or decision-making related to the question that was posed.

being used by the Public Health Agency of Canada to organize its vaccine-related workflows:

- **Supply**
 - National purchasing
 - Delivery to Canada and to administration sites
- **Allocation, ordering, distribution, and inventory management within Canada** (for vaccines and ancillary supplies like needles and diluents)
 - Allocation rules (to lower 'levels,' to populations, and to providers who can reach these populations)
 - Ordering procedure
 - Distribution procedures (including whether direct from centralized distributor to administering location and whether redistribution is allowed)
 - Inventory management (including expiration date)
 - Storage and handling (e.g., cold-chain requirements and related supplies such as liquid nitrogen)
 - Stockpile capacities
- **Administration within provincial and territorial health systems** (for healthcare workers, essential workers, those at highest risk for developing severe illness, and the general public)
 - When (e.g., when one or a preferred vaccine becomes available)
 - Where (e.g., doctors' offices, pharmacies, long-term care homes, and other healthcare settings; temporary clinics in workplaces, schools, congregate and other non-healthcare settings; and mobile clinics) and with what physical distancing, sanitation and other public-health measures
 - By whom (e.g., nurses)
 - With what partnerships to reach early populations of focus (e.g., BIPOC, Indigenous leaders)
 - With what complementary vaccination-uptake supports (e.g., vaccine communication, combatting misinformation)
 - With what broader, complementary health interventions (e.g., flu vaccination, reminders for public-health measures)
 - With what second-dose reminders
 - With what documentation requirements (patient-held vaccination report cards, COVID-19 apps, and electronic reporting)
 - With what reporting requirements (e.g., vaccine supply, expiration dates, temperature excursion, and uptake) and supporting immunization information systems (i.e., vaccine registries) and data (e.g., to EHRs)
 - With what surveillance and data sharing networks/structures
 - 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)
- **Performance indicators** (particularly those adjusted from standard vaccine programs)

What we found

We identified 10 evidence documents that provide highly relevant evidence in relation to one or more of the above categories, which include:

- four guidelines developed using a robust process (e.g., GRADE);
- five rapid reviews; and
- one guideline developed using some type of evidence synthesis and/or expert opinion.

We outline in narrative form below our key findings related to the question from highly relevant evidence documents and based on experiences from other countries and from Canadian provinces and territories. We provide hyperlinks to the highly relevant evidence documents in Table 1, as well as more detailed findings extracted from each of them.

For those who want to know more, we provide additional details in Table 2 (the type and number of all documents that were identified), Table 3 (for experiences from other federal jurisdictions), Table 4 (for experiences from other comparator countries), and Table 5 (for experiences from Canadian provinces and territories). In addition, we provide a detailed summary of our methods in Appendix 1, the full list of included evidence documents in Appendix 2, abstracts for highly relevant documents in Appendix 3 and documents excluded at the final stages of reviewing in Appendix 4.

Key findings from highly relevant evidence sources

The findings from 10 highly relevant evidence documents (guidelines and rapid reviews) are summarized in Table 1 with key insights from them summarized below in relation to the four domains of the organizing framework described above.

Supply

We found two guidelines (both from WHO) that were developed using a robust process, which provided insights related to vaccine supply. The first guideline focuses [the Vaccine Readiness Assessment Tool, which is intended to be used by Ministries of Health as a roadmap for countries to plan for COVID-19 vaccine introduction](#). Complementing this, the second guideline provides [action steps for COVID-19 vaccine introduction to countries, which includes guidance on service delivery](#).

Allocation, ordering, distribution, and inventory management within a country

We found three guidelines that were developed using a robust process and one guideline developed using some type of evidence synthesis and/or expert opinion. One of the guidelines that was produced by WHO provides insights across most of the categories in this section of the organizing framework. As noted above in relation to vaccine supply, the guideline provides [action steps for COVID-19 vaccine introduction to countries related to planning, regulations, prioritization, service delivery, training, monitoring and evaluation, vaccine cold chain and logistics, and communication](#).

In addition to this WHO guideline, three additional guidelines provide insights in relation to allocation rules. One guideline from the National Academies of Sciences, Engineering and Medicine provides [a framework for the equitable allocation of a COVID-19 vaccine that proposes a phased approach across five population groups](#). The framework is built on key principles and key characteristics of COVID-19, including rates of infection, modes of transmission, groups and individuals most susceptible to infection, and varying rates of severe illness and death among those groups. Based on this framework, it proposes the following phased approach to vaccine allocation:

- phase 1a (high-risk health workers);
- phase 1b (people of all ages with comorbid and underlying conditions that put them at significantly higher risk, and older adults living in congregate or overcrowded settings);
- phase 2 (kindergarten to grade 12 teachers, school-staff childcare workers, critical workers in high-risk settings, people of all ages with comorbid and underlying conditions that put them at moderately higher risk, people in homeless shelters or group homes, and all older adults not included in phase 1);

- phase 3 (young adults, children, workers in key industries at increased risk not included in phases 1 and 2); and
- phase 4 (everyone not included in previous phases).

Another [guideline \(from The Johns Hopkins University\)](#) provides a framework for ethical allocation of COVID-19 vaccines and proposes two tiers of population groups, with the first tier including individuals with the greatest risk of illness and death, their caregivers, and essential employees. The second tier includes those who face greater barriers to accessing care if they become seriously ill, those contributing to the maintenance of core societal functions, and those whose living or working conditions give them elevated risk of infection. Lastly, another WHO guideline [proposes the initial allocation of doses to cover 20% of a country's population, with a follow-up expansion to other population groups](#).

Administration within sub-national units of health systems

One guideline produced using a robust process and five low-quality rapid reviews provide insights related to administration of a COVID-19 vaccine-delivery program. In relation to where to administer vaccines, two of the rapid reviews indicate that:

- [hard-to-reach groups may be reached by vaccine-delivery programs by setting up vaccination sites in familiar and accessible population-specific spaces](#); and
- [socially distanced immunization clinics, drive-through clinics and small mobile-team clinics were found to be effective, but there are logistical challenges, such as monitoring and staff training, that need to be considered](#).

When considering who will administer vaccines, two of the rapid reviews highlighted that:

- [providers must be educated about vaccines and provided with appropriate training to increase their recommendation of vaccines to patients](#); and
- [individuals with or without backgrounds in medicine can be recruited to deliver vaccination through several avenues, and in-person training and just-in-time training were not found to be more effective than distant or traditional training methods, respectively](#).

Moreover, in relation to reaching early populations of focus (e.g., Black, Indigenous and other people of colour), one of the rapid reviews emphasized that [community-based teaching methods and community partnerships may be leveraged to enable greater vaccination uptake by hard-to-reach populations](#).

In considering what complementary vaccination-uptake supports (e.g., vaccine communication and combatting misinformation), the [WHO guideline that provides action steps for COVID-19 vaccine introduction to countries includes guidance on vaccine communication](#). As part of such efforts, one of the rapid reviews indicated that [additional considerations must also be made to overcome language and cultural barriers related to COVID-19 vaccine uptake](#). Moreover, another rapid review emphasized that [reliable, frequent, and tailored information about vaccines must be shared with community members through multiple platforms, including social media, traditional media, and providers](#).

One rapid review provided relevant information to safety monitoring requirements. It outlined that [training staff to identify signs of adverse vaccine reactions, respond to adverse reactions, and enable quick access to emergency medical supplies is central to mitigating risks associated with vaccination](#).

Complementing this, we recently prepared a rapid evidence profile focused on [vaccine injury-compensation programs](#). Each of the three highly relevant studies found were based on the evaluation of the U.S. National Vaccine Injury Compensation Program (VICP). Two of the studies reported that the program's ability to address liability were associated with improved confidence among the public-health workforce and an improved environment for vaccine research and development, but there were mixed findings related to its association with vaccine uptake.

Performance indicators

Two of the guidelines that we identified (both from the WHO) provide insights about performance indicators for a COVID-19 vaccine-delivery system. The [first guideline](#) provides a the Vaccine Readiness Assessment Tool (VIRAT), which offers a framework for countries to self-monitor their readiness progress against key milestones, and a set of recommended indicators (coverage, acceptability, and disease surveillance) for a COVID-19 vaccine. In addition, the guideline described earlier in this section that provides action steps for COVID-19 vaccine introduction to countries [describes key considerations for monitoring and evaluation, and safety surveillance for COVID-19 vaccine delivery for countries](#).

Key findings from the jurisdictional scan

We examined experiences with COVID-19 vaccine-delivery program elements, and whether and how federated states are harmonizing these elements across constituent units of federations in eight federations or federation-like countries (Australia, Germany, Mexico, South Africa, Spain, Switzerland, U.K., and U.S.A) and (for the first part of the question) in three other common comparator countries to Canada (France, Japan and New Zealand), as well as all provinces and territories in Canada. Experiences from these countries (with the exception of Switzerland given that no relevant information was found) and provinces and territories are presented below in relation to the four domains included in the organizing framework.

Supply

Most countries reported securing agreements for COVID-19 vaccines through a variety of mechanisms, including international alliances such as the [COVAX Facility](#), local public-private partnerships, and country agreements with vaccine producers. For example, the government of France announced an inclusive regional alliance with Germany, Italy, and the Netherlands to secure 400 million vaccine doses. We found limited information about vaccine delivery to countries and to administration sites.

In Canada, there are signed agreements with Sanofi and GlaxoSmithKline to secure 72 million doses of COVID-19 vaccine candidates. In addition, Canada is a contributing participant of the COVAX Facility. The federal government aims to distribute a safe and effective vaccine in a targeted manner to the provinces and territories.

Allocation, ordering, distribution, and inventory management within a country

Four jurisdictions (Germany, New Zealand, U.K., and U.S.) described similar vaccine-allocation rules related to their COVID-19 vaccine-delivery programs. These countries identified priority populations groups as older adults, health and social care front-line workers, essential workers from other sectors, and individuals at risk due to underlying chronic conditions.

One jurisdiction (U.S.) reported information on ordering procedures. The government developed the Vaccine Tracking System (VTrckS) as part of their comprehensive vaccine-delivery program, and the system will be used to order and distribute vaccines to jurisdictions, private partners (e.g., pharmacy chains), and other federal agencies (e.g., The Indian Health Service).

Two jurisdictions (U.S. and Germany) described distribution procedures in their vaccine-delivery program plans. The U.S. will be utilizing a federally contracted distributor (McKesson) to centrally manage and deliver vaccines. The contractor can maintain vaccine doses that require refrigeration or be kept frozen. In contrast, Germany plans to identify 60 facilities throughout the country that will be used as delivery centres.

Additionally, the vaccine-delivery program in the U.S. addresses inventory management-related responsibilities. Jurisdictions within the U.S. will be responsible for developing strategies to ensure proper inventory management and approve orders from enrolled providers within different settings in their jurisdictions (e.g., public-health clinics or federally qualified health centres, hospitals, physician clinics, mobile and/or mass-vaccination events).

In Canada, the federal government will prioritize similar population groups, including those at high risk of severe illness and death from COVID-19 and essential workers maintaining the COVID-19 response and other services. However, it diverges from other countries as it plans to include individuals with poor working or living conditions that put them at greater risk of infection. In terms of provinces and territories, Quebec is developing allocation rules based on the severity of the pandemic, vulnerability of the population, and the number of people deemed a priority. The Northwest Territories has stated that it will prioritize older adults and individuals who are immunocompromised and/or have long-term illnesses. There was limited to no information about provincial and territorial plans for ordering, distributing, and managing COVID-19 inventories. With sparse publicly available details, the government of Quebec has briefly described their intent to oversee the distribution of the COVID-19 vaccine once it is available.

Administration within sub-national units of health systems

We found limited information about when a vaccine-delivery program will be developed or administered. In Australia, the government is preparing for vaccine distribution, with the intent to develop an immunization program once there is a safe and effective vaccine.

In terms of vaccine administration sites, Germany plans to utilize vaccination centres with mobile teams for its first phase of vaccine distribution, with a second phase including physician clinics. The U.S. will prioritize settings that meet storage and handling requirements and can reach prioritized populations within health systems (e.g., hospitals, pharmacies, long-term care, and federal agencies such as Indian Health services).

Related to partnerships to reach early populations of focus, New Zealand reported their commitment to engage different stakeholders, including government and related entities. Specific to other broader, complementary health interventions, the U.K. government has stated that there are no initial plans to co-administer the COVID-19 vaccine with the flu vaccine. Additionally, the European Centre for Disease Prevention and Control developed guidance for the U.K. (along with other European Union countries) about the safety monitoring of adverse events following immunization at the regional-level and for specific population groups.

The U.S. Centers for Disease Control and Prevention's Vaccination Program Interim Playbook outlines detailed information about the administration of their vaccine-delivery program, including:

- expanding the scope-of-practice of pharmacists to give them the ability to administer vaccines;
- developing a vaccination campaign called 'Vaccinate with Confidence' as part of their vaccine communication for COVID-19;
- engaging different stakeholders in government, public-private partnerships, and related entities;
- developing reporting requirements to include information on administration (facility, type, address, date) and vaccine (product, dose number, lot number, expiration, series completion, route of administration), recipient characteristics (race, ethnicity, IIS ID number, event ID, address, date of birth, name, sex, comorbidity status, missed appointment, serology results, vaccination refusal), and vaccine administration (provider, site);
- constructing an immunization-information system to be used by jurisdictions; and
- ensuring vaccine-injury compensation for recipients and liability immunity for distributors.

We found limited available information about administering vaccine-delivery programs within provinces and territories in Canada. In Quebec, physicians, nurses, pharmacists, respiratory therapists, and midwives can administer vaccines. In preparation for the COVID-19 vaccine, Quebec's Ministry of Health and Social Services is requesting additional assistance from other health professionals, such as psychologists, social workers, and dental hygienists, to administer vaccines. Specific to partnerships to reach early populations of focus, Canada has created an equitable-access framework emphasizing the need for engagement and distribution of vaccines to prioritized populations. Related to broader, complementary health interventions, Yukon reported that they will use their existing flu-vaccination campaign as a template for COVID-19, which includes appointment logistics and physical-distancing measures. There are some elements of safety monitoring requirements within the jurisdictions. For example, Manitoba and Ontario participate in the Public Health Agency of Canada's Canadian Adverse Events Following Immunization Surveillance System. Additionally, Public Health Ontario conducts provincial surveillance of adverse event reports and supports local public-health units in their investigations

Performance indicators

We found limited information about performance indicators across the countries we reviewed and in Canadian provinces and territories. The only example we identified was from European Centre for Disease Prevention and Control, which released a comprehensive guide related to COVID-19 vaccine-delivery program elements for the EU and the U.K. The guide includes the development of performance indicators such as assessing impact, safety, effectiveness, coverage, dose type, and vaccine product.

Table 1: Key findings from highly relevant documents related to COVID-19 vaccine-delivery programs elements

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
Supply		
<ul style="list-style-type: none"> National purchasing 	<p><i>Key findings from guidelines developed using a robust process</i></p> <ul style="list-style-type: none"> The Vaccine Readiness Assessment Tool (VIRAT) is intended to be used by Ministries of Health as a roadmap for countries to plan for COVID-19 vaccine introduction (WHO technical guidance; last update 21 September 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> In Australia, the government has secured agreements for COVID-19 vaccine with Oxford University/AstraZeneca and University of Queensland/CSL Limited (total doses: 84.8 million) The Government of France announced an inclusive vaccine alliance with Germany, Italy, and the Netherlands, with a secured agreement with AstraZeneca for 400 million vaccine doses Japan and Mexico submitted a commitment agreement to the COVAX Facility New Zealand secured an agreement with Pfizer to supply 1.5 million doses of vaccine (that will cover 750,000 people in New Zealand) South Africa is expanding an existing public-private partnership with Biovac, a manufacturer for local vaccines, to include the production of COVID-19 vaccines The U.K. Government Vaccine Taskforce has secured agreements to six vaccines, and is participating in the COVAX Facility and CEPI with a GBP\$548 million commitment to deliver vaccines to both the U.K. population and low-income countries The U.S. government aims to assemble 6.6 million supply kits (including needles, syringes, alcohol pads, vaccination cards, limited PPE), which can support up to 660 million doses of vaccines (which U.S. jurisdictions will need to enroll in the federal government program for vaccine access) <p><i>Key findings from experiences in Canada and within provinces/territories</i></p>

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
<ul style="list-style-type: none"> • Delivery to Canada and to administration sites 	<p><i>Key findings from guidelines using a robust process</i></p> <ul style="list-style-type: none"> • Action steps for COVID-19 vaccine introduction to countries, which includes guidance on service delivery (WHO technical guidance; last update 21 September 2020) 	<ul style="list-style-type: none"> • Canada is a participant of the COVAX Facility, and has signed agreements with Sanofi and GlaxoSmithKline to secure 72 million doses of COVID-19 vaccine candidates <p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> • No experiences were identified <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> • The federal public health response plan stated that once a safe and efficacious vaccine is available it will be distributed in a targeted manner
Allocation, ordering, distribution, and inventory management within a country (for vaccines and ancillary supplies like needles and diluents)		
<ul style="list-style-type: none"> • Allocation rules (to lower 'levels,' to populations, and to providers who can reach these populations) 	<p><i>Key findings from guidelines developed using a robust process</i></p> <ul style="list-style-type: none"> • A framework for the equitable allocation of a COVID-19 vaccine that proposes a phased approach across five population groups (National Academies of Sciences, Engineering and Medicine; last update October 2020) • WHO develops action steps for COVID-19 vaccine introduction to countries (i.e., planning, regulations, prioritization, service delivery, training, monitoring and evaluation, vaccine cold chain and logistics, communication) (WHO technical guidance; last update 21 September 2020) • WHO proposes initial allocation of doses to cover 20% of a country's population, with a follow-up expansion to other population groups (WHO technical guidance; last update 9 September 2020) <p><i>Guidance developed using some type of evidence synthesis and/ or expert opinion</i></p> <ul style="list-style-type: none"> • A framework for ethical allocation of COVID-19 vaccines proposes two tiers of 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> • Germany identifies priority population groups as front-line workers, older adults, and individuals with chronic conditions • New Zealand will be prioritizing allocation rules that achieve population immunity and protect groups such as Māori, Pacific peoples, and population groups at risk of COVID-19 • The National Health Services (NHS) in the U.K. will be prioritizing vulnerable populations such as older adults (50 years or older), individuals at care homes (residents and staff), health- and social-care staff, and adults with multiple chronic conditions • In the U.S., healthcare personnel (paid and unpaid) and essential workers, adults with high-risk medical conditions, and older adults (65 years or older) are considered in the prioritized population group <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> • Canada will prioritize those at high risk of severe illness and death from COVID-19; those most likely to transmit COVID-19 to those at high risk of severe illness and death and workers essential to maintaining the COVID-19 response; those contributing to the maintenance of other

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
	<p>population groups, with the first tier including individuals with the greatest risk of illness and death, their caregivers, and essential employees (Centre for Health Security, John’s Hopkins University; published August 2020)</p>	<p>essential services for the functioning of society; and those whose living or working conditions places them at a greater risk of infection and where infection may have disproportionate consequences</p> <ul style="list-style-type: none"> • Quebec will develop an allocation hierarchy based on the severity of the pandemic, the vulnerability of the population, and the number of people judged to be in priority groups in any region • Northwest Territories will prioritize older adults, individuals who are immunocompromised due to comorbidities and/or with long-term illnesses
<ul style="list-style-type: none"> • Ordering procedure 	<ul style="list-style-type: none"> • No findings from highly relevant evidence documents were identified 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> • The U.S. government developed the Vaccine Tracking System (VTrckS) to help with ordering and distribution among the U.S. jurisdictions, private partners (e.g., pharmacy chains), and other federal agencies <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> • No experiences were identified
<ul style="list-style-type: none"> • Distribution procedures (including whether direct from centralized distributor to administering location and whether redistribution is allowed) 	<p><i>Key findings from guidelines developed using a robust process</i></p> <ul style="list-style-type: none"> • WHO develops action steps for COVID-19 vaccine introduction to countries including guidance on planning, regulations, and service delivery(WHO technical guidance; last update 21 September 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> • Germany is currently identifying 60 facility locations to be used as delivery centres for manufacturers, and smaller cities are proposing accessible, central locations (e.g. exhibition halls) to be used as centres to stockpile vaccines • The U.S. will use a federally contracted distributor, McKesson, to manage distribution to facilities and depots (with CDC overseeing distribution of vaccines), and will allow for redistribution for refrigerated vaccines within jurisdictions <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> • Quebec’s Ministry of Health and Social Services will oversee the distribution of a vaccine when it becomes available

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
<ul style="list-style-type: none"> Inventory management (including expiration date) 	<p><i>Key findings from guidelines using a robust process</i></p> <ul style="list-style-type: none"> WHO develops action steps for COVID-19 vaccine introduction to countries including guidance on planning, and vaccine cold chain and logistics (WHO technical guidance; last update 21 September 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> Jurisdictions in the U.S. are responsible for developing strategies to ensure proper inventory management and approve orders from enrolled providers in settings such as public health clinics or FQHCs, hospitals, physician clinics, mobile and/or mass vaccination programs <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> No experiences were identified
<ul style="list-style-type: none"> Storage and handling (e.g., cold-chain requirements and related supplies such as liquid nitrogen) 	<p><i>Key findings from guidelines developed using a robust process</i></p> <ul style="list-style-type: none"> WHO develops action steps for COVID-19 vaccine introduction to countries including guidance on vaccine cold chain and logistics, communication (WHO technical guidance; last update 21 September 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> In the U.S., federal contractor, McKesson will maintain vaccine doses that require refrigeration (2–8°C) or be kept frozen (-40°C) <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> Ontario has a <i>Vaccine Storage and Handling Protocol</i> from 2018 that outlines duties and responsibilities for managing provincial vaccine inventories; however, it is unclear if/how this protocol may apply or be modified for a potential COVID-19 vaccine
<ul style="list-style-type: none"> Stockpile capacities 	<ul style="list-style-type: none"> No findings from highly relevant evidence documents were identified 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> The U.S. may stockpile any increased quantities of vaccines if production proceeds before a regulatory decision has been made from FDA <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> No experiences were identified
<p>Administration within sub-national units of health systems (for healthcare workers, essential workers, those at highest risk for developing severe illness, and the general public)</p>		
<ul style="list-style-type: none"> When (e.g., when one or a preferred vaccine becomes available) 	<ul style="list-style-type: none"> No findings from highly relevant evidence documents were identified 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> While Australia is preparing for vaccine distribution, the country will develop an immunization program when a safe and effective vaccine is available <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> No experiences were identified

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
<ul style="list-style-type: none"> Where (e.g., doctors' offices, pharmacies, long-term care homes, and other healthcare settings; temporary clinics in workplaces, schools, congregate and other non-healthcare settings; and mobile clinics) and with what physical distancing, sanitation and other public-health measures 	<p><i>Key findings from rapid reviews</i></p> <ul style="list-style-type: none"> Hard-to-reach groups may be reached by vaccine delivery programs by setting up vaccination sites in familiar and accessible population-specific spaces (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) Socially distanced immunization clinics, drive-through clinics and small mobile-team clinics were found to be effective, but there are logistical challenges such as monitoring, and training staff that need to be considered (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> In Germany, vaccination centres will involve mobile teams, and a second phase of vaccine distribution will be delivered to physician clinics In terms of administration sites in the U.S., the initial phase will include settings that meet storage and handling requirements in health systems (e.g., large hospitals, pharmacies, long-term care providers, home health and Indian Health Services) and reach prioritized populations <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> No experiences were identified
<ul style="list-style-type: none"> By whom (e.g., nurses) 	<p><i>Key findings from rapid reviews</i></p> <ul style="list-style-type: none"> Providers must be educated about vaccines and provided with appropriate training to increase provider vaccine recommendations to patients (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) Individuals with or without backgrounds in medicine can be recruited to deliver vaccination through several avenues (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> The U.S. will expand the scope of practice for state-licensed pharmacists to administer the COVID-19 vaccine <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> Quebec's plan of action for a second wave includes a mention of expanding the pool of professionals that can contribute towards vaccinating the population
<ul style="list-style-type: none"> With what partnerships to reach early populations of focus (e.g., BIPOC, Indigenous leaders) 	<p><i>Key findings from rapid reviews</i></p> <ul style="list-style-type: none"> Community-based teaching methods and community partnerships may be leveraged to enable greater vaccination uptake by hard-to-reach populations (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> New Zealand is involving the Ministry of Business, Innovation and Employment, Ministry of Health, MedSafe, PHARMAC, and the Ministry of Foreign Affairs and Trade as part of their COVID-19 Vaccine Strategy Task Force The U.S. is aiming to engage stakeholders including the public and state, tribal, territorial, local partners

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
		<p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> The Public Health Agency of Canada and the National Advisory Committee of Immunization have worked to develop an equitable, ethical and accessible framework outlining COVID-19 vaccine distribution principles to optimize public health benefits
<ul style="list-style-type: none"> With what complementary vaccination-uptake supports (e.g., vaccine communication, combatting misinformation) 	<p><i>Key findings from guidelines developed using a robust process</i></p> <ul style="list-style-type: none"> WHO develops action steps for COVID-19 vaccine introduction to countries including guidance on vaccine communication (WHO technical guidance; last update 21 September 2020) <p><i>Key findings from rapid reviews</i></p> <ul style="list-style-type: none"> Additional considerations must also be made to overcome language and cultural barriers related to COVID-19 vaccine uptake (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) Reliable, frequent, and tailored information about vaccines must be shared with community members through multiple platforms, including social media, traditional media, and providers (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> In terms of communication efforts, the U.S. Centers for Disease Control and Prevention is collaborating with other HHS counterparts to start an effective vaccination campaign with the framework “Vaccinate with Confidence” <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> No experiences were identified
<ul style="list-style-type: none"> With what broader, complementary health interventions (e.g., flu vaccination, reminders for public-health measures) 	<ul style="list-style-type: none"> No findings from highly relevant evidence documents were identified 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> The U.K. has no initial plans to co-administer the COVID-19 vaccine with the influenza vaccination <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> Yukon will use the local influenza-vaccination campaign as a template for the COVID-19 vaccination campaign

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
		including appointment logistics and social distancing measures
<ul style="list-style-type: none"> • With what second-dose reminders 	<ul style="list-style-type: none"> • No findings from highly relevant evidence documents were identified 	<ul style="list-style-type: none"> • No experiences were identified
<ul style="list-style-type: none"> • With what documentation requirements (patient-held vaccination report cards, COVID-19 apps, and electronic reporting) 	<ul style="list-style-type: none"> • No findings from highly relevant evidence documents were identified 	<ul style="list-style-type: none"> • No experiences were identified
<ul style="list-style-type: none"> • With what reporting requirements (e.g., vaccine supply, expiration dates, temperature excursion, and uptake) and supporting immunization information systems (i.e., vaccine registries) and data (e.g., to EHRs) 	<ul style="list-style-type: none"> • No findings from highly relevant evidence documents were identified 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> • Reporting requirements from jurisdictions within the U.S. include the following data elements: <ul style="list-style-type: none"> ○ administration (facility, type, address, date) ○ vaccine (product, dose number, lot number, expiration, series completion, route of administration) ○ recipient characteristics (race, ethnicity, IIS ID number, event ID, address, date of birth, name, sex, comorbidity status, missed appointment, serology results, vaccination refusal) ○ vaccine administration (provider, site) <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> • No experiences were identified
<ul style="list-style-type: none"> • With what surveillance and data sharing networks/structures 	<ul style="list-style-type: none"> • No findings from highly relevant evidence documents were identified 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> • The U.S. government aims to develop an immunization information system to be used by entities (such as states and territories) that will deliver public vaccinations (with private entities using existing record systems and electronic health records) <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> • No experiences were identified

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
<ul style="list-style-type: none"> With what safety monitoring requirements (e.g., adverse events) 	<p><i>Key findings from rapid reviews</i></p> <ul style="list-style-type: none"> Training staff to identify signs of adverse vaccine reactions, respond to adverse reactions, and enable quick access to emergency medical supplies are central to mitigating risks associated with vaccination (AMSTAR rating 3/9; date of literature search not reported - published 27 August 2020) 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> The European Centre for Disease Prevention and Control released a comprehensive guide related to COVID-19 vaccine deployment and delivery program elements for the EU and the U.K., such as involving routine reporting of adverse events following immunization at regional-level and for specific population groups (which could be completed in sentinel hospitals or vaccination sites, registration systems, mobile technology) <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> Manitoba and Ontario participate in the Public Health Agency of Canada’s Canadian Adverse Events Following Immunization Surveillance System Public Health Ontario conducts provincial surveillance of adverse event reports and supports local public-health units in their investigations
<ul style="list-style-type: none"> With what injury-compensation program (for vaccine recipients) and liability immunity (for vaccine distributors, planners, and administering staff) 	<ul style="list-style-type: none"> A rapid evidence profile we recently produced focused on vaccine injury-compensation programs, and each of the three highly relevant studies found were based on the evaluation of the U.S. National Vaccine Injury Compensation Program (VICP) <ul style="list-style-type: none"> Two of the studies reported that the program’s ability to address liability were associated with improved confidence among the public-health workforce and improvement environment for vaccine research and development, but there were mixed findings related to the impact of vaccine uptake 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> COVID-19 vaccines are covered under the Countermeasures Injury Compensation Program (CICP) in the U.S. The U.S.’ Public Readiness and Emergency Preparedness Act (PREP Act) for Medical Countermeasures Against COVID-19 will provide liability immunity (under specific requirements) to manufacturers, distributors, program planners, prescribers, administrators, and State-licensed pharmacists and interns <p><i>Key findings from experiences in Canada and within provinces/territories</i></p> <ul style="list-style-type: none"> No experiences were identified
<p>Performance indicators (particularly those adjusted from standard vaccine programs)</p>	<p><i>Key findings from guidelines developed using a robust process</i></p> <ul style="list-style-type: none"> WHO guidance document describes key considerations for monitoring and evaluation, 	<p><i>Key findings from experiences of other countries</i></p> <ul style="list-style-type: none"> The European Centre for Disease Prevention and Control released a comprehensive guide related to COVID-19 vaccine deployment and delivery program elements for the

Broad and specific program elements	Living, full or rapid reviews about program elements	Jurisdictional scans about program elements
	<p>and safety surveillance for COVID-19 vaccine delivery for countries (WHO technical guidance; last update 21 September 2020)</p> <ul style="list-style-type: none"> • The Vaccine Readiness Assessment Tool (VIRAT) offers a for countries to self-monitor their readiness progress against key milestones, and a set of recommended indicators (coverage, acceptability, disease surveillance) for a COVID-19 vaccine (WHO technical guidance; last update 21 September 2020) 	<p>EU and the U.K., such as developing performance indicators (e.g., linking to immunization information systems, assessing impact, safety, effectiveness, coverage, dose type, vaccine product)</p> <p><i>Key findings from experiences in Canada and within provinces/ territories</i></p> <ul style="list-style-type: none"> • No experiences were identified

Table 2: Overview of type and number documents that were identified about vaccine-delivery programs elements

Type of document	Total	Supply	Allocation, ordering, distribution, and inventory management within a country	Administration within sub-national units of health systems	Performance indicators
Guidelines developed using a robust process (e.g., GRADE)	6	1	4	4	2
Full systematic reviews	6	-	-	6	-
Rapid reviews	5	-	-	5	-
Guidelines developed using some type of evidence synthesis and/or expert opinion	3	-	3	2	-
Protocols for reviews that are underway	2	-	-	2	-
Titles/questions for reviews that are being planned	0	-	-	-	-
Single studies in areas where no reviews were identified	11	1	5	5	1

Table 3: COVID-19 vaccine-delivery program elements in other federal jurisdictions

Country	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
Australia	<ul style="list-style-type: none"> • According to Australia’s COVID-19 Vaccine and Treatment Strategy, agreements for the supply of COVID-19 vaccines have been made with: <ul style="list-style-type: none"> ○ Oxford University/AstraZeneca, who will provide early access to 3.8 million doses of vaccines in January and February 2021 ○ University of Queensland (UQ)/CSL Limited, who will provide 51 million doses of UQ vaccine from mid-2021 • The above agreements will secure a total of 84.8 million doses, and additional orders will be negotiated for donation or sale to other countries • The Government of Australia has signed a consumables contract with Becton Dickinson for the supply of needles and syringes for COVID-19 vaccine administration • On 23 September 2020, Australia joined the international COVAX facility, which gives them access to vaccines for up to 50% of the population under a two-dose treatment requirement • The Government of Australia established two COVID-19 technical advisory groups: <ul style="list-style-type: none"> ○ The COVID-19 Vaccine and Treatments for Australia – Science and Industry Technical Advisory Group, which provides guidance on vaccine purchasing and manufacturing ○ The Australian Technical Advisory Group on Immunisation (ATAGI) COVID-19 Working Group, which provides guidance to the Minister of Health regarding COVID-19 vaccines immunization programs • No definitive information has been found on the COVID-19 vaccine-distribution process for Australia • A vaccine-distribution plan is currently being prepared by the Department of Health, in consultation with state and territory governments and health services 	<ul style="list-style-type: none"> • No additional information about a COVID-19 vaccine-delivery program in Australia was identified

Country	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
	<ul style="list-style-type: none"> Decisions on how to implement a COVID-19 vaccination program will be made if and when a safe and effective vaccine is approved 	
Germany	<ul style="list-style-type: none"> In October 2020, the Government of Germany approved a national vaccine strategy, which details: <ul style="list-style-type: none"> The identification of central vaccination centres by state The coupling of mobile teams in vaccination centres The identification of priority population groups by the Robert Koch Institute (e.g. front-line workers, older adults, and those with chronic conditions) A second phase of vaccine distribution which will be delivered at physician clinics The development of an application that will help to track any adverse effects caused by the vaccine 	<ul style="list-style-type: none"> The 16 states of Germany have until 10 November 2020 to present 60 facility locations that can be used as delivery centres for manufacturers trade fair halls and airport terminals are being proposed to be used as mass vaccination distribution centres Smaller cities are proposing accessible, central locations (e.g. exhibition halls) to be used as centres to stockpile vaccines
Mexico	<ul style="list-style-type: none"> On 26 March 2020, the G20 held a virtual summit where Mexico's president proposed that the United Nations (UN) intervene to ensure that all countries have equal access to COVID-19-related medicines, vaccines, and equipment <ul style="list-style-type: none"> This proposal was adopted by consensus on 20 April 2020 as UN General Assembly Resolution 74/274, entitled "International cooperation to ensure global access to medicines, vaccines and medical equipment to face COVID-19" On 10 October 2020, Mexico's government announced a \$159.88 million payment to secure access to COVID-19 vaccines through the COVAX plan <ul style="list-style-type: none"> The COVAX plan is backed by the World Health Organization (WHO), and the COVAX facility is running trials on several potential vaccines The Ministry of Foreign Affairs stated that the payment will allow Mexico to acquire enough doses of a vaccine to immunize up to a fifth of the country's population 	<ul style="list-style-type: none"> Mexico, along with the University of Oxford and Astra Zeneca laboratories, will be one of the countries in Latin America in charge of developing and producing a COVID-19 vaccine, which should allow Mexico timely and sufficient access to the vaccine. Mexico's president reports that the country's strategy is to diversify their possibilities of having access to a vaccine as soon as possible, and at an affordable cost <ul style="list-style-type: none"> Mexico's government has memorandums of understanding with Sanofi, Johnson & Johnson's Janssen unit, CanSino Biologics Inc, and Walvax Biotechnology Co Ltd On 24 August 2020, the Ministry of Foreign Affairs announced that 19 Mexican scientific projects focused on treatments and vaccines for COVID-19 will receive funding to accelerate their research and development
South Africa	<ul style="list-style-type: none"> South Africa is currently developing a national COVID-19 vaccine strategy, with the aim to secure adequate supply of vaccines to achieve population immunity 	<ul style="list-style-type: none"> The Africa Medical Supply platform has been established to coordinate resource procurement that will be adapted for COVID-19 vaccine distribution

Country	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
	<ul style="list-style-type: none"> An existing private-private partnership with Biovac will be expanded to manufacture COVID-19 vaccines 	
Spain	<ul style="list-style-type: none"> The Spanish Ministry of Health and the Spanish government is part of the centralized purchase of the COVID-19 vaccines by the European Commission 	<ul style="list-style-type: none"> No additional information about a COVID-19 vaccine-delivery program in Spain was identified
Switzerland	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Switzerland was identified 	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Switzerland was identified
U.K. (while not a federal jurisdiction per se, the UK has some federation-style arrangements with Scotland, Wales and Northern Ireland)	<ul style="list-style-type: none"> The U.K. Government Vaccine Taskforce has secured agreements to six vaccines, and has initiated vaccine delivery program elements, including: <ul style="list-style-type: none"> deployment plans by NHS to initiate vaccination for prioritized cohorts in different settings no initial plans to co-administer the COVID-19 vaccine with the influenza vaccination additional funding and surge capacity for manufacturing vaccines The U.K. government is participating in the COVAX Facility and CEPI, with a commitment of GBP\$548 million commitment to deliver vaccines to both the U.K. population and low-income countries. In a recent BMJ news release, the NHS is coordinating with health leaders to deliver vaccines to general practices and pharmacists, community vaccination centres, care homes, and other areas involving vulnerable populations <ul style="list-style-type: none"> The NHS is preparing vaccine delivery and is prioritizing vulnerable populations such as older adults (50 years or older), individuals at care homes (residents and staff), health and social care staff, and adults with multiple chronic conditions The European Centre for Disease Prevention and Control released a comprehensive guide related to COVID-19 vaccine deployment and delivery program elements for the EU and the U.K., including: <ul style="list-style-type: none"> developing performance indicators (e.g., linking to immunization information systems, assessing impact, safety, 	<ul style="list-style-type: none"> No additional information about a COVID-19 vaccine-delivery program in U.K. was identified

Country	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
	<p>effectiveness, coverage, dose type, vaccine product) and routine reporting of adverse events following immunization at regional-level and for specific population groups (which could be completed in sentinel hospitals or vaccination sites, registration systems, mobile technology)</p> <ul style="list-style-type: none"> ○ administering with other public health measures (e.g., physical distancing, effective communication strategies) ○ deciding on delivery options (e.g., school-based, clinics, pharmacies, hospitals, long-term care facilities, social care facilities, mass vaccination clinics) ○ defining specific groups for prioritization (e.g., essential service employees, risk groups, socially vulnerable, age groups, outbreaks, densely populated areas) 	
U.S.	<ul style="list-style-type: none"> ● The Health and Human Services (HHS) department is leading the development of vaccine development, while the Department of Defense (DoD) and the Centers for Disease Control and Prevention (CDC) will be coordinating the supply, production, and distribution of the COVID-19 vaccine as part of the U.S. government’s Operation Warp Speed initiative ● As described in the comprehensive COVID-19 vaccine-delivery program playbook (version 2.0 published 29 October 2020), the U.S. government aims to engage stakeholders (e.g., state, tribal, territorial, local partners, public), grant authorization for emergency use, ensure safe administration and availability of vaccines, and monitor the supply through IT systems ● A centralized distribution (managed and delivered by Federal contract, McKesson) will be completed in a phased-approach, which will leverage jurisdiction-specific plans (“microplans”) that involves ordering vaccines, and identifying vaccination sites and IT infrastructure specific to each jurisdiction ● In terms of storage and handling, McKesson is capable of maintaining doses that require refrigeration (2–8°) or kept frozen (-40°C) ● In terms of allocation and ordering, the HHS developed the Vaccine Tracking System (VTrcks) to help with distribution 	<ul style="list-style-type: none"> ● The comprehensive COVID-19 vaccine-delivery program playbook (version 2.0 published 29 October 2020) is aimed at jurisdictions to implement a COVID-19 vaccination program with key program planning and implementation guidance, which includes: identifying prioritized populations, providing provider training, understanding administration capacity, allocation, ordering, distribution and inventory management, handling and storing vaccines, developing or integrating immunization information systems, and developing effective vaccination communication campaigns ● In terms of administration sites, states will receive an allocation of vaccines from the federal government, with states responsible for managing and approving orders from enrolled providers in settings such as public health clinics or FQHCs, hospitals, physician clinics, mobile and/or mass vaccination programs ● In terms of the COVID-19 vaccines, jurisdictions will need to develop strategies to ensure proper dosing intervals (two doses, either 21 or 28 days apart) ● Jurisdictions can redistribute refrigerated vaccines

Country	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
	<p>among the U.S. jurisdictions, private partners (e.g., pharmacy chains), and other federal agencies</p> <ul style="list-style-type: none"> ○ The National Academies of Sciences, Engineering, and Medicine, and the National Academy of Medicine (NAM) developed a framework for equitable allocation (e.g., limited availability of vaccines will be allocated to priority populations; large number of doses will expand to other populations and include other commercial or private partner involvement for vaccine administration) ○ For example, healthcare personnel (paid and unpaid) and essential workers, adults with high-risk medical conditions, and older adults (65 years or older) are considered in the prioritized population group ● Vaccines will be free with no out-of-pocket expenses to the U.S. population <ul style="list-style-type: none"> ○ In terms of administering sites, the initial phase will include settings that meet storage and handling requirements and reach prioritized populations (large hospitals and health systems, pharmacy, long-term care providers, home health, Indian Health Services) ● In terms of ancillary supplies, the government aims to assemble 6.6 million supply kits (including needles, syringes, alcohol pads, vaccination cards, limited PPE), which can support up to 660 million doses of vaccines (which U.S. jurisdictions will need to enroll in the federal government to receive these supplies) ● In terms of performance indicators and monitoring, the U.S. government aims to develop an immunization information system to be used by entities (such as states and territories) that will deliver public vaccinations (with private entities using existing record systems and electronic health records), with the following required data elements: <ul style="list-style-type: none"> ○ administration (facility, type, address, date) ○ vaccine (product, dose number, lot number, expiration, series completion, route of administration) ○ recipient characteristics (race, ethnicity, IIS ID number, event ID, address, date of birth, name, sex, comorbidity) 	

Country	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
	<p>status, missed appointment, serology results, vaccination refusal)</p> <ul style="list-style-type: none"> ○ vaccine administration (provider, site) ● In terms of communication efforts, CDC is collaborating with other HHS counterparts to start an effective vaccination campaign with the framework “Vaccinate with Confidence” ● In terms of vaccine injury-compensation programs, COVID-19 vaccines are covered under the Countermeasures Injury Compensation Program (CICP) ● The Declaration Under the Public Readiness and Emergency Preparedness Act (PREP Act) for Medical Countermeasures Against COVID-19 will provide liability immunity (under specific requirements) to manufacturers, distributors, program planners, prescribers, administrators, and State-licensed pharmacists and interns 	

Table 4: COVID-19 vaccine-delivery program elements in select unitary states

Country	Program elements (and rationale if provided)
France	<ul style="list-style-type: none"> • On 5 June 2020, the Government of France announced an inclusive vaccine alliance with Germany, Italy, and the Netherlands. <ul style="list-style-type: none"> ○ Support vaccine development ○ Gather supplies ○ Secure mass production agreements with pharmaceutical companies (e.g. a total of 400 million vaccine doses produced by AstraZeneca) ○ Distribute doses based on the participating countries' population • As a leading contributor in the Access to COVID-19 Tools Accelerator, the Government of France has announced an investment of €500 million to help support the development and production of COVID-19 vaccines
Japan	<ul style="list-style-type: none"> • The government of Japan is involved with Coalitions for Epidemic Preparedness Innovation (CEPI), which is designed to promote international cooperation in the development of a COVID-19 vaccine • The government of Japan submitted a commitment agreement to the COVAX Facility, which is an international initiative to provide equitable access and distribution of COVID-19 vaccines
New Zealand	<ul style="list-style-type: none"> • The government of New Zealand released a COVID-19 Vaccine Strategy that involves engaging national partners (Vaccine Alliance Aotearoa New Zealand – Ohu Kaupare Huaketo and Biocell) and international collaboration (COVAX Facility, CEPI) for research, development, and production <ul style="list-style-type: none"> ○ NZ\$5 million was allocated to support local production of a potential COVID-19 vaccine candidate • Implementation of the strategy is led by the COVID-19 Vaccine Strategy Task Force including the Ministry of Business, Innovation and Employment, Ministry of Health, MedSafe, PHARMAC, and the Ministry of Foreign Affairs and Trade. The Ministry of Health is developing a COVID-19 immunization program guided by experts at WHO and expert groups within New Zealand <ul style="list-style-type: none"> ○ Vaccines are prioritized to achieve population immunity and protect groups such as Māori, Pacific peoples, and population groups at risk of COVID-19 ○ Development will entail considerations such as delivery, distribution, and supply chain management (no further details provided) • An agreement with Pfizer was secured to supply 1.5 million doses of vaccine (that will cover 750,000 people in New Zealand)

Table 5: COVID-19 vaccine-delivery program elements in Canada

Province/territory	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
Pan-Canadian	<ul style="list-style-type: none"> • The federal public health response plan stated that once a safe and efficacious vaccine is available it will be distributed in a targeted manner • The Public Health Agency of Canada and the National Advisory Committee of Immunization have worked to develop an equitable, ethical and accessible framework outlining COVID-19 vaccine distribution principles to optimize public health benefits • The preliminary guidance on key populations for early COVID-19 immunization report stated that sequencing of populations and sub-prioritization within populations will be based on a population-based risk-benefit analysis of vaccine supply and COVID-19 epidemic conditions when the vaccine becomes available <ul style="list-style-type: none"> ○ Key populations will include: those at high risk of severe illness and death from COVID-19; those most likely to transmit COVID-19 to those at high risk of severe illness and death and workers essential to maintaining the COVID-19 response; those contributing to the maintenance of other essential services for the functioning of society; and those whose living or working conditions places them at a greater risk of infection and where infection may have disproportionate consequences • The preliminary guidance report also states that jurisdictions should begin planning for the implementation of a COVID-19 vaccination program, including monitoring of safety, effectiveness and coverage of the vaccine, and effective immunization of populations in remote and/or isolated communities 	<ul style="list-style-type: none"> • No additional information about a COVID-19 vaccine-delivery program in at the pan-Canadian level was identified
British Columbia	<ul style="list-style-type: none"> • No information about a COVID-19 vaccine-delivery program in British Columbia was identified 	<ul style="list-style-type: none"> • No information about a COVID-19 vaccine-delivery program in British Columbia was identified

Province/territory	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
Alberta	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Alberta was identified 	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Alberta was identified
Saskatchewan	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Saskatchewan was identified 	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Saskatchewan was identified
Manitoba	<ul style="list-style-type: none"> Manitoba participates in the Public Health Agency of Canada's Canadian Adverse Events Following Immunization Surveillance System Through this system, data for adverse events are reviewed by Manitoba Health, Seniors and Active Living and then forwarded to the Public Health Agency of Canada Reports of adverse events following immunization are received by regional Medical Officers of Health from providers and the provincial pediatric hospital-based Immunization Monitoring Program ACTive (IMPACT) Regional Medical Officers of Health make recommendations based on these reports and forward them to the vaccine recipient's immunization provider and Manitoba Health, Seniors and Active Living. 	<p>No additional information about a COVID-19 vaccine-delivery program in Manitoba was identified</p>
Ontario	<ul style="list-style-type: none"> Ontario participates in the Public Health Agency of Canada's Canadian Adverse Events Following Immunization Surveillance System Public Health Ontario forwards data on adverse events following immunization to the national system once a month Local public-health units receive initial reports on adverse events from healthcare providers, patients, and the provincial pediatric hospital-based IMPACT Local public health units process reports and upload information into the provincial integrated Public Health Information System Public Health Ontario conducts provincial surveillance of adverse event reports and supports local public-health units in their investigations 	<ul style="list-style-type: none"> Ontario has a Vaccine Storage and Handling Protocol from 2018 that outlines duties and responsibilities for managing provincial vaccine inventories, however, it is unclear if/how this protocol may apply or be modified for a potential COVID-19 vaccine

Province/territory	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
Quebec	No additional information about a COVID-19 vaccine-delivery program in Quebec was identified	<ul style="list-style-type: none"> • The Ministry of Health and Social Services developed an intervention plan for municipalities in the case of an epidemic or pandemic • This plan states that the Ministry of Health and Social Services will be in charge of the distribution of a vaccine when it becomes available, and a priority hierarchy will be developed based on the severity of the pandemic, the vulnerability of the population, and the number of people judged to be in priority groups in any region • The Ministry's plan of action for a second wave includes a mention of expanding the pool of professionals that can contribute towards vaccinating the population • In preparation for the COVID-19 vaccine, Quebec's Health Ministry is requesting additional assistance from other health professionals (such as psychologists, social workers, and dental hygienists) to administer vaccines.
New Brunswick	<ul style="list-style-type: none"> • No additional information about a COVID-19 vaccine-delivery program in New Brunswick was identified 	<ul style="list-style-type: none"> • The New Brunswick Provincial Pandemic Coordination Plan, outlines that priority groups will be identified to receive vaccines
Nova Scotia	<ul style="list-style-type: none"> • No information about a COVID-19 vaccine-delivery program in Nova Scotia was identified 	<ul style="list-style-type: none"> • No information about a COVID-19 vaccine-delivery program in Nova Scotia was identified
Prince Edward Island	<ul style="list-style-type: none"> • No additional information beyond the content in the adjacent cell about a COVID-19 vaccine-delivery program in Prince Edward Island was identified 	<ul style="list-style-type: none"> • No additional information beyond the content in the adjacent cell about a COVID-19 vaccine-delivery program in Prince Edward Island was identified
Newfoundland and Labrador	<ul style="list-style-type: none"> • No information about a COVID-19 vaccine-delivery program in Newfoundland and Labrador was identified 	<ul style="list-style-type: none"> • No information about a COVID-19 vaccine-delivery program in Newfoundland and Labrador was identified
Yukon	<ul style="list-style-type: none"> • On 9 September 2020, Yukon's Chief Medical Officer of Health stated that discussions on early planning for COVID-19 vaccine implementation had begun with his counterparts around the country, as well as with the Public Health Agency of Canada 	<ul style="list-style-type: none"> • On 9 September 2020, Yukon's Chief Medical Officer stated that the local influenza vaccine campaign (October 2020) would be used as a template for the COVID-19 vaccine • Much of the increased safety measures introduced for the dissemination of the influenza vaccine, including appointment logistics and social distancing measures, will be similar when the COVID-19 vaccine is available

Province/territory	Program elements that are being harmonized across constituent units of federations (and rationale if provided)	Program elements that are not being harmonized across constituent units of federations (and rationale if provided)
Northwest Territories	<ul style="list-style-type: none"> No additional information about a COVID-19 vaccine-delivery program in Northwest Territories was identified 	<ul style="list-style-type: none"> It is unclear whether a specific COVID-19 vaccine delivery program has been developed in the Northwest Territories Under the Government of NWT response to COVID-19, The Relaxing Phase 4 Plan states that COVID-19 vaccines for seniors, people who are immunocompromised due to comorbidities and people with long-term illnesses must be prioritized before lifting public health restrictions
Nunavut	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Nunavut was identified 	<ul style="list-style-type: none"> No information about a COVID-19 vaccine-delivery program in Nunavut was identified

Bhuiya AR, Wilson MG, Moat KA, Gauvin FP, Wang Q, Whitelaw S, Alam S, Sharma K, Ahmad A, Drakos A, Dren N, Bain T, Lavis JN. COVID-19 rapid evidence profile #23: What is known about anticipated COVID-19 vaccine-delivery program elements, and whether and how federated states are harmonizing these elements across constituent units of federations. Hamilton: McMaster Health Forum, 5 November 2020.

The McMaster Health Forum is one of the three co-leads of RISE, which is supported by a grant from the Ontario Ministry of Health to the McMaster Health Forum. To help Ontario Health Team partners and other health- and social-system leaders as they respond to unprecedented challenges related to the COVID-19 pandemic, the Forum is preparing rapid evidence responses like this one. The opinions, results, and conclusions are those of the McMaster Health Forum and are independent of the ministry. No endorsement by the ministry is intended or should be inferred.



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Appendix 1: Methodological details

We use a standard protocol for preparing each rapid evidence profile (REP) to ensure that our approach to identifying research evidence as well as experiences from other countries and from Canadian provinces and territories are as systematic and transparent as possible in the time we were given to prepare the profile.

Identifying research evidence

For each REP, we search our continually updated [inventory of best evidence syntheses](#) and [guide to key COVID-19 evidence sources](#) for:

- 1) guidelines developed using a robust process (e.g., GRADE);
- 2) full systematic reviews;
- 3) rapid reviews;
- 4) guidelines developed using some type of evidence synthesis and/or expert opinion;
- 5) protocols for reviews or rapid reviews that are underway
- 6) titles/questions for reviews that are being planned; and
- 7) single studies (when no guidelines, systematic reviews or rapid reviews are identified)

For this rapid evidence profile, we also searched Health Systems Evidence (www.healthsystemsevidence.org) for overviews of systematic reviews, systematic reviews of effects, systematic reviews addressing other questions and protocols for systematic reviews that may provide insights about vaccine-delivery systems by searching for ‘vaccine’ using the filters for ‘public health’ (under health-system sectors).

Each source for these documents is assigned to one team member who conducts hand searches (when a source contains a smaller number of documents) or keyword searches to identify potentially relevant documents. A final inclusion assessment is performed both by the person who did the initial screening and the lead author of the rapid evidence profile, with disagreements resolved by consensus or with the input of a third reviewer on the team. The team uses a dedicated virtual channel to discuss and iteratively refine inclusion/exclusion criteria throughout the process, which provides a running list of considerations that all members can consult during the first stages of assessment.

During this process we include published, pre-print and grey literature. We do not exclude documents based on the language of a document. However, we are not able to extract key findings from documents that are written in languages other than Chinese, English, French and Spanish. We provide any documents that do not have content available in these languages in an appendix containing documents excluded at the final stages of reviewing.

Identifying experiences from other countries and from Canadian provinces and territories

For each rapid evidence profile we collectively decide on what countries to examine based on the question posed. For other countries we search relevant sources included in our continually updated guide to key COVID-19 evidence sources. These sources include government-response trackers that document national responses to the pandemic. In addition, we conduct searches of relevant government and ministry websites. In Canada, we search websites from relevant federal and provincial governments, ministries and agencies (e.g., Public Health Agency of Canada).

While we do not exclude countries based on language, where information is not available through the government-response trackers, we are unable to extract information about countries that do not use English, Chinese, French or Spanish as an official language.

Assessing relevance and quality of evidence

We assess the relevance of each included evidence document as being of high, moderate or low relevance to the question and to COVID-19. We then use a colour gradient to reflect high (darkest blue) to low (lightest blue) relevance.

Two reviewers independently appraise the methodological quality of systematic reviews and rapid reviews that are deemed to be highly relevant. Disagreements are resolved by consensus with a third reviewer if needed. AMSTAR rates overall methodological quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. High-quality reviews are those with scores of eight or higher out of a possible 11, medium-quality reviews are those with scores between four and seven, and low-quality reviews are those with scores less than four. 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 health-system arrangements or to economic and social responses to COVID-19. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered 'high scores.' A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8.

Preparing the profile

Each included document is hyperlinked to its original source to facilitate easy retrieval. For all included guidelines, systematic reviews, rapid reviews and single studies (when included), we prepare declarative headings that provide a brief summary of the key findings and act as the text in the hyperlink. Protocols and titles/questions have their titles hyperlinked given that findings are not yet available. We then draft a brief summary that highlights the total number of different types of highly relevant documents identified (organized by document), as well as their key findings, date of last search (or date last updated or published), and methodological quality.

Appendix 2: Key findings from evidence documents that address the question, organized by document type and sorted by relevance to the question and COVID-19

Type of document	Relevance to question	Key findings	Recency or status
<p>Guidelines developed using a robust process (e.g., GRADE)</p>	<ul style="list-style-type: none"> • Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules 	<ul style="list-style-type: none"> • This report offers a framework for the equitable allocation of COVID-19 vaccine, and is built on key principles and key characteristics of COVID-19, including: <ul style="list-style-type: none"> ○ rates of infection ○ modes of transmission ○ groups and individuals most susceptible to infection ○ varying rates of severe illness and death among those groups • The framework addresses the institutional and administrative commitments needed to implement equitable allocation policies • It also proposes a phased approach to vaccine allocation: <ul style="list-style-type: none"> ○ Phase 1a – High-risk health workers ○ Phase 1b – People of all ages with comorbid and underlying conditions that put them at significantly higher risk, and older adults living in congregate or overcrowded settings ○ Phase 2 – K-12 teachers, school-staff childcare workers, critical workers in high-risk settings, people of all ages with comorbid and underlying conditions that put them at moderately higher risk, people in homeless shelters or group homes, and all older adults not included in phase 1 ○ Phase 3- young adults, children, workers in key industries at increased risk not included in phases 1 and 2 ○ Phase 4 – Everyone not included in previous phases 	<p>Last update October 2020</p>

Type of document	Relevance to question	Key findings	Recency or status
		<ul style="list-style-type: none"> Vaccine access should be prioritized for geographic areas identified through CDC’s Social Vulnerability Index (or another more specific index) Source (National Academies of Sciences, Engineering and Medicine) 	
	<ul style="list-style-type: none"> Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> Allocation rules Distribution procedures Administration within provincial and territorial health systems <ul style="list-style-type: none"> With what partnerships to reach early populations of focus With what reporting requirements and supporting immunization information systems and data With what surveillance and data sharing networks/structures With what safety monitoring requirements Performance indicators 	<ul style="list-style-type: none"> This guidance document provides a summary of pre-planning actions that all countries can begin working on immediately to prepare for COVID-19 vaccine introduction These include activities in nine areas: <ul style="list-style-type: none"> Planning and coordination Regulatory Prioritizing, targeting and COVID-19 surveillance Service delivery Training and supervision Monitoring and evaluation Vaccine cold chain and logistics Safety surveillance Demand generation and communication Source (WHO technical guidance)	Last update 21 September 2020
	<ul style="list-style-type: none"> Supply <ul style="list-style-type: none"> National purchasing Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> Allocation rules Distribution procedures Administration within provincial and territorial health systems <ul style="list-style-type: none"> With what partnerships to reach early populations of focus With what reporting requirements and supporting immunization information systems and data With what surveillance and data sharing networks/structures 	<ul style="list-style-type: none"> The Vaccine Readiness Assessment Tool (VIRAT) is intended to be used by Ministries of Health as a roadmap for countries to plan for COVID-19 vaccine introduction It also offers a structured framework for countries to self-monitor their readiness progress against key milestones, and a set of recommended indicators (coverage, acceptability, disease surveillance) for a COVID-19 vaccine Source (WHO technical guidance) 	Last update 21 September 2020

Type of document	Relevance to question	Key findings	Recency or status
	<ul style="list-style-type: none"> ○ With what safety monitoring requirements ● Performance indicators ● Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules 	<ul style="list-style-type: none"> ● This document describes the WHO Secretariat’s proposal for the allocation of COVID-19 vaccines among countries, specifically in the context of the COVID-19 Vaccines Global Access (COVAX) Facility access mechanism, including: <ul style="list-style-type: none"> ○ an initial proportional allocation of doses to countries until all countries have enough doses to cover 20% of their population ○ a follow-up phase to expand coverage to other populations; if severe supply constraints persist, a weighted allocation approach would be adopted, taking account of a country’s COVID threat and vulnerability <p>Source (WHO technical guidance)</p>	Last update 9 September 2020
	<ul style="list-style-type: none"> ● Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what broader, complementary health interventions 	<ul style="list-style-type: none"> ● In the context of the COVID-19 pandemic, this document outlines the decision-making framework for implementing mass vaccination campaigns for the prevention of vaccine-preventable diseases and high impact diseases (VPD/HID), including: <ul style="list-style-type: none"> ○ step 1: assessing the potential impact of the VPD/HID outbreak using key epidemiological criteria ○ step 2: assessing the potential benefits of a mass vaccination campaign and the country capacity to implement it safely and effectively ○ step 3: considering the potential risk of increased COVID-19 transmission associated with the mass vaccination campaign ○ step 4: determining the most appropriate actions considering the COVID-19 epidemiological situation ○ step 5: if a decision is made to proceed with a mass vaccination campaign, implementing best practice 	Last update 22 May 2020

Type of document	Relevance to question	Key findings	Recency or status
		Source (WHO technical guidance)	
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what broader, complementary health interventions 	<ul style="list-style-type: none"> • This document provides guidance on polio eradication programme continuity plans in the context of the COVID-19 pandemic. <ul style="list-style-type: none"> ○ Programme management and coordination ○ Support to the COVID-19 response ○ Poliovirus surveillance, laboratory capacity and risk assessment ○ Supplementary immunization activities ○ Vaccine supply ○ Novel mOPV2 (monovalent type 2 oral polio vaccine) introduction ○ Risk communications, public and donor engagement ○ Protecting polio eradication programme personnel and communities ○ Certification of the poliovirus eradication ○ Poliovirus containment ○ Resumption of full-scale polio eradication activities Source (Global Polio Eradication Initiative)	Last update May 2020
Full systematic reviews	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports ○ With what broader, complementary health intervention 	<ul style="list-style-type: none"> • This review examined barriers that influence newcomers' decision-making with regards to vaccination • Findings revealed four types of barriers: <ul style="list-style-type: none"> ○ cultural factors ○ knowledge barriers ○ insufficient access to healthcare ○ vaccine hesitancy 	Literature last searched 2017

Type of document	Relevance to question	Key findings	Recency or status
		<ul style="list-style-type: none"> • More specifically, having insufficient knowledge about vaccination and having safety concerns were the most reported barriers <p>Source (AMSTAR rating 7/9)</p>	
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports ○ With what broader, complementary health interventions 	<ul style="list-style-type: none"> • This review examined the effectiveness of various types of patient reminder and recall interventions to improve vaccination rates • Findings revealed that: <ul style="list-style-type: none"> ○ Reminding people to get a vaccination likely increases the number of people who receive vaccination rates (an average of 8 percentage points) ○ Reminding people by telephone and automatic calls, sending a letter or postcard, or sending a text message increased vaccination rates (as well as a combination of reminders) ○ Reminding people over the telephone was more effective than other types of reminders <p>Source (AMSTAR rating 9/11)</p>	Literature last searched 2017
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ Where and with what physical distancing, sanitation, and other public-health measures ○ By whom 	<ul style="list-style-type: none"> • This review examined the feasibility, acceptability, and effectiveness of community pharmacies as sites for adult vaccination • Findings revealed that: <ul style="list-style-type: none"> ○ pharmacy-based immunization services are widely accepted by both patients and pharmacy staff ○ pharmacies may improve access and increase vaccination rates ○ political and organizational barriers may limit the feasibility and effectiveness of pharmacies for sites of adult vaccination <p>Source (AMSTAR rating 7/9)</p>	Literature last searched 2016
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ By whom 	<ul style="list-style-type: none"> • Research evidence found an increase in vaccine coverage when pharmacists were involved in the immunization process, regardless of role (e.g., educator, facilitator, administrator) or vaccine administered (e.g., influenza, pneumococcal), when 	Literature last searched 2015

Type of document	Relevance to question	Key findings	Recency or status
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ By whom ○ With what broader, complementary health interventions 	<p>compared to vaccine provision by traditional providers without pharmacist involvement Source (AMSTAR rating 10/11)</p> <ul style="list-style-type: none"> • This review examined the effectiveness of process interventions (e.g., education for clinicians, parent presence, education of parents (before and on day of vaccination), and education of patients on day of vaccination) on reducing vaccination pain, fear, and distress and increasing the use of interventions during vaccination • Findings reveal that: <ul style="list-style-type: none"> ○ clinicians should be educated about vaccine injection pain management ○ parents should be present ○ parents should be educated before the vaccination day ○ parents should be educated on the vaccination day ○ individuals three years of age and above should be educated on the day of vaccination fear <p>Source (AMSTAR rating 6/10)</p>	<p>Date of literature search not reported (published in 2015)</p>
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what surveillance and data sharing networks/structures 	<ul style="list-style-type: none"> • Use of an immunization information system (IIS) was an effective intervention to increase vaccination rates, and studies with benefit information focused on administrative efficiency of clinical vaccination activities and savings resulting from decreased overvaccination <p>Source (AMSTAR rating 2/9)</p>	<p>Literature last searched March 2012</p>
Rapid reviews	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ Where and with what physical distancing, sanitation, and other public-health measures ○ By whom ○ With what partnerships to reach early populations of focus ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> • Hard-to-reach groups may be reached by vaccine delivery programs by setting up vaccination sites in familiar and accessible population-specific spaces • Community-based teaching methods and community partnerships may be leveraged to enable greater vaccination uptake by hard-to-reach populations • Additional considerations must also be made to overcome language and cultural barriers <p>Source (AMSTAR rating 3/9)</p>	<p>Date of literature search not reported (published 27 August 2020)</p>

Type of document	Relevance to question	Key findings	Recency or status
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ Where and with what physical distancing, sanitation, and other public-health measures 	<ul style="list-style-type: none"> • There are three models for vaccination delivery in non-healthcare settings, including: social-distancing immunization clinics, drive-through clinics, and small mobile-team clinics • Social-distancing clinics were found to be effective, although monitoring social distancing was challenging. • Drive-through immunization clinics allowed for greater social distancing, but with less efficiency and with greater risk of use of an improper vaccine-administration technique • Mini-mobile teams increase ability to monitor social distancing and decrease the risk of exposure but have significant logistical challenges. • Strict protocols for vaccination sites to manage patient flow and duration of time at site must be established • Staff must be screened and appropriately trained to manage the vaccination site <p>Source (AMSTAR rating 3/9)</p>	Date of literature search not reported (published 27 August 2020)
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ By whom ○ With what partnerships to reach early populations of focus ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> • Barriers to the uptake of vaccinations include: limited trust in vaccine effectiveness; limited knowledge; unhealthy lifestyle; low concern about disease; and safety concerns about immunizations • Reliable, frequent, and tailored information about vaccines must be shared with community members through multiple platforms, including social media, traditional media, and providers • Providers must be educated about vaccines and provided with appropriate training to increase provider vaccine recommendations to patients <p>Source (AMSTAR rating 3/9)</p>	Date of literature search not reported (published 27 August 2020)
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ By whom 	<ul style="list-style-type: none"> • Individuals with or without backgrounds in medicine can be recruited to deliver vaccination through several avenues 	Date of literature search not reported

Type of document	Relevance to question	Key findings	Recency or status
	<ul style="list-style-type: none"> ○ With what partnerships to reach early populations of focus • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what safety monitoring requirements 	<ul style="list-style-type: none"> • In-person immunization trainings and just-in-time trainings were not found to be more effective than distant or traditional training methods, respectively Source (AMSTAR rating 3/9) • A separate waiting area must be established to allow patients to be monitored post-vaccination for 15 minutes • Training staff to identify signs of adverse vaccine reactions, respond to adverse reactions, and enable quick access to emergency medical supplies are central to mitigating risks associated with vaccination • Ensuring patients are aware of how to get help in drive-through clinic models (i.e. through honking) and administering vaccines in-clinic for patients with a known history of adverse reactions is also critical to safety • For in-clinic vaccine administration, patient flow and clinic layout must be strictly monitored Source (AMSTAR rating 3/9) 	<p>(published 27 August 2020)</p> <p>Date of literature search not reported (published 27 August 2020)</p>
<p>Guidance developed using some type of evidence synthesis and/or expert opinion</p>	<ul style="list-style-type: none"> • Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules 	<ul style="list-style-type: none"> • Emphasis should be placed on the following ethical dimensions in decision-making about vaccine allocation decisions: 1) promoting the common good by promoting public health and enabling social and economic activity; 2) promoting social equity (e.g., addressing racial and ethnic disparities in COVID-19 mortality); 3) recognizing the contributions of essential workers who have been overlooked in previous allocation schemes (e.g., for influenza); and 4) promoting legitimacy, trust and a sense of community ownership over vaccine policy while continuing to respect diversity in a pluralist society • Ethically defensible priority groups for high-priority access to scarce SARS-CoV-2 vaccine include: <ul style="list-style-type: none"> ○ tier 1: Those most essential in sustaining the ongoing COVID-19 response; those at greatest 	<p>Published August 2020</p>

Type of document	Relevance to question	Key findings	Recency or status
		<p>risk of severe illness and death, and their caregivers; and those most essential to maintaining core societal functions</p> <ul style="list-style-type: none"> ○ tier 2: Those involved in broader health provision; those who face greater barriers to access care if they become seriously ill; those contributing to maintenance of core societal functions; and those whose living or working conditions give them elevated risk of infection, even if they have lesser or unknown risk of severe illness and death <p>Source (Centre for Health Security, John’s Hopkins University, U.S.)</p>	
	<ul style="list-style-type: none"> ● Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules ● Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> ● The equitable allocation of vaccines where there is limited supply needs to take into account who is most at risk of exposure and severe outcomes, feasibility and acceptability of the vaccine and ethical considerations, and should also ensure flexibility in vaccine-delivery methods ● Efforts to maintain trust in government throughout the pandemic are key to ensuring vaccine uptake, as well as proper communication to counter misinformation and disinformation related to vaccines, through the development of tailored messages for specific contexts and groups, working with community leaders, media-literacy experts, community organizations and other key influencers <p>Source (The Chief Public Health Officer of Canada, Government of Canada)</p>	Published October 2020
	<ul style="list-style-type: none"> ● Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules ● Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> ● To protect those most vulnerable to severe disease, the National Health Service is expanding its flu immunization program from 25 to 30 million people for the 2020/21 season ● Prioritization of flu vaccination will initially be for the following at-risk groups (with further expansions planned in November and December to those in the 50-64 age group): 	Published 29 September 2020

Type of document	Relevance to question	Key findings	Recency or status
	<ul style="list-style-type: none"> ○ With what broader, complementary health interventions 	<ul style="list-style-type: none"> ○ All children aged two to 11 years as of 31 August 2020 ○ Those aged six months to under 65 years in clinical risk groups ○ Those aged 65 or older ○ Those in long-stay residential care homes ○ The main carers of older or disabled people ○ Close contacts of immunocompromised individuals ○ Pregnant women ○ Health- and social-care staff employed by a registered residential care or nursing home, registered domiciliary care provider or a voluntary managed hospice provider, or those employed through other means to provide domiciliary care to patients and service users ○ Household contacts of those on the NHS shielded patients list ○ Supports for uptake include outreach by general practitioners, and a broad marketing campaign, which includes the distribution of leaflets on who should be vaccinated, and how to protect children against flu (in multiple languages), a national reminder service for eligible citizens (e.g., letters) that will be tailored to particular needs (e.g., those with learning disabilities) <p>Source (Public Health England)</p>	
Protocols for reviews that are underway	<ul style="list-style-type: none"> ● Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> ● Protocol about the determinants of COVID-19 vaccine acceptance <p>Source</p>	Anticipated completion date 1 June 2021
	<ul style="list-style-type: none"> ● Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> ● Evaluating the impact of social media exposure on vaccine hesitancy <p>Source</p>	Anticipated completion date 20 September 2020

Type of document	Relevance to question	Key findings	Recency or status
Titles/questions for reviews that are being planned	None identified		
Single studies in areas where no reviews were identified	<ul style="list-style-type: none"> • Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Inventory management ○ Storage and handling 	<ul style="list-style-type: none"> • 38% of all the countries assessed in the study did not have the appropriate infrastructure in place to provide adult immunization programs • Specific management strategies will need to be developed in order for countries to offer COVID-19 vaccines when available (e.g. systems for vaccine storage, delivery, and disposal) <p>Source</p>	Published 18 October 2020
	<ul style="list-style-type: none"> • Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules 	<ul style="list-style-type: none"> • This study aimed evaluate the optimal allocation of COVID-19 vaccines in the U.S. based on age and occupational status (i.e. essential worker or non-essential worker) • The optimal allocation of COVID-19 vaccines is reported to prioritize the treatment of older-aged essential workers • Younger essential workers should be prioritized when trying to control the spread of the disease, while prioritization should be given to seniors when trying to control mortality • With the developed model, approximately 15,000 deaths are predicted to be prevented <p>Source</p>	Published 6 October 2020
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> • The aim of this study was to examine the attitudes towards and obstacles facing COVID-19 vaccination • A survey administered to 316 individuals in the U.S. found that 68% of individuals were supportive of receiving a COVID-19 vaccine, but vaccine side effects, efficacy and length of testing were prominent concerns • The survey also found that longer vaccine-testing periods, increased efficacy and vaccines that would be developed in the U.S. were found to be significantly 	Published October 3 2020

Type of document	Relevance to question	Key findings	Recency or status
		<p>associated with increased COVID-19 vaccine acceptance</p> <ul style="list-style-type: none"> Based on the findings of this study, it was determined that targeted messages that promote COVID-19 vaccination and that alleviate concerns of individuals who are hesitant to receive vaccines should be disseminated, and that sufficient amount of time should be dedicated to these efforts prior to COVID-19 vaccine release to ensure maximum vaccine uptake <p>Source</p>	
	<ul style="list-style-type: none"> Administration within provincial and territorial health systems 	<ul style="list-style-type: none"> The aim of this study was to measure the willingness-to-pay for a COVID-19 vaccine in Indonesia A survey of 1,359 individuals found that 78.3% were willing to pay for the COVID-19 vaccine The study also found that being a healthcare worker, having a high income, and having high perceived risk were significantly associated with higher willingness to pay for the COVID-19 vaccine The findings of this study suggest that COVID-19 vaccine uptake, and willingness to pay for the vaccine is high in Indonesia, and these findings may be used to develop a payment model for COVID-19 vaccinations in the country. In addition, to achieve greater vaccination coverage, subsidization plans for lower-income individuals should be implemented and targeted promotional materials should be developed <p>Source</p>	<p>Published September 29 2020</p>
	<ul style="list-style-type: none"> Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> Allocation rules 	<ul style="list-style-type: none"> This study aimed to use a model-informed approach to assess a variety of prioritization strategies and their impacts on COVID-19 incidence and mortality To best minimize the spread of COVID-19, transmission blocking vaccines are to be prioritized within adults 20-49 years of age 	<p>Published 10 September 2020</p>

Type of document	Relevance to question	Key findings	Recency or status
		<ul style="list-style-type: none"> • Redirecting vaccination to only seronegative individuals is recommended to best optimize the impact of each dose Source	
	<ul style="list-style-type: none"> • Supply <ul style="list-style-type: none"> ○ National purchasing • Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Stockpile capacities 	<ul style="list-style-type: none"> • A total of 7.75 billion people will need to be accounted for in a universal COVID-19 vaccination program • An estimated 15.6 billion doses of COVID-19 vaccines will be required by the 194 World Health Organization Member States • Essential workers and high-risk groups with previous health conditions are reported to have a high demand for vaccination • Vaccine prioritization, allocation and delivery must be catered towards each individual region, considering inter- and intra-regional disparities Source	Pre-print (last edited 30 September 2020)
	<ul style="list-style-type: none"> • Allocation, ordering, distribution, and inventory management within Canada <ul style="list-style-type: none"> ○ Allocation rules ○ Distribution procedures 	<ul style="list-style-type: none"> • The developed model suggests that the optimal allocation of COVID-19 vaccines is based on age mortality risk rather than potential exposure from an individual's occupation • Under the assumption that there are 60 million doses of an approved, 50% effective vaccine, it is predicted that 1.37% of working employees will still contract COVID-19 until it is readily available for all Source	Pre-print (last edited 4 July 2020)
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what surveillance and data sharing networks/structures 	<ul style="list-style-type: none"> • This article analyzed the contributions of two active, paediatric hospital-based sentinel networks such as: <ul style="list-style-type: none"> ○ the Canadian Immunization Monitoring Program, Active (IMPACT) established in 1991 ○ the Australian Paediatric Active Enhanced Disease Surveillance (PAEDS) network established in 2007 • Active hospital-based sentinel surveillance systems could leverage efficiencies gained by monitoring for 	Published 25 June 2020

Type of document	Relevance to question	Key findings	Recency or status
	<ul style="list-style-type: none"> • Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports ○ With what broader, complementary health interventions • Performance indicators 	<p>more than one condition to play multiple roles in informing public health policy and responding to public health emergencies (e.g. COVID-19)</p> <ul style="list-style-type: none"> • <u>Source</u> • Four distinct archetypes of older adult immunization decision-making and implementation in 32 high-and-middle-income countries and two territories were identified <ul style="list-style-type: none"> ○ Disease prevention-focused ○ Health security-focused ○ Evolving adult focus ○ Child-focused and cost-sensitive • Considering common barriers and facilitators of decision-making and implementation of adult vaccines within a primary archetype could help provide a framework for strategies to support countries with similar needs and approaches, and help in developing context-specific policies and guidance for countries prioritizing adult immunization programs in light of COVID-19 • The highest-performing countries belonged to the disease prevention-focused and health security archetypes • Nine indicators for assessing adult vaccine implementation performance among countries <ul style="list-style-type: none"> ○ Vaccine financing--level of public financing (for each vaccine) ○ Vaccine registry (for pediatric and adult populations) ○ Availability of public vaccine coverage data (for each vaccine) ○ Advocacy--promotion of adult immunization ○ Influence of individuals or organizational leaders on how older adult immunization program is implemented 	<p>Published 27 May 2020</p>

Type of document	Relevance to question	Key findings	Recency or status
		<ul style="list-style-type: none"> ○ Access--ease of getting vaccinated as an older adult ○ Equity is a focus in adult vaccine program implementation ○ Degree of centralization of adult vaccine delivery ○ Degree of centralization of health system delivery ● Source 	
	<ul style="list-style-type: none"> ● Administration within provincial and territorial health systems <ul style="list-style-type: none"> ○ With what complementary vaccination-uptake supports 	<ul style="list-style-type: none"> ● The primary aim of this study was to examine 100 YouTube videos surrounding COVID-19 vaccinations ● Of the YouTube videos included within the study, 75% were uploaded by news outlets, while 16% were uploaded by users ● Manufacturing processes and an estimated timeline regarding vaccine approval was mentioned in 61% and 45% of the videos respectively ● Source 	Published 26 April 2020

Appendix 3: Abstracts for highly relevant documents

Note that the table below only includes the abstracts for the documents that we identified on page 1 as being highly relevant to the question.

Type of document	Abstract and link to full text
Guidelines developed using a robust process (e.g., GRADE)	<p>Framework for Equitable Allocation of COVID-19 Vaccine</p> <p>Abstract In response to the coronavirus disease 2019 (COVID-19) pandemic and the societal disruption it has brought, national governments and the international community have invested billions of dollars and immense amounts of human resources to develop a safe and effective vaccine in an unprecedented time frame. Vaccination against this novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), offers the possibility of significantly reducing severe morbidity and mortality and transmission when deployed alongside other public health strategies and improved therapies. Health equity is intertwined with the impact of COVID-19 and there are certain populations that are at increased risk of severe illness or death from COVID-19. In the U.S. and worldwide, the pandemic is having a disproportionate impact on people who are already disadvantaged by virtue of their race and ethnicity, age, health status, residence, occupation, socioeconomic condition, or other contributing factors. Framework for Equitable Allocation of COVID-19 Vaccine offers an overarching framework for vaccine allocation to assist policy makers in the domestic and global health communities. Built on widely accepted foundational principles and recognizing the distinctive characteristics of COVID-19, this report's recommendations address the commitments needed to implement equitable allocation policies for COVID-19 vaccine.</p>
	<p>Preparing countries for COVID-19 vaccine introduction</p> <p>Abstract While there are still unknowns about the vaccine products, there are immediate actions that countries can take to prepare for COVID-19 vaccines. This document provides a brief summary of pre-planning actions that all countries can begin working on immediately. These actions are highlighted in the COVID-19 Vaccine Introduction Readiness Assessment Tool (VIRAT) and are listed below. Supporting countries to prepare for COVID-19 vaccine introduction: To prepare all countries for COVID-19 vaccine introduction, WHO, UNICEF, Gavi, and partners are working together at the global and regional levels to (1) develop and disseminate adaptable guidance, trainings, planning and monitoring tools, and advocacy materials and to (2) provide technical assistance and support to countries.</p>
	<p>COVID-19 vaccine introduction readiness assessment tool</p> <p>Abstract The COVID-19 Vaccine Introduction Readiness Assessment Tool (VIRAT) is intended to be used by Ministries of Health, with support from WHO and UNICEF Country Offices. It provides a roadmap for countries to plan for</p>

Type of document	Abstract and link to full text
	<p>COVID-19 vaccine introduction and a structured framework for countries to self-monitor their readiness progress against key milestones. Countries can use the VIRAT to identify areas where support may be needed.</p>
	<p>Fair allocation mechanisms for COVID-19 vaccines through the COVAX Facility</p> <p>Abstract The ACT-Accelerator was set up to contain the COVID-19 pandemic faster and more efficiently by ensuring that successful diagnostics, vaccines and treatments are shared equitably across all countries. Key to achieving that goal is the design and implementation of a Fair Allocation Framework. Equitable distribution is particularly important in the area of vaccines, which, if used correctly and equitably, could help to stop the acute phase of the pandemic and allow the rebuilding of our societies and economies. Although the ACT-Accelerator will speed up development and production, initial supplies will be limited. If there is no international plan to manage vaccine distribution fairly, there will be hoarding in some places and life-threatening shortages in others. There will also be price spikes. So WHO advises that once a vaccine(s) is shown to be safe and effective, and authorized for use, all countries receive doses in proportion to their population size, albeit initially in reduced quantities. This will enable every country to start by immunizing the highest priority populations. In the second phase, vaccines would continue to be deployed to all countries so that additional populations can be covered according to national priorities. In a snapshot, fair allocation of vaccines will occur in the following way:</p> <ol style="list-style-type: none"> 1. An initial proportional allocation of doses to countries until all countries reach enough quantities to cover 20% of their population 2. A follow-up phase to expand coverage to other populations. If severe supply constraints persist, a weighted allocation approach would be adopted, taking account of a country's COVID threat and vulnerability. <p>The document is a final working document and may be adjusted in the future as new information about the vaccines and the epidemiology of COVID-19 becomes available.</p>
Rapid reviews	<p>COVID-19: Accessibility of mass vaccination</p> <p>Abstract Abstract not provided</p> <hr/> <p>Covid-19: Models of mass vaccination in non-healthcare settings</p> <p>Abstract Abstract not provided</p> <hr/> <p>Covid-19: Communication to address concerns and encourage vaccine uptake</p> <p>Abstract Abstract not provided</p>

Type of document	Abstract and link to full text
	<p data-bbox="449 224 1360 248">Covid-19: Recruiting and training a skilled workforce to deliver mass vaccination</p> <p data-bbox="449 289 705 345">Abstract Abstract not provided.</p>
	<p data-bbox="449 357 1398 381">Covid-19: Safe management of post vaccination recovery in non-health care settings</p> <p data-bbox="449 422 705 479">Abstract Abstract not provided.</p>
Guidance developed using some type of evidence synthesis and/or expert opinion	<p data-bbox="449 490 1394 514">Interim Framework for COVID-19 Vaccine Allocation and Distribution in the U.S.</p> <p data-bbox="449 555 1829 1166">Abstract The purpose of this report is to offer an ethics framework that can be used to make decisions about the allocation of a SARS-CoV-2 vaccine during the initial period of scarcity in the U.S. and make related suggestions about vaccine distribution. Our approach considers factors such as medical risk, public health, ethics, equity, economic impact, and logistics. We note where our approach aligns with or differs from the 2018 CDC guidance for vaccine allocation in a severe influenza pandemic, which is the most recent pandemic vaccine guidance from the US government. The framework places emphasis on promoting the common good by promoting public health and by enabling social and economic activity. It also emphasizes the importance of treating individuals fairly and promoting social equity by, for example, addressing racial and ethnic disparities in COVID-19 mortality, and by recognizing the contributions of essential workers who have been overlooked in previous allocation schemes. The framework includes a third ethical value not often well-articulated in ethics discussions of vaccine allocation and whose importance we wish to elevate— the promotion of legitimacy, trust, and a sense of community ownership over vaccine policy—while respecting the diversity of values and beliefs in our pluralist society. We consider the ethical principles that should guide COVID-19 vaccine allocation and identify specific policy goals and objectives that should be based on these ethical principles. In this report, we compare the implications of our framework to the prior CDC guidance for prioritization of pandemic influenza vaccine allocation and suggest candidate groups who should be given serious consideration for inclusion in the top allocation tier when vaccine availability is limited and in a second tier (those also prioritized before the general public) if/when more vaccine supply becomes available. We also discuss how COVID-19 vaccines should be distributed so as to reach these 2 tiers.</p>

Appendix 4: Documents excluded at the final stages of reviewing

Type of document	Hyperlinked title
Guidelines developed using a robust process (e.g., GRADE)	WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings
Full systematic reviews	<p>The association between influenza vaccination and the risk of SARS-CoV-2 infection, severe illness, and death: A Systematic review of the literature</p> <p>Universal influenza vaccination in children</p> <p>The effects, safety and acceptability of compact, pre-filled, autodisable injection devices when delivered by lay health workers</p> <p>Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: A synthesis of qualitative evidence</p>
Rapid reviews	<p>SARS-CoV-2 vaccine development: Current status</p> <p>Resource allocation and pandemic response: An evidence synthesis to inform decision making</p> <p>Does BCG vaccination protect against acute respiratory infections and COVID-19? A rapid review of current evidence</p> <p>The most promising therapeutics for COVID-19</p> <p>The most promising vaccines for COVID-19</p> <p>Needed: Less influenza vaccine hesitancy and less presenteeism among health care workers in the COVID-19 era</p> <p>Ongoing trials for Bacille Calmette-Guérin (BCG) vaccines in the prevention of COVID-19</p> <p>Ongoing trials for novel vaccines in the prevention of COVID-19</p> <p>Influenza vaccination and risk of subsequent non-influenza respiratory viruses: Safety</p> <p>Needleless injectors for the administration of vaccines: A review of clinical effectiveness</p> <p>COVID-19 and child vaccination: A systematic approach to closing the immunization gap</p>

Type of document	Hyperlinked title
Guidance developed using some type of evidence synthesis and/or expert opinion	Not applicable
Protocols for reviews that are underway	Vaccine communication campaigns: A systematic review of the literature based on experimental methodology (2000-2019)
Titles/questions for reviews that are being planned	Role of BCG vaccination for prevention of COVID 19
Single studies in areas where no reviews were identified	<p>Mistrust in biomedical research and vaccine hesitancy: the forefront challenge in the battle against COVID-19 in Italy</p> <p>'Vaccine hesitancy' among university students in Italy during the COVID-19 pandemic</p> <p>Contingent assessment of the COVID-19 vaccine</p> <p>Attitudes toward a potential SARS-CoV-2 vaccine: A survey of U.S. adults</p> <p>Factors associated with U.S. adults' likelihood of accepting COVID-19 vaccination</p> <p>Are we ready when COVID-19 vaccine is available? Study on nurses' vaccine hesitancy in Hong Kong</p> <p>Survey data for COVID-19 vaccine preference analysis in the United Arab Emirates</p> <p>The SARS-CoV-2 vaccine pipeline: An overview</p> <p>Financing vaccines for global health security</p> <p>An mRNA vaccine against SARS-CoV-2: Preliminary report</p> <p>BCG vaccination and mortality of COVID-19 across 173 Countries: An ecological study</p> <p>Factors determining COVID-19 pneumonia severity in a country with routine BCG vaccination</p> <p>Effect of an inactivated vaccine against SARS-CoV-2 on safety and immunogenicity outcomes: Interim analysis of two randomized clinical trials</p> <p>Impact of routine infant BCG vaccination on COVID-19</p> <p>Immunogenicity and safety of a recombinant adenovirus type-5-vectored COVID-19 vaccine in healthy adults aged 18 years or older: A randomised, double-blind, placebo-controlled, phase 2 trial</p>

Type of document	Hyperlinked title
	<p>Mandated Bacillus Calmette-Guérin (BCG) vaccination predicts flattened curves for the spread of COVID-19</p> <p>Safety and immunogenicity of an rAd26 and rAd5 vector-based heterologous prime-boost COVID-19 vaccine in two formulations: two open, non-randomised phase 1/2 studies from Russia</p> <p>Safety and immunogenicity of an inactivated SARS-CoV-2 vaccine, BBIBP-CorV: A randomised, double-blind, placebo-controlled, phase 1/2 trial</p> <p>Safety and immunogenicity of the ChAdOx1 nCoV-19 vaccine against SARS-CoV-2: A preliminary report of a phase 1/2, single-blind, randomised controlled trial</p> <p>Safety and immunogenicity of two RNA-based COVID-19 vaccine candidates</p> <p>Safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 vectored COVID-19 vaccine: A dose-escalation, open-label, non-randomised, first-in-human trial</p> <p>Safety and COVID-19 symptoms in individuals recently vaccinated with BCG: A retrospective cohort study</p> <p>Silver lining of COVID-19: Heightened global interest in pneumococcal and influenza vaccines, an infodemiology study</p> <p>Designing pull funding for a COVID-19 vaccine</p> <p>Contingent assessment of the COVID-19 vaccine</p> <p>Emerging manufacturers engagements in the COVID –19 vaccine research, development and supply</p> <p>Impact of COVID-19 and Health System Performance on Vaccination Hesitancy: Evidence from a Two-Leg Representative Survey in the UK</p> <p>Preparing for a COVID-19 vaccine: Identifying and psychologically profiling those who are vaccine hesitant or resistant in two general population samples</p>