McMaster University | HEALTH FORUM

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

Appendices for COVID-19 Living Evidence Profile #1

(Version 1: 21 January 2021)

Appendix 1: Methodological details

We use a standard protocol for preparing living evidence profiles (LEP) 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 LEP, 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 the first version of this LEP, we also searched Health Systems Evidence (www.healthsystemsevidence.org) and HealthEvidence (www.healthevidence.org), to identify any relevant evidence documents that might have relevance to the COVID-19 vaccine roll-out, but were produced before the pandemic, given that the other sources searched were specific to COVID-19. In Health Systems Evidence, we searched 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). In HealthEvidence, we searched using the categories for 'Immunization' and 'Policy and Legislation' under the intervention strategy filter combined with 'Communicable Disease/Infection' category under the topic filter.

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 or 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 LEP, 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. 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 a small number of bullet points that provide a brief summary of the key findings, which are used to summarize key messages in the text. 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

Guidelines developed using a robust process (e.g., GRADE)	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules (to priority populations, including those listed below, as well as to 'lower levels' in a federation and/or to providers who can reach priority populations)
	  ▪ Front-line healthcare workers
	  ▪ Residents in long-term care homes and other congregate-care settings
	  ▪ People at increased risk of severe COVID-19 (e.g., older and/or frail adults, those with chronic health conditions)
	  ▪ Essential workers (beyond front-line healthcare workers) and/or those in work environments that put them at elevated risk (e.g., food processing and transit)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ High-risk groups
		• The priorities for the COVID-19 vaccination program should be the prevention of COVID-19 mortality and the protection of health and social-care staff and systems
		• Secondary priorities should include vaccination of individuals at increased risk of hospitalization and increased risk of exposure, and to maintain resilience in essential services
		• Based on the proposed guidelines, the order of priority of COVID-19 vaccinations are as follows:
		  ○ Residents in a care home for older adults and their carers
		  ○ All those 80 years of age and over and front-line health and social-care workers
		  ○ All those 75 years of age or over
		  ○ All those 70 years of age and over and clinically extremely vulnerable individuals
		  ○ All those 65 years of age and over
		  ○ All individuals aged 16 years to 64 years with underlying health conditions which put them at higher risk of serious disease and mortality
		  ○ All those 60 years of age and over
		  ○ All those 55 years of age and over
		  ○ All those 50 years of age and over
		• Immunization advice and communication programs should be tailored to mitigate inequalities. Specifically, programs should be tailored to Black, Asian and minority ethnic groups who have higher rates of infection, morbidity and mortality
		Source (Department of Health & Social Care, Government of UK)
			Published 6 January 2021

Type of document	Relevance to question	Key findings	Recency or status

	• Securing and distributing a reliable supply of vaccines and ancillary supplies (e.g., needles, diluents)
	  ○ National purchasing
	  ○ Delivery to country
	  ○ Inventory management within country
	• Administering vaccines in ways that optimize timely uptake
	  ○ With what second-dose provisions
		• This guideline describes the rationale and recommendations from the Advisory Committee on Immunization Practices (ACIP) on the use of Moderna COVID-19 vaccine for U.S. adults aged 18 years or older for the prevention of COVID-19
		• Engagement with community leaders and organizations will be needed to reduce barriers specific to vaccination uptake
		• ACIP states that adults should complete their second vaccination with the same vaccine product as the first dose
		Source (Advisory Committee on Immunization Practices, Centers for Disease Control and Prevention)
			Last update 20 December 2020

	• Securing and distributing a reliable supply of vaccines and ancillary supplies
	  ○ Inventory management within country
	  ○ Distribution within country and to administration sites
	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	• Surveillance, monitoring and evaluation, and reporting
	  ○ Documenting vaccine-related opinions
	  ○ Documenting vaccine status
	  ○ Documenting adverse events and follow-up
	• Infrastructure to enable surveillance, monitoring and evaluation
		• This guidance document outlined key elements and themes from vaccine strategy and deployment plans in the United Kingdom and countries within the European Union and European Economic Area
		• Within the interim recommendations of European countries, the top priority group for COVID-19 vaccines included older adults, healthcare workers, and individuals with select comorbidities
		  ○ Due to the limited supply of vaccines, certain countries may be further prioritizing from within this group
		• Three key themes have been noted across the European countries: 1) the COVID-19 vaccine will be free of charge; 2) models will use pre-existing vaccination structures and delivery services for the roll-out of COVID-19 vaccines; and 3) electronic immunization registries will be used to help monitor vaccine safety, efficacy, coverage, and acceptance
		Source (European Centre for Disease Prevention and Control)
			Published 2 December 2020

Type of document	Relevance to question	Key findings	Recency or status

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
		• This report follows the process of an expert group established by the Norwegian Institute of Public Health in determining the order in which vaccines should be allocated during the first stage of the Norwegian Coronavirus Immunization Programme
		• Core values were established by the group for the first stage of the program and included, "equal respect, welfare, equity, trust, and legitimacy"
		• These five core values were then translated to the following key goals: "1) reduce the risk of death, 2) reduce the risk of severe illness, 3) maintain essential services and critical infrastructure, 4) protect employment and the economy, 5) re-open society"
		• Through defining the aforementioned key values and goals, the following categories of prioritization were established:
		  ○ "Risk factors for severe illness and death
		  ○ The infection situation
		  ○ Occupation"
		• The group recommends a dynamic approach to prioritization in accordance with a model published by the Norwegian government illustrating four possible scenarios for the COVID-19 pandemic. Each scenario varies based on severity of infection and is accompanied by recommendations for possible response measures. As an example, "Scenario 1a: Control" represents mild infection rates whereas "Scenario 2b: Widespread Transmission" represents more severe infection rates and societal closures are recommended
		  ○ The group recommends that risk groups and healthcare workers be given priority in pandemic scenarios 1-2a
		  ○ In pandemic scenario 2b, in which there is widespread transmission, the order of priority
			Published 15 November 2020

Type of document	Relevance to question	Key findings	Recency or status
		should be amended to: "1) health care workers, 2) risk groups, and 3) critical societal functions" Source (Norwegian Institute of Public Health)	

	• Allocating vaccines and ancillary supplies equitably
	  ○ Distribution within country and to administration sites
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ Individuals who are hesitant about or opposed to vaccination
	• Surveillance, monitoring and evaluation, and reporting
		• This report published by the Health Information and Quality Authority was written with the purpose of advising the National Public Health and Emergency Team in Ireland on various factors which influence vaccine uptake as well as possible interventions and communication strategies that can combat these barriers
		• The influenza vaccine was used as a surrogate for the COVID-19 vaccine, and a rapid review was conducted to identify factors (barriers and facilitators) that influence vaccine uptake
		  ○ As a result of this rapid review, the following themes were identified as either barriers or facilitators to vaccine uptake, varying based on context: "perceived risks and benefits, knowledge, social influences, and patient-specific factors."
		  ○ Additionally, "perceived benefits from vaccination" and "recommendations from healthcare professionals" were reported as factors which typically improve vaccine uptake
		  ○ The rapid review also concluded that multi-component interventions involving both individual- and system-level components are successful towards improving vaccine uptake in a variety of groups
		• The group stressed the importance of ensuring equitable access to the vaccine by varying populations (i.e., taking into account the location of immunization centres, vaccination costs, etc.) as a means of improving uptake
			Published 16 December 2020

Type of document	Relevance to question	Key findings	Recency or status

		• The following parties should be educated on the COVID-19 vaccine to ensure evidence-based information is being relayed to the general public:
		  ○ Healthcare professionals (who should be educated on the vaccine prior to the initiation of any vaccination program)
		  ○ Community opinion leaders
		• A communication campaign with the purpose of combatting misconceptions about the COVID-19 vaccine should include the following key pieces of information:
		  ○ The mechanism of action of the vaccine
		  ○ Evidence related to the safety and efficacy of the vaccine
		  ○ The rigour of the scientific process used to evaluate the safety and effectiveness of the vaccine, as well as the fact that it is undergoing continuous evaluation
		• Finally, the team stressed that a vaccination campaign based on knowledge and consensus would be a more effective approach than making vaccination compulsory for citizens in Ireland
		• To maintain a relationship of trust with the public, all surveillance information related to the safety and effectiveness of the vaccine should be made openly available
		Source (Health Informant and Quality Authority)	

	• Securing and distributing a reliable supply of vaccines and ancillary supplies (e.g., needles, diluents)
	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules (to priority populations, including those listed below, as well as to 'lower levels' in a federation and/or to
		• This document provides guidance on developing COVID-19 national deployment and vaccination plans
		• Aspects of this plan include:
		  ○ Regulatory preparedness
		  ○ Planning and coordination
		  ○ Costing and funding
		  ○ Identification of target populations
		  ○ Vaccine-delivery strategies
			Last update 16 November 2020

Type of document	Relevance to question	Key findings	Recency or status
	providers who can reach priority populations) ○ Ensuring equity (including whether and how access through private means can be achieved by those not initially prioritized) • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines • Administering vaccines in ways that optimize timely uptake • Surveillance, monitoring and evaluation, and reporting	○ Preparation of supply chain and management of healthcare waste ○ Human-resource management and training ○ Vaccine acceptance and uptake (demand) ○ Vaccine-safety monitoring, management of adverse effects following immunization (AEFI) and injection safety ○ Immunization monitoring systems ○ COVID-19 surveillance ○ Evaluation of COVID-19 vaccine Source (World Health Organization)	
	• Allocating vaccines and ancillary supplies equitably ○ Allocation rules	• This document provides guidance on prioritizing limited supply of COVID-19 vaccines • It provides a roadmap for priority uses of COVID-19 vaccines including: ○ Staging priority groups in relation to group size and supply ○ Gender considerations ○ Addressing pregnant women ○ Addressing lactating women ○ Addressing children ○ Considering comorbidities in vaccine prioritization Source (World Health Organization)	Last update 13 November 2020
	• Allocating vaccines and ancillary supplies equitably ○ Approaches to developing and adjusting allocation rules ○ Ensuring equity (including whether and how access through private means can be achieved by those not initially prioritized)	• The MMWR describes the Advisory Committee on Immunization Practices' ethical principles for the allocation of COVID-19 vaccine in the U.S. • The recommended approach for national, state, tribal, local and territorial levels is guided by four ethical principles: 1) maximize benefits and minimize harms; 2) promote justice; 3) mitigate health inequities; 4) promote transparency	Last update November 2020

Type of document	Relevance to question	Key findings	Recency or status
		• Additional considerations include decisions based on science (e.g., safety and efficacy) and feasibility of implementation (e.g., storage and handling) Source (Advisory Committee on Immunization Practices, Centers for Disease Control and Prevention)	

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	  ▪ Front-line healthcare workers
	  ▪ Residents in long-term care homes and other congregate-care settings
	  ▪ Essential workers and/or those in work environments that put them at elevated risk
	  ▪ Children (school aged)
	  ▪ Mass public
		• 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:
		  ○ 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:
		  ○ 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
			Last update October 2020

Type of document	Relevance to question	Key findings	Recency or status
		○ Phase 4 – Everyone not included in previous phases • 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)	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ General public ▪ Individuals who are hesitant about or opposed to vaccination ○ Delivery of the intervention ▪ By whom (e.g., health worker, research expert, teacher, business leader, government leader, community leader, citizen champion, media) ▪ Frequency (e.g., daily, weekly) ▪ Duration (i.e., how much or for how long) ▪ Modality of delivery (e.g., social media, text, email, telephone, radio, television, face-to-face by video, face-to-face in person) ○ Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 (including duration of protection) and protection against transmission (and other factors that may contribute to vaccine acceptance and hesitancy) ▪ Information about novel vaccine platforms (e.g., mRNA), current vaccine options (e.g., number of vaccines available in a country, number of doses required of any given	• This guideline discusses behavioural insights related to drivers of vaccine acceptance and uptake • It provides a framework of drivers of vaccine uptake including: 1) an enabling environment, 2) social influences and 3) motivation Source (World Health Organization)	Last update 15 October 2020

Type of document	Relevance to question	Key findings	Recency or status
	vaccine), prioritized populations, and behaviours after vaccination ▪ Information (for health workers) about vaccine-administration protocols ▪ Myths and misinformation about vaccines ▪ Risk-mitigation efforts (including complementary public-health measures used at time of vaccination) ▪ Anticipated timing of when all those who want a vaccine will have been vaccinated		
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public ▪ Individuals who are hesitant about or opposed to vaccination	• This guideline highlights how countries can begin pre-planning for the introduction of COVID-19 vaccines by conducting a series of activities, including activities that focus on demand generation and communication o Design a demand plan (includes advocacy, communications, social mobilization, risk and safety communications, community engagement, and training) to generate confidence, acceptance and demand for COVID-19 vaccines o The plan must include crisis-communications preparedness planning Source (World Health Organization)	Last update 21 September 2020
	• Securing and distributing a reliable supply of vaccines and ancillary supplies o National purchasing • Allocating vaccines and ancillary supplies equitably o Distribution within country and to administration sites o Distribution procedures • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public	• 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 • COVID-19 Vaccine Introduction Readiness Assessment Tool proposes additional activities that focus on demand generation and communication	Last update 21 September 2020

Type of document	Relevance to question	Key findings	Recency or status
	▪ Individuals who are hesitant about or opposed to vaccination • Administering vaccines in ways that optimize timely uptake o With what partnerships to reach early populations of focus o With what reporting requirements, supporting immunization information systems, and broader healthcare information systems o With what safety-monitoring requirements • Surveillance, monitoring and evaluation, and reporting	o Design a demand plan (includes advocacy, communications, social mobilization, risk and safety communications, community engagement, and training) to generate confidence, acceptance and demand for COVID-19 vaccines. The plan must include crisis-communications preparedness planning o Establish data-collection systems, including: 1) social media listening and rumour management; and 2) assessing behavioural and social data o Develop key messages and materials for public communications and advocacy that are aligned with the demand plan Source (World Health Organization)	
	• Allocating vaccines and ancillary supplies equitably o Allocation rules	• This guidance document provides a values framework for COVID-19 vaccine allocation and prioritization • The values framework consists of six core principles: o Human well-being o Equal respect o Global equity o National equity o Reciprocity o Legitimacy Source (World Health Organization)	Last update 13 September 2020
	• Allocating vaccines and ancillary supplies equitably o Allocation rules	• 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: o An initial proportional allocation of doses to countries until all countries have enough doses to cover 20% of their population	Last update 9 September 2020

Type of document	Relevance to question	Key findings	Recency or status
		○ 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 Source (WHO technical guidance)	
	• Securing and distributing a reliable supply of vaccines and ancillary supplies ○ Distribution within country and to administration sites	• 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: ○ 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 Source (WHO technical guidance)	Last update 22 May 2020
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Delivery of the intervention ▪ By whom (e.g., health worker) ▪ Modality of delivery (e.g., social media, text, email, telephone, face-to-face in person) ○ Content of messaging ▪ Myths and misinformation about vaccines	• This guideline indicates that people in eligible groups who understand why flu vaccination is particularly important for them are more likely to be vaccinated ○ Thus, professionals need to explain the benefits of vaccination and address people's misconceptions about it • The guideline proposes a multi-component approach to develop and deliver programs to	Last update 22 August 2018

Type of document	Relevance to question	Key findings	Recency or status
		increase flu-vaccination uptake, including raising awareness among health and social-care staff, and among eligible groups Source (National Institute for Health and Care Excellence)	

	• Securing and distributing a reliable supply of vaccines and ancillary supplies
	  ○ Distribution within country and to administration sites
		• This document provides guidance on polio-eradication program continuity plans in the context of the COVID-19 pandemic
		  ○ Program 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 program 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

	• Securing and distributing a reliable supply of vaccines and ancillary supplies
	  ○ Inventory management within country
	  ○ Storage and handling within country
	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
		• This guidance document provides recommendations on using the Pfizer-BioNTech COVID-19 vaccine under emergency use listing
		• The recommendations cover:
		  ○ Administration of the vaccine
		  ○ Considerations for deferring the second dose
		  ○ Booster doses
		  ○ Interchangeability with other vaccines
			Last update 8 January 2021

Type of document	Relevance to question	Key findings	Recency or status
	▪ People at increased risk of severe COVID-19 ▪ People for whom vaccine safety and effectiveness has not yet been established • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ Individuals who are hesitant about or opposed to vaccination o Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission • Administering vaccines in ways that optimize timely uptake o Where ▪ Other community settings	o Co-administration with other vaccines o Contraindications o Precautions o Vaccination for specific populations o Special settings Source (World Health Organization)	
	• Securing and distributing a reliable supply of vaccines and ancillary supplies o National purchasing • Allocating vaccines and ancillary supplies equitably o Distribution within country and to administration sites o Distribution procedures • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public ▪ Individuals who are hesitant about or opposed to vaccination o Content of messaging ▪ Myths or misinformation about vaccines	• This report highlights the process of vaccine development through to distribution, summarizing several WHO guidelines with respect to the deployment of effective vaccination programs at the country level, as well as strategies to improve vaccine uptake within populations. • The report also offers information on COVAX and summarizes ethical issues related to the use of the COVID-19 vaccine (i.e., autonomy, equity, prescribing vaccines before data is publicly available, etc.) • An overview of current considerations for vaccine deployment in Lebanon is also summarized by this report o Vaccines are said to be arriving in Lebanon by mid-February 2021 and autonomy will be respected regarding one's decision to be	Published 7 January 2021

Type of document	Relevance to question	Key findings	Recency or status

	• Administering vaccines in ways that optimize timely uptake
	  ○ With what reporting requirements, supporting immunization information systems, and broader healthcare information systems
	  ○ With what safety-monitoring requirements
	• Surveillance, monitoring and evaluation, and reporting
		vaccinated. A detailed vaccine roll-out plan for the country is currently in progress
		  ○ Lebanon currently has only 12 specialized refrigerators to store its vaccines, with up to 6 more to be provided by the WHO
		  ○ Given the country's current state of political, economic, and social distress, the Ministry of Public Health has committed to covering the cost of vaccination for 15% of the population. Additionally, COVAX may cover the cost of vaccination for an additional 20% of the country's population
		  ▪ Despite these efforts, a large proportion of the population will still be unable to afford the vaccine ($20/dose)
		Source (Knowledge to Policy Center)	

	• Administering vaccines in ways that optimize timely uptake
	  ○ With what post-vaccination observation period and what physical distancing, personal protective equipment, sanitation and other public-health measures
	  ○ With what broader, complementary health interventions (e.g., flu vaccination and routine immunization, ongoing public-health measures)
		• The following recommendations from the Indian Academy of Pediatrics Advisory Committee describe public-health efforts for regular childhood immunization scheduled during the COVID-19 pandemic such as:
		  ○ Additional vaccination rooms that are well-ventilated with separate entrances and exits
		  ○ Access to hand hygiene resources (e.g., sanitizers, handwashing stations) and COVID-19 awareness educational materials during waiting periods
		  ○ Appropriate physical distancing, personal protective equipment for healthcare workers, and limitations to number of individuals in the vaccination area
		  ○ 15-minute observational period after vaccination
		Source (Indian Academy of Pediatrics Advisory Committee on Vaccines and Immunization Practices)
			Last update 15 December 2020

Type of document	Relevance to question	Key findings	Recency or status

	• Allocating vaccines and ancillary supplies equitably
	  ○ Ensuring equity
	• Administering vaccines in ways that optimize timely uptake
	  ○ Where
	  ▪ Other community settings
	• With what reporting requirements
		• This guideline provides recommendations to improve equity in the uptake of vaccines in people under 19 years of age
		• It specifies the target population, who should be responsible for taking action, and what actions should be taken across five recommendations:
		  ○ Immunization programs
		  ○ Information systems
		  ○ Training
		  ○ The role of nurseries, schools and colleges of further education
		  ○ Targeting at-risk groups
		Source (National Institute for Health and Care Excellence)
			Last update 26 September 2017

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ High-risk groups
	• Administering vaccines in ways that optimize timely uptake
	  ○ With what appointment/scheduling and screening support changes to physical spaces and patient flows through these spaces, and changes to hours of operation
	• With what reporting requirements
		• This document provides guidance for improving the uptake of vaccinations in people under the age of 19
		• The guideline consists of five quality statements about the following recommendations to improve the uptake of vaccines in under 19s:
		  ○ Children and young people be sent a written recall invitation and a phone call or text message if they do not attend their immunization appointment
		  ○ Missed vaccinations should be offered the outstanding vaccination
		  ○ Children and young people receiving a vaccination should have it recorded in their GP record, their personal health record and the child health information system
		  ○ Immunization status should be checked at specific educational stages
		  ○ Young offenders should have their immunization status checked and offered any outstanding vaccinations before entry into a secure setting
			Published 2 March 2017

Type of document	Relevance to question	Key findings	Recency or status
		Source (National Institute for Health and Care Excellence)	

	• Administering vaccines in ways that optimize timely uptake
	  ○ With what appointment/scheduling and screening support changes to physical spaces and patient flows through these spaces, and changes to hours of operation
	• With what reporting requirements
		• This document provides clinical guidance on maintaining immunization programs during COVID-19 for healthcare providers
		• The recommendations cover:
		  ○ General principles of national immunization programs
		  ○ General immunization practices that should be maintained during COVID-19
		  ○ NHS immunization FAQs
		Source (Public Health England)
			Last update November 2020

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
		• The MMWR describes recommendations from the Advisory Committee on Immunization Practices (ACIP) for the prevention and control of seasonal influenza with vaccines
		• The recommendations include specific guidance on primary changes to recommendations, new vaccines for older adults aged 65 years and older, guidance for specific populations (e.g., children, pregnant women, immunocompromised), storage and handling, adverse-event reporting system, and the national vaccine-injury compensation program
		• ACIP recommends a delay in influenza vaccine if the patient has confirmed case of COVID-19
		Source (Advisory Committee on Immunization Practices; Centers for Disease Control and Prevention)
			Last update 21 August 2020

Full systematic reviews	• Administering vaccines in ways that optimize timely uptake ○ By whom and with what changes to remuneration	• This review aimed to estimate the effect of pharmacists administering vaccinations for influenza on overall vaccination rates, and to assess whether there is a difference in effect for at-risk sub-groups compared to the general population • Findings revealed that:	Literature last searched July 2019

Type of document	Relevance to question	Key findings	Recency or status
		○ There appeared to be a small positive effect associated with allowing pharmacists to administer influenza vaccinations ○ The largest increase in overall population vaccination rates associated with pharmacists vaccinating for influenza was 10% ○ There was a graduated effect in that pharmacists with the most autonomy had the largest vaccination rate increases Source (AMSTAR rating 5/10)	
	• Administering vaccines in ways that optimize timely uptake ○ Where ▪ Other community settings	• School and childcare centre-located vaccination programs are effective in increasing vaccination rates, and decreasing rates of vaccine-preventable morbidity and mortality • Key components of effective school and childcare centre-located vaccination programs include: ○ Vaccinations provided on site ○ Administration of programs by a wide range of providers including school health personnel, health-department staff, and other vaccination providers ○ Delivery in a variety of different school and organized childcare settings ○ Delivery of one or more of a range of vaccines recommended for children and adolescents ○ Inclusion of additional components such as education, reduced out-of-pocket costs, enhanced access to vaccination services • School and childcare centre-located programs may be most useful for improving immunization rates among children and adolescents for new vaccines, where background rates are likely to be very low Source (AMSTAR rating 6/9)	Literature last searched February 2012
	• Administering vaccines in ways that optimize timely uptake ○ Where	• There is strong evidence on the effectiveness of vaccination requirements for childcare, school, and college attendance in increasing vaccination rates	Literature last searched 2015

Type of document	Relevance to question	Key findings	Recency or status
	▪ Other community settings (e.g., schools)	and decreasing rates of vaccine-preventable disease and associated morbidity and mortality • Vaccination requirements could be: o Laws created by states, with the specific vaccines required established by the legislature and embodied in statutes or adopted as administrative rules by health or education departments o Additional vaccination policies established by institutions (such as colleges and private schools) for attendance or residence o Varied across jurisdictions Source (AMSTAR rating 3/10)	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Delivery of the intervention ▪ Modality of delivery (e.g., social media, text, and email)	• Vaccine uptake and coverage can be improved by implementing interventions that apply new media such as text messaging, internet promotions, and computerized standing orders and reminders for healthcare providers • Computer-generated text messaging sent to parents of newborns and school-aged children were effective at increasing vaccination in these groups • Immunization campaign websites and computerized reminders for patients have some influence on uptake of vaccine information, and patient attitudes and behaviours about vaccination • There is uncertainty about how effective social-media networks, email communications and smartphone applications are on influencing vaccine uptake • Vaccination rates are higher when computerized reminders to encourage providers to recommend vaccination and computer-based standing orders are in use Source (AMSTAR rating 7/10)	Date of literature search not reported (published January 2015)

Type of document	Relevance to question	Key findings	Recency or status

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ High-risk groups
	  ▪ Individuals who are hesitant about or opposed to vaccination
	  ○ Delivery of the intervention
	  ▪ By whom (e.g., citizen champion)
	  ▪ Modality of delivery (e.g., face-to-face in person)
	  ○ Content of messaging
	  ▪ Myths and misinformation about vaccines
	  ▪ Risk-mitigation efforts
		• Findings about the structure of interventions revealed that:
		  ○ Engaging religious and other community leaders was a commonly used strategy to address contextual influences (e.g., religion, culture and gender)
		  ○ Across all regions, most interventions were multi-component
		• Findings about the success (defined as either increase in vaccine uptake, or increase in knowledge and awareness) of interventions revealed that:
		  ○ Few interventions were found to have been evaluated for their success in vaccine uptake or their influence in increasing knowledge and awareness
		  ○ Interventions to increase uptake that have multiple components and/or have a focus on dialogue-based approaches tend to be more effective
		  ○ Interventions that resulted in the largest increases in vaccine uptake were those which directly targeted unvaccinated or under-vaccinated populations, improved convenience and access to vaccination, aimed to increase vaccination knowledge and awareness, targeted specific populations (e.g., healthcare workers), mandated vaccinations, and engaged religious or other influential leaders
		  ○ Interventions that resulted in the greatest increases in knowledge and awareness were education initiatives, especially where new knowledge was embedded into routine processes
		Source (AMSTAR rating 7/10)
			Literature last searched 2013

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention	• This systematic review aimed to investigate whether interventions that present risk messages are able to	Literature last searched

Type of document	Relevance to question	Key findings	Recency or status
	▪ General public ○ Delivery of the intervention ▪ Modality of delivery (e.g., text and telephone) ○ Content of messaging ▪ Risk-mitigation efforts	increase risk appraisal, vaccine intention and vaccine uptake • The findings from this review indicate that interventions involving risk messages had no effect on the intention of participants to vaccinate, their behaviour towards vaccines, and their perception of the severity of the disease • This review identified very few behaviour-change techniques, though the additional inclusion of studies focusing on efficacy appraisal may increase intervention effectiveness Source (AMSTAR rating 8/11)	September 2017
	• Administering vaccines in ways that optimize timely uptake ○ With what broader, complementary health interventions (e.g., flu vaccination and routine immunization, ongoing public-health measures)	• 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 revealed that: ○ 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 Source (AMSTAR rating 6/10)	Date of literature search not reported (published in 2015)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ High-risk groups ▪ Individuals who are hesitant about or opposed to vaccination	• Combinations of interventions should be used in efforts to increase vaccination rates in targeted populations • At least one of the interventions should be focused on increasing demand using approaches found to be most effective, including client reminder and	Literature last searched February 2012

Type of document	Relevance to question	Key findings	Recency or status

		recall systems, clinic-based client education, and manual outreach and tracking
		• One or more of the interventions should address either or both of the following:
		  ○ Enhancing access to vaccinations (e.g., through effective interventions such as expanded access in healthcare settings, reducing out-of-pocket costs, or home visits)
		  ○ Ensuring vaccination providers are reminded and supported to deliver vaccinations (e.g., through effective interventions such as reminders, standing orders and assessment and feedback)
		Source (AMSTAR rating 6/9)	

	• Administering vaccines in ways that optimize timely uptake
	  ○ Where
	  ▪ With what reporting requirements and supporting immunization information systems and broader healthcare information systems
		• 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 over-vaccination
		Source (AMSTAR rating 4/9)
			Literature last searched March 2012

	Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ High-risk groups
	  ○ Delivery of the intervention
	  ▪ Modality of delivery
	• Administering vaccines in ways that optimize timely uptake
	  ○ Where
	  ▪ Other community settings
	  ○ With what broader, complementary health intervention
		• On-site, reduced-cost and actively promoted influenza vaccinations for non-healthcare workers are effective in increasing influenza vaccination coverage among workers in worksites
		• Key components of effective interventions include:
		  ○ Active promotion through worksite announcements (e.g., newsletters, email, paycheque inserts)
		  ○ On-site access to vaccination
		  ○ Complementary components that support awareness and access (e.g., health information and education efforts, mobile carts)
		Source
			Literature last searched March 2008

Type of document	Relevance to question	Key findings	Recency or status
	• Administering vaccines in ways that optimize timely uptake ○ With what reporting requirements and supporting immunization information systems and broader healthcare information systems	• A systematic review of eight studies examined the effectiveness of client-held paper immunization records in increasing vaccination rates or reducing rates of vaccine-preventable diseases • Client-held records used for vaccination increased clients' receipt of preventive services • Based on the limited available evidence, it was unclear whether client-held records utilized for vaccinations alone would produce the same results • In summary, this review found that there was insufficient evidence for the use of client-held paper immunization records in increasing vaccination rates or reducing rates of vaccine-preventable diseases Source	Literature last searched 2012

	• Administering vaccines in ways that optimize timely uptake
	  ○ With what reporting requirements and supporting immunization information systems and broader healthcare information systems
		• Immunization information systems are effective at increasing vaccination rates when used as a system-level intervention to support effective targeted interventions such as reminder and recall systems, provider assessment and feedback, and provider reminders
		• Immunization information systems are also effective for:
		  ○ Supporting clinicians, health departments and schools in determining client vaccination status
		  ○ Guiding public-health responses to outbreaks of vaccine-preventable disease
		  ○ Informing assessments of vaccination coverage, missed vaccination opportunities, invalid dose administration, and disparities in coverage
		  ○ Facilitating vaccine management and accountability
		Source
			Literature last searched April 2011

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• Interventions that were found to increase immunization rates in adult populations included	Date of literature search not

Type of document	Relevance to question	Key findings	Recency or status
	○ Target of intervention ▪ General public ○ Delivery of the intervention ▪ By whom (e.g., health worker, teacher, business leader, government leader, community leader, citizen champion, media) ▪ Modality of delivery (e.g., text and telephone) ○ Content of messaging ▪ Myths or misinformation about vaccines	using text and telephone calls to provide education and reminders for vaccination, providing low-cost or subsidized vaccines, providing easy access to immunization services, and understanding the cultural and social needs of different racial and ethnic populations • Significantly improving vaccination rates will likely require the use of an evidence-based multimodal approach using different categories of interventions Source	reported (published November 2019)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ High-risk groups ▪ Individuals who are hesitant about or opposed to vaccination	• The overall proportion of 8,847 healthcare workers (HCWs) that intend to accept COVID-19 vaccination was 55.9%, with a wide range among studies from 27.7% to 81.5% • The following factors were associated with increased HCWs' willingness to get vaccinated against COVID-19: male gender, older age, physician profession, lesser work experience, comorbidity among HCWs, seasonal influenza vaccination, stronger vaccine confidence, positive attitude towards a COVID-19 vaccine, fear about COVID-19, individual perceived risk about COVID19, and contact with suspected or confirmed COVID-19 patients Source	Literature last searched 2 December 2020
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ General public ○ Content of messaging ▪ Risk-mitigation efforts (including complementary public-health measures used at time of vaccination) ▪ Myths or misinformation about vaccines	• The review examined 33 studies and reported increased vaccine acceptance and uptake following community-based interventions, monetary incentives, and technology-based health literacy • For community-based interventions, most of them were targeted at parents or caregivers of children, with home visits and information campaigns conducted by community health workers and medical interns as the most common modality	Pre-print (Literature last searched 2019)

Type of document	Relevance to question	Key findings	Recency or status
		• For incentive-based interventions, alleviating financial burden had a moderate impact in low-income settings • Technology-based health literacy interventions (videos, posters, lectures) were conducted in urban primary-care practices and medical organizations, and reported improved vaccine acceptance among the general public Source (AMSTAR rating 5/9)	
	• Administering vaccines in ways that optimize timely uptake o With what explicit effort to leverage existing health-system arrangements o Where ▪ Community-based health settings o By whom and with what changes to remuneration o With what broader, complementary health intervention	• This review examined the feasibility, acceptability, and effectiveness of community pharmacies as sites for adult vaccination • Findings revealed that: o Pharmacy-based immunization services are widely accepted by both patients and pharmacy staff o Pharmacies may improve access and increase vaccination rates o Political and organizational barriers may limit the feasibility and effectiveness of pharmacies as sites of adult vaccination Source (AMSTAR rating 7/9)	Literature last searched 2016
	• Administering vaccines in ways that optimize timely uptake o By whom	• 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 compared to vaccine provision by traditional providers without pharmacist involvement Source (AMSTAR rating 10/11)	Literature last searched 2015
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public o Delivery of intervention	• The review focused on parents' and informal caregivers' views and experiences of communication about routine childhood vaccination and found, in general, parents desired more information than they were receiving, and that a lack of information led to	Literature last searched August 2013

Type of document	Relevance to question	Key findings	Recency or status
	▪ By whom ▪ Modality of delivery ○ Content of messaging ▪ Myths and misinformation about vaccines ▪ Risk-mitigation efforts	worry and regret about vaccination decisions among some parents • The synthesis of included qualitative studies found that parents: ○ Expressed wanting balanced information about vaccination benefits and harms that is presented clearly and simply, and tailored to their situation, and that that they want vaccination information to be available at a wide variety of locations (not just in health settings), with access to information provided well in advance before the time of a vaccination appointment ○ View health workers as an important source of information, but that poor communication and negative relationships with health workers can have an impact on vaccination decisions ○ Find it difficult to know which vaccination-information sources to trust, and challenging to find unbiased and balanced information, and that parents who are vaccine hesitant want more information • Most of the included interventions addressed at least one or two key aspects of communication, including the provision of information prior to a vaccination appointment and tailoring information to parents' needs, but none of the interventions responded to negative media stories or addressed parental perceptions of health-worker motives Source (AMSTAR rating 7/9)	
	• Surveillance, monitoring and evaluation, and reporting ○ Infrastructure to enable surveillance, monitoring and evaluation	• 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 over-vaccination Source (AMSTAR rating 2/9)	Literature last searched March 2012

Type of document	Relevance to question	Key findings	Recency or status

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ High-risk groups
	  ○ Delivery of the intervention
	  ▪ Modality of delivery
		• Using mobile phone reminders was largely efficacious for improving childhood immunization completeness, but not so much for uptake and timeliness in low-and-middle-income countries
		• A combination of voice message and short message service (SMS) had a greater effect followed by phone calls then SMS reminders for immunization completeness
		Source
			Literature last searched 14 June 2020

	• Administering vaccines in ways that optimize timely uptake
	  ○ Where
	  ○ With what broader, complementary health intervention
		• The use of reminder/recalls by letters and leaflets, pharmacists educating, or nurses vaccinating patients, were positively associated with an increased demand of vaccination among community-dwelling older adults (aged 60 years or older)
		• Effective studies (that were not part of the meta-analysis) included outreach by retired teachers, receptionists, nurses and medical students
		• Personalized phone calls and home visits are effective in increasing vaccination uptake; however, it is more resource-intensive
		• Home visits, client-group clinic visits, and free vaccination programs were associated with improved vaccination access
		Source (AMSTAR rating 9/11)
			Literature last searched 7 December 2017

	• Administering vaccines in ways that optimize timely uptake
	  ○ With what broader, complementary health intervention
		• This review examined the effectiveness of various types of patient reminder and recall interventions to improve vaccination rates
		• Findings revealed that:
		  ○ Reminding people to get a vaccination likely increases the number of people who receive vaccination rates (an average of 8%)
		  ○ Reminding people by telephone and automatic calls, sending a letter or postcard, or sending a
			Literature last searched 2017

Type of document	Relevance to question	Key findings	Recency or status
		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 Source (AMSTAR rating 9/11)	
	• Administering vaccines in ways that optimize timely uptake ○ With what broader, complementary health intervention	• This review examined barriers that influence newcomers' decision-making with regards to vaccination • Findings revealed four types of barriers: ○ Cultural factors ○ Knowledge barriers ○ Insufficient access to healthcare ○ Vaccine hesitancy • More specifically, having insufficient knowledge about vaccination and having safety concerns were the most reported barriers Source (AMSTAR rating 7/9)	Literature last searched 2017
	• Administering vaccines in ways that optimize timely uptake ○ Where ○ With what broader, complementary health intervention	• There is strong evidence on the effectiveness of home visits to increase vaccination rates • Home visits can be resource-intensive and costly • Home visits include discussions of current vaccination status, on-site vaccinations, and referrals to other immunizations for populations who are unresponsive to previous vaccine-reminder interventions • Home visits are conducted by health providers, such as nurses, or other allied professionals such as social workers Source (AMSTAR rating 3/10)	Literature last searched 2012
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ Individuals who are hesitant about or opposed to vaccination	• This systematic review aimed to examine interventions that may be effective in improving vaccine hesitancy and acceptance among parents • Within the included studies in the review, educational resources and information were the most commonly examined intervention	Literature last searched September 2012

Type of document	Relevance to question	Key findings	Recency or status
		• In eight of the 15 studies assessing vaccine attitude, parents' attitude towards vaccines substantially improved after receiving educational resources and information, such as brochures, pamphlets, or posters Source (AMSTAR rating 8/10)	
	• Administering vaccines in ways that optimize timely uptake o Where o With what broader, complementary health intervention	• This review found that there is strong evidence for the use of community-based interventions, implemented in combinations, to increase vaccination rates • The review found a median increase in vaccination rates of 14% • The 18 studies evaluated various interventions in different combinations o Client reminder and recall systems were used in most of the evaluated vaccination programs o These systems were commonly implemented by vaccination providers or generated from a regional immunization information system • The review found that many of the interventions were resource-intensive, and that community-based interventions using manual outreach, tracking or home visits were more costly than interventions without these components o It was suggested that resource-intensive interventions may be necessary strategies to increase vaccination rates amongst populations who typically have low rates of vaccination o Community-based interventions may be less costly if they are implemented in a stepped approach, starting with less resource-intensive interventions such as client reminder and recall systems, and progressing to other interventions in a strategic manner if needed Source (AMSTAR rating 3/10)	Literature last searched May 2012

Type of document	Relevance to question	Key findings	Recency or status

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ Individuals who are hesitant about or opposed to vaccination
		• Among studies conducted in the general population, vaccine acceptance rates ranged from >90% (97% in Ecuador, 94.3% in Malaysia, 93.3% in Indonesia and 91.3% in China) to <60% (23.6% in Kuwait, 28.4% in Jordan, 53.7% in Italy, 54.9% in Russia and 56.3% in Poland)
		• Across studies conducted on healthcare workers, vaccine acceptance rates ranged from 78.1% in Israel to 27.7% in the Democratic Republic of the Congo
		Source
			Literature last searched 25 December 2020 (Pre-Print)

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Delivery of the intervention
	  ▪ By whom
		• This review aimed to investigate the effects of school-based educational interventions on increasing human papillomavirus (HPV) knowledge and vaccine uptake in adolescents aged 15-17
		• All included studies reported a substantial increase in at least one of the following measured outcomes related to HPV vaccines: knowledge; attitude; or perception. The majority of interventions were led by health professionals, with designs centred around:
		  ○ Focus groups
		  ○ Interactive activities
		  ○ Web-based educational resources
		  ○ Brochures
		  ○ Didactic presentations
		• In order to maximize vaccine uptake within this population, an initial intervention with annual follow-up sessions is recommended
		Source (AMSTAR rating 7/11)
			Literature last searched 31 December 2019

Rapid reviews	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ Individuals who are hesitant about or opposed to vaccination
		• This rapid review of over 100 surveys focused on comparing trends in public reception to COVID-19 vaccines over time, and analyzing factors related to vaccine perceptions, concerns and intentions during the COVID-19 pandemic	Last search 20 October 2020

Type of document	Relevance to question	Key findings	Recency or status
	○ Delivery of the intervention ▪ By whom ○ Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 (including duration of protection) and protection against transmission (and other factors that may contribute to vaccine acceptance and hesitancy)	• Study results show that vaccine hesitancy is universal across countries and is typically manifested in the preference to wait to be vaccinated or to reject vaccination altogether • The most cited reasons for vaccine hesitancy or refusal included fear of side effects, safety and effectiveness, as well as the expedited development of the COVID-19 vaccines, perceived political interference, and misinformation • Survey participants from the U.S. and U.K. with higher skepticism had a lower perceived risk of trust in government or professionals, and therefore had more doubts and objections to being vaccinated • The authors recommend that confidence in the COVID-19 vaccines can be improved by emphasizing transparency and compliance with scientific standards throughout the vaccine-development and approval processes • Communication strategies could use positive cues to vaccinate through engagement with loved ones and family members, and trusted figures like doctors and religious leaders. Confidence can also be instilled through transparency in access and equitable distribution of the vaccines Source (AMSTAR rating 7/9)	
	• Administering vaccines in ways that optimize timely uptake ○ With what broader, complementary health interventions	• There are three models for vaccination delivery in non-healthcare settings: 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	Date of literature search not reported (published 27 August 2020)

Type of document	Relevance to question	Key findings	Recency or status
		• 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 Source (AMSTAR rating 3/9)	
	• Administering vaccines in ways that optimize timely uptake o With what explicit effort to leverage existing health-system arrangements (e.g., vaccination systems and primary-care practices/community health centres) o With what partnerships to reach early populations of focus	• 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 Source (AMSTAR rating 3/9)	Date of literature search not reported (published 27 August 2020)
	• Administering vaccines in ways that optimize timely uptake o By whom and with what changes to remuneration	• Individuals with or without backgrounds in medicine can be recruited to deliver vaccinations through several avenues • 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)	Date of literature search not reported (published 27 August 2020)
	• Administering vaccines in ways that optimize timely uptake o With what safety monitoring requirements	• 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	Date of literature search not reported (published 27 August)

Type of document	Relevance to question	Key findings	Recency or status
		• 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 are also critical to safety • For in-clinic vaccine administration, patient flow and clinic layout must be strictly monitored Source (AMSTAR rating 2/9)	
	• Surveillance, monitoring and evaluation, and reporting ○ Identifying sources of vaccine hesitancy	• This rapid review includes 18 surveys on individuals' willingness to receive a COVID-19 vaccine • The percentage of respondents inclined towards receiving a vaccine ranged from 58% in a U.S.-based sample to 93% in an Indonesian sample • Greater perceived risk of COVID-19, characteristics such as being older, male, more educated and having higher income, and valuing healthcare providers' recommendations, were positively associated with willingness to receive a COVID-19 vaccine • Willingness to receive a COVID-19 vaccine was negatively associated with being of Latino or Black racial/ethnic background, and concerns about vaccine safety • Communication strategies to improve willingness to receive a COVID-19 vaccine might consider behaviour-change techniques such as information about health consequences, prompts and cues, and support or encouragement Source – not yet available online (AMSTAR rating 3/9)	Literature last searched December 2020

Type of document	Relevance to question	Key findings	Recency or status

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ Individuals who are hesitant about or opposed to vaccination
	  ○ Content of messaging
	  ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission
	  ▪ Information about novel vaccine platforms, current vaccine options, prioritized populations, and behaviours after vaccination
	  ▪ Myths and misinformation about vaccines
	  ▪ Risk-mitigation efforts
	• Anticipated timing of when all those who want a vaccine will have been vaccinated
		• This brief aimed to support decision-makers in planning and implementing vaccine-communication strategies
		• Communication strategies with the public about vaccines should aim to:
		  ○ Identify concerns and misconceptions about the vaccine
		  ○ Provide information that is perceived to be trustworthy
		  ○ Make information about how the vaccine was developed, what it contains, its effects and safety, and the background for its recommendation easily accessible
		  ○ Provide transparent, timely, consistent, accessible and easily understandable information, including to hard-to-reach groups
		  ○ Include practical information about where to get the vaccine and what the procedure is
		Source (AMSTAR rating 4/9)
			Date of literature search not stated (published October 2020)

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	  ○ Ensuring equity (including whether and how access through private means can be achieved by those not initially prioritized)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Content of messaging
	  ▪ Anticipated timing of when all those who want a vaccine will have been vaccinated
		• To maintain public support among non-priority groups, it is critical that key stakeholders effectively communicate all evidence-informed decisions clearly
		• To uphold ethical integrity, COVID-19 vaccines must be administered in accordance with the priority groups that have been established
		Source (AMSTAR rating 4/9)
			Date of literature search not reported (published 27 August 2020)

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ High-risk groups
		• This review provides an overview of implementation considerations related to communication between healthcare workers and older adults about vaccines	Date of last search or publication not stated (listed as forthcoming)

Type of document	Relevance to question	Key findings	Recency or status
	▪ Individuals who are hesitant about or opposed to vaccination o Delivery of the intervention ▪ By whom (e.g., health worker, research expert, teacher, business leader, government leader, community leader, citizen champion, media)	• Communicating the aim of vaccine communication with older adults and their role in the decision-making process in relation to patient rights legislation or other standards and policies in the local setting • Planners and implementers should consider healthcare workers' views and attitudes about communication and decision-making in terms of o Older adults' rights and preferences o Communication training o Awareness around influence o Healthcare workers' vaccine uptake • Additional considerations related to the relationships healthcare workers have with older adults o Do healthcare workers view communication about vaccination as part of their role? o Is it their responsibility to initiate the conversation about vaccination? o Do healthcare workers receive support and guidance to facilitate communication with older adults who do not have the capacity to make their own decisions? o Do healthcare workers receive support and guidance when communicating with older adults who speak a minority language? • Practical issues encountered by healthcare workers related to communicating with older adults about vaccination include: o Sufficient time o Lack of appropriate context and preparation to facilitate informed decision-making o Limited knowledge of disease vaccine aims to prevent o Unable to provide information to address questions, concerns and fears about vaccines	

Type of document	Relevance to question	Key findings	Recency or status
		○ Limited or no access to patient data necessary to discuss vaccines with older adults ○ Lack of agreement with current recommendations Source (AMSTAR rating 1/9)	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Delivery of the intervention ▪ Modality of delivery (e.g., social media, text, email, telephone, radio, television, face-to-face by video, face-to-face in person)	• This brief provides policy- and decision-makers and operational staff insights about how digital interventions can promote vaccine uptake • Evidence on the effectiveness of digital interventions to promote vaccine uptake is mixed and fragmented • Mobile reminders may encourage people to vaccinate; online prompts from health providers make little or no difference to adolescent vaccine uptake; the effects of vaccination reminders via online patient portal systems or of educational videos for parents are uncertain • Start-up and ongoing costs, acceptability and feasibility of digital interventions should be considered before implementing an intervention in a specific setting • Given the limited evidence available, large scale implementation of digital interventions for vaccine uptake should be carefully evaluated, including for unintended consequences and equity impacts • Operational staff and decision-makers should consider context, including health-system arrangements, constraints and on-the-ground realities that might shape the feasibility and acceptability of digital interventions Source (AMSTAR rating 4/9)	Date of literature search not stated (published October 2020)
	• Administering vaccines in ways that optimize timely uptake ○ With what appointment/scheduling and screening support, changes to physical spaces	• A separate waiting area must be established to allow patients to be monitored post-vaccination for 15 minutes	Date of literature search not reported

Type of document	Relevance to question	Key findings	Recency or status
	and patient flows through these spaces, and changes to hours of operation ○ With what post-vaccination observation period and what physical distancing, personal protective equipment, sanitation and other public-health measures ○ With what safety monitoring requirements	• 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 are also critical to safety • For in-clinic vaccine administration, patient flow and clinic layout must be strictly monitored Source (AMSTAR rating 2/9)	(published 27 August 2020)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ Individuals who are hesitant about or opposed to vaccination ○ Delivery of the intervention ▪ By whom	• 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 Source (AMSTAR rating 4/9)	Date of literature search not reported (published 27 August 2020)
	• Administering vaccines in ways that optimize timely uptake ○ With what explicit effort to leverage existing health-system arrangements ○ With what partnerships to reach early populations of focus ○ With what broader, complementary health interventions	• The Global Routine Immunization Strategic Plan (GRISP) is a useful framework for operationalizing programs to increase vaccine coverage in countries where early COVID-19 mitigation measures have had an impact • To maximize reach, services should be designed to reach all equitably, vaccinator capacity and training should be increased, and immunization services should be re-integrated as synergistically as possible	Literature last searched June 2020

Type of document	Relevance to question	Key findings	Recency or status
	○ With what reporting requirements and supporting immunization information systems and broader healthcare information systems	• Efforts should be made to engage communities and create demand for immunization through culturally specific education campaigns and engagement of stakeholders and community partners • Vaccination progress should be continuously monitored to ensure availability of vaccine stock and plan for catch-up vaccination Source (AMSTAR rating 3/9)	
	• Securing and distributing a reliable supply of vaccines and ancillary supplies ○ Distribution within country and to administration sites ○ Storage and handling within country • Allocating vaccines and ancillary supplies equitably ○ Allocation rules • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention • Individuals who are hesitant about or opposed to vaccination	• This 'rapid evidence check' summarizes recommendations from the World Health Organization's interim guidance on developing a national deployment and vaccination plan for COVID-19 vaccines, including recommendations about: ○ 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 ○ Deciding potential population groups for vaccine prioritization • Source (AMSTAR rating 1/9)	Date of literature search not reported (published 9 December 2020)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ Individuals who are hesitant about or opposed to vaccination	• Nationally representative studies conducted across 13 countries consistently demonstrate that the percentage of individuals intending to vaccinate is decreasing, while the percentage intending to refuse vaccination is increasing as the pandemic progresses • Pooled data conducted from June-October suggests that 60% (95% CI: 49% to 69%) of respondents intend to vaccinate while 20% (95% CI: 13% to	Literature last searched November 2020 (Pre-Print)

Type of document	Relevance to question	Key findings	Recency or status
		29%) intend to refuse vaccination, with intentions varying greatly across samples and countries (I^2 > 90%) • Being female, of low education or income level, younger and belonging to an ethnic minority group were consistently associated with being less likely to intend to vaccinate Source	

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ Individuals who are hesitant about or opposed to vaccination
	  ○ Content of messaging
	  ▪ Risk-mitigation efforts
	  ▪ Myths or misinformation about vaccines
	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	• Administering vaccines in ways that optimize timely uptake
	  ○ With what broader, complementary health interventions
		• The British Academy produced a rapid evidence review to assist in the understanding of COVID-19 and COVID-19 vaccines
		  ○ The review found that behavioural factors underpinning vaccine uptake include: 1) complacency; 2) trust and confidence in efficacy and safety; 3) convenience; 4) sources of information; and 5) socio-demographic variation
		  ○ The review also found that COVID-19 vaccine deployment will encounter an infodemic with misinformation characterized by: 1) distrust of science and selective use of expert authority; 2) distrust in pharmaceutical companies and authorities; 3) straight forward explanations that are difficult to distinguish from facts; 4) use of emotion and divisive language to make an impact on decision-making; and 5) echo chambers that can exacerbate misunderstanding of facts
		• The review concluded with recommendations that may improve vaccine uptake and address hesitancy, including:
		  ○ Public dialogue about vaccine concerns and misinformation
		  ○ Convenient locations for vaccination (build on existing immunization programs)
			Literature last searched October 2020

Type of document	Relevance to question	Key findings	Recency or status
		○ Decentralized local vaccination program with visually appealing, multi-language toolkits for local jurisdictions and partners ○ Vaccine deployment with ethical allocation (age and comorbidity-based priority groups) ○ Accountability from media and responsibility of citizens (report misinformation and remove harmful information) Source (AMSTAR rating 2/9)	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ High-risk groups ○ Delivery of the intervention ▪ By whom ▪ Duration ▪ Modality of delivery ○ Content of messaging • Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission	• Vaccine uptake increases when parents making the decision to vaccinate their children are informed about vaccine safety/side effects, vaccine effectiveness, and the severity of vaccine-preventable diseases ○ Use a multi-component approach for information delivery (in-person meetings, support group question-and-answer discussions) ○ A web-based decision tool may assist with conversations between healthcare providers and parents • Parents are less likely to feel informed about vaccination when there is inadequate depth and length of discussions with healthcare providers • The effectiveness of vaccination media marketing on vaccine uptake was unclear. These included brochures, pamphlets and posters Source	Literature last searched August 2013
	• Allocating vaccines and ancillary supplies equitably ○ Allocation rules ▪ Front-line healthcare workers ▪ Residents in long-term care homes and other congregate-care settings • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention	• This study summarizes regional and national strategies for influenza vaccination in the context of the COVID-19 pandemic • Recommendations include conducting influenza vaccinations in well-ventilated spaces with frequent environmental cleaning, scheduling vaccination appointments to prevent crowding, implementing hand hygiene and using proper personal protective equipment (PPE)	Date of literature search not reported (published 23 September 2020)

Type of document	Relevance to question	Key findings	Recency or status
	▪ General public ▪ Individuals who are hesitant about or opposed to vaccination • Administering vaccines in ways that optimize timely uptake o With what explicit effort to leverage existing health-system arrangements • With what broader, complementary health interventions (e.g., flu vaccination and routine immunization, ongoing public-health measures)	• Some countries have set up drive-through outdoor vaccination sites (Australia) while others plan to expand their influenza vaccination coverage through more investment in vaccine programs, vaccination registration systems and catch-up programmes (Netherlands, U.K.) • To mitigate increasing concerns about vaccine hesitancy in most populations, countries should implement communication strategies that address public concerns regularly, build public trust and confidence, and enhance community engagement • Countries should also invest in strengthening their vaccine delivery systems which could benefit not only influenza vaccination but also the rapid introduction and upscaling of new COVID-19 vaccines Source	
Guidance developed using some type of evidence synthesis and/or expert opinion	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public ▪ High-risk groups ▪ Individuals who are hesitant about or opposed to vaccination • Delivery of the intervention ▪ By whom o Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission ▪ Risk-mitigation efforts ▪ Myths or misinformation about vaccines • Administering vaccines in ways that optimize timely uptake	• A 23-person *Working Group on Readying Populations for COVID-19 Vaccine* released a set of recommendations and best practices for improving COVID-19 vaccine acceptance and addressing hesitancy o Value social science (involve research funding to include social, behavioural and communication science, and develop active partnerships) o Inform public expectations about COVID-19 vaccination benefits, risks and supply (forecast range of scenarios, temper expectations, provide transparency of vaccine safety systems, seek input from marginalized populations) o Communicate in meaningful ways (public well-being at the centre of communication, reject political tensions, conduct qualitative studies to understand local and community needs and concerns, conduct surveys on attitudes and beliefs across sub-groups, engage network of	Published 20 October 2020

Type of document	Relevance to question	Key findings	Recency or status
	○ Where ○ With what broader, complementary health interventions	trusted champions and spokespersons to deliver a unified message) ○ Earn public trust and confidence in allocation and distribution (develop strategies that take marginalized populations into consideration, implement guidelines that are consistent across providers and locations) ○ Make vaccination available in safe, familiar places (use schools, pharmacies, places of worship, workplaces, grocery stores, health departments, senior centres, home visits; prepare educational materials and train individuals tasked with vaccination; develop hesitancy campaign plans; foster partnerships with government, health departments, media) ○ Establish an independent body to instil public ownership (establish public committees to review and report on public understanding, access and acceptance) Source (Johns Hopkins Center for Health Security and Texas State University Department of Anthropology)	
	• Allocating vaccines and ancillary supplies equitably ○ Allocation rules • Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Content of messaging ▪ Data and evidence about safety and about effectiveness ▪ Myths and misinformation about vaccines	• 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	Published October 2020

Type of document	Relevance to question	Key findings	Recency or status
		Source (The Chief Public Health Officer of Canada, Government of Canada)	

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	• Administering vaccines in ways that optimize timely uptake
	  ○ By whom (e.g., nurses, public-health workers, retired health workers) and with what changes to remuneration (e.g., increased vaccine-administration fee code)
	• Surveillance, monitoring and evaluation, and reporting
	  ○ Documenting adverse events and follow-up
		• Vaccines should be provided to individuals in accordance with the government-identified priority groups
		• Adverse events and safety concerns following COVID-19 vaccine administration should be reported using the established Coronavirus Yellow Card reporting scheme
		• To ensure that there is a sufficient workforce to deliver the vaccination program, changes to the Human Medicines Regulations now permit non-registered healthcare professionals to administer the COVID-19 vaccine
		• All individuals administering COVID-19 vaccines are required to complete assigned training
		Source (Public Health England)
			Last updated 11 January 2021

	• Securing and distributing a reliable supply of vaccines and ancillary supplies
	  ○ Delivery to country
	  ○ Inventory management within country
	  ○ Distribution within country and to administration sites
	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	  ○ Ensuring equity
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ Individuals who are hesitant about or opposed to vaccination
	  ○ Content of messaging
		• This guidance document outlined 10 key components that must be considered for a successful vaccine-deployment strategy within the European Union, European Economic Area, and the United Kingdom
		  ○ A robust surveillance system
		  ○ Conducting post-market studies
		  ○ Monitoring adverse effects upon vaccine administration
		  ○ Documenting vaccination coverage data
		  ○ Making evidence-informed decisions
		  ○ Preparing legal and regulatory frameworks
		  ○ Planning options for vaccine distribution and delivery
		  ○ Performing behavioural research to understand issues around vaccine acceptability, uptake, and hesitancy
		  ○ Preparing a communication plan
			Published 26 October 2020

Type of document	Relevance to question	Key findings	Recency or status
	▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission ▪ Myths and misinformation about vaccines • Surveillance, monitoring and evaluation, and reporting o Documenting vaccine status o Documenting adverse events and follow-up • Identifying sources of vaccine hesitancy	o Allocating vaccines using an ethical and equitable framework • Consideration should be given to: 1) a tier-based approach when identifying priority groups; and 2) the use of mathematical modelling to assess alternative strategies and outcomes Source (European Centre for Disease Prevention and Control)	
	• Allocating vaccines and ancillary supplies equitably o Allocation rules	• 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: o Tier 1: Those most essential in sustaining the ongoing COVID-19 response; those at greatest risk of severe illness and death, and their caregivers; and those most essential to maintaining core societal functions o 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,	Published August 2020

Type of document	Relevance to question	Key findings	Recency or status
		even if they have lesser or unknown risk of severe illness and death Source (Centre for Health Security, John's Hopkins University, U.S.)	

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	• Administering vaccines in ways that optimize timely uptake
	• With what broader, complementary health interventions
		• 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):
		  ○ 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
			Published 29 September 2020

Type of document	Relevance to question	Key findings	Recency or status
		(e.g., letters) that will be tailored to particular needs (e.g., those with learning disabilities) Source (Public Health England)	

Protocols for reviews that are underway	• Allocating vaccines and ancillary supplies equitably
	  ○ Approaches to developing and adjusting allocation rules (e.g., citizen- and stakeholder-engagement processes)
	  ○ Allocation rules (to priority populations, including those listed below, as well as to 'lower levels' in a federation and/or to providers who can reach priority populations)
	  ○ Ensuring equity (including whether and how access through private means can be achieved by those not initially prioritized)
	• Surveillance, monitoring and evaluation, and reporting
	  ○ Identifying sources of vaccine hesitancy
		• Access to vaccination among disadvantaged, isolated and difficult-to-reach communities in the WHO-European region
		Source
			Anticipated completion date 30 June 2021

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention • Individuals who are hesitant about or opposed to vaccination	• Understanding reluctance to vaccinate against COVID-19 in the United States Source	Anticipated completion date 26 February 2021
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention • Individuals who are hesitant about or opposed to vaccination	• COVID-19 vaccine hesitancy and population vaccination intentions in African countries Source	Anticipated completion date 31 March 2021
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention • Individuals who are hesitant about or opposed to vaccination	• Acceptance of COVID-19 vaccine Source	Anticipated completion date 31 July 2021
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• Acceptability of vaccination against COVID-19 and its influencing factors	Anticipated completion

Type of document	Relevance to question	Key findings	Recency or status
	○ Target of intervention • Individuals who are hesitant about or opposed to vaccination	Source	date 31 January 2021
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention • Individuals who are hesitant about or opposed to vaccination	• Cross-cultural perspectives of COVID-19 vaccination intention Source	Anticipated completion date 28 February 2021
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ General public • Individuals who are hesitant about or opposed to vaccination	• Community and provider acceptability of the COVID-19 vaccine Source	Anticipated completion date 31 January 2021
	• Surveillance, monitoring and evaluation, and reporting ○ Documenting vaccine status (e.g., for number of doses received and for use in cross-border travel and work-related migration) • Documenting adverse events and follow-up	• Bi-weekly review and critical appraisal of the implementation of a vaccination program to combat COVID 19 in the WHO south-east Asian region Source	Anticipated completion date 30 May 2021
	• Surveillance, monitoring and evaluation, and reporting ○ Documenting vaccine status (e.g., for number of doses received and for use in cross-border travel and work-related migration) • Documenting adverse events and follow-up	• Efficacy, effectiveness and safety of vaccines against COVID-19 authorized in the European Union Source	Anticipated completion date 30 May 2022
	• Surveillance, monitoring and evaluation, and reporting • Identifying sources of vaccine hesitancy	• How vaccine hesitancy and its sub-populations are described in the literature Source	Anticipated completion date 30 May 2022
	• Surveillance, monitoring and evaluation, and reporting • Documenting adverse events and follow-up	• Effects of vaccines compared with any comparator for participants in all age groups Source	Anticipated completion date 1 June 2021

Type of document	Relevance to question	Key findings	Recency or status
	• Surveillance, monitoring and evaluation, and reporting • Documenting adverse events and follow-up	• Safety profile for COVID-19 candidate vaccines Source	Anticipated completion date 25 November 2020
	• Surveillance, monitoring and evaluation, and reporting • Infrastructure to enable surveillance, monitoring and evaluation (e.g., patient-held records, electronic health records or reporting systems, online vaccination registries, COVID-19 apps)	• Designing, implementing and scaling immunization information systems in low- and middle-income countries in response to a pandemic situation such as COVID-19 Source	Anticipated completion date 15 February 2021
	• Administering vaccines in ways that optimize timely uptake • With what broader, complementary health interventions	• Protocol about the determinants of COVID-19 vaccine acceptance Source	Anticipated completion date 1 June 2021
	• Administering vaccines in ways that optimize timely uptake • With what broader, complementary health interventions	• Evaluating the impact of social media exposure on vaccine hesitancy Source	Anticipated completion date 20 September 2020

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ○ Delivery of intervention
	• Modality of delivery
		• Efficacy of motivational interviewing and knowledge-based interventions for vaccination
		Source
			Anticipated completion date 1 August 2020

Titles/questions for reviews that are being planned	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• Incentivizing vaccine uptake for COVID-19 Source	Registered on 10 November 2020
	• Allocating vaccines and ancillary supplies equitably	• Ethical concerns and guidance on COVID-19 vaccination Source	Registered on 11 November 2020
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• Vaccine transparency and conspiracy beliefs Source	Registered on 14 October 2020

Type of document	Relevance to question	Key findings	Recency or status
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• Increasing intentions to vaccinate against COVID-19 Source	Registered on 3 November 2020
	• Allocating vaccines and ancillary supplies equitably	• Equitable COVID-19 vaccination strategies Source	Registered on 18 September 2020
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• The COVID-19 vaccine communication handbook Source	Registered on 4 January 2021
Single studies in areas where no reviews were identified	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public ▪ Individuals who are hesitant about or opposed to vaccination o Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission	• The study examined the casual effect of exposure to distinct pro- and anti-vaccination message frames on individuals' intentions to get vaccinated o Several types of message content were focused on the safety and efficacy of the vaccine itself, the likelihood that others will take the vaccine, and the possible role of politics in promoting the vaccine • Respondents who received information about the safety/efficacy of the vaccine were more likely to report that they would take the vaccine • Respondents who received information that others were reluctant to take the vaccine were more likely to report that they themselves would not take it, that other Americans would not take it, and that it was not important to get the vaccine • Respondents who received information about political influences on vaccine development expressed hesitancy to take the vaccine Source	Pre-print (last edited 6 January 2021)
	• Securing and distributing a reliable supply of vaccines and ancillary supplies o National purchasing o Delivery to country	• This study provided estimates of global, regional and national target population sizes for COVID-19 vaccination to inform immunization strategies on a global scale • A strategy for vaccine allocation is proposed based on three main goals:	Published 15 December 2020

Type of document	Relevance to question	Key findings	Recency or status

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	  ▪ Front-line healthcare workers
	  ▪ Residents in long-term care homes and other congregate-care settings
	  ▪ People at increased risk of severe COVID-19 (e.g., older and/or frail adults, those with chronic health conditions)
	  ▪ Essential workers (beyond front-line healthcare workers) and/or those in work environments that put them at elevated risk (e.g., food processing and transit)
	  ○ Ensuring equity
		○ To maintain core societal functions during the pandemic
		○ To protect people from irreversible and devastating harm (e.g., people over 65 years old or with high-risk health conditions)
		○ To control community transmission to return to a pre-pandemic baseline of economic and social activities
		• The size of target populations varies significantly by region with a considerable proportion of those needed to maintain essential functions of societies and of those over 80 years of age living in Europe and North America
		Study estimates reveal that it would take about six to seven months to produce enough vaccines to inoculate 60-80% of the world population in order to achieve herd immunity
		○ In countries with sufficient local capacity to produce vaccines, vaccination of a significant proportion of the population can be achieved within months. However, in lower- and middle-income countries that have much less capacity to secure and deliver vaccines, the vaccination process can last much longer
		• The strengthening of national and international supply chains to guarantee the distribution of vaccines to remote communities in developing countries will call for international institutions, national governments, and manufacturers to plan for vaccine allocation and negotiate affordable vaccine prices
		• When designing vaccination programs, each country should consider local epidemiology, underlying population health, the effectiveness of different vaccines, and projections of available vaccine doses	

Type of document	Relevance to question	Key findings	Recency or status
		Source	

	• Securing and distributing a reliable supply of vaccines and ancillary supplies
	  ○ National purchasing
	• Allocating vaccines and ancillary supplies equitably
	  ○ Ensuring equity
		• This cross-sectional analysis describes the premarket purchase commitments for COVID-19 vaccines from manufacturers to recipient countries
		• As of November 15, 2020, premarket purchase commitments of 7.48 billion doses of COVID-19 vaccines from 13 manufacturers have been made
		  ○ High-income countries have secured 51% of these doses even though they represent only 14% of the world's population
		  ○ Only six manufacturers have sold premarket vaccines to low- and middle-income countries, with the majority of vaccines being provided by AstraZeneca/Oxford University, Novavax, the Gamaleya Research Institute of Russia, and the Chinese firms, SinoVac and CanSino
		  ○ At least 500 million doses, or 250 courses, have been secured to ensure access to COVID-19 vaccines for developing countries through the COVAX facility of the WHO's ACT Accelerator, along with financing for half of its 2 billion dose-target by the end 2021
		• Vaccine prices vary substantially – from US$6.00 per course to $74.00 per course
		• There has been limited transparency about purchasing contracts between manufacturers, countries and COVAX facility, which can lead to increased concerns about vaccine nationalism and access to vaccines
		• It is unknown how many countries will follow the WHO's proposed equitable allocations scheme for population-based distribution of vaccines, as several countries participating in the COVAX facility have bilateral agreements with manufacturers
		• Global collective action is needed to pool procurement and share COVID-19 vaccines in an
			Published 15 December 2020

Type of document	Relevance to question	Key findings	Recency or status
		equitable way so that there is fair access to populations around the world Source	

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules
	  ▪ Front-line healthcare workers
	  ▪ Essential workers and/or those in work environments that put them at elevated risk
	  ▪ Children (school aged)
	  ▪ Migrant workers
	  ▪ People in social environments that put them at elevated risk for COVID-19
	  ○ Ensuring equity
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ▪ Individuals who are hesitant about or opposed to vaccination
		• Among 9,122 respondents in the U.K. (49.4% response rate), 71.5% indicated wanting COVID-19 vaccination, and 9.6% would refuse
		  ○ Age and female gender were, respectively, strongly positively and negatively associated with wanting a vaccine
		• Although 2,068 respondents (22.7%) disagreed with the government's order of priority, 6,416 (70.3%) were against being able to expedite vaccination through payment
		  ○ Teachers, Black, Asian and Minority Ethnic (BAME) groups, general key workers, children, and university students were most cited by respondents for prioritization
		  ○ 32.6% of respondents were concerned that the priority list makes no reference to BAME groups
		Source
			Pre-print (last edited 8 December 2020)

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ○ Delivery of the intervention
	  ▪ By whom
		• The study examined how timing and elite endorsement affect public opinion about COVID-19 vaccines in the United States
		• Approval before the election reduced willingness to vaccinate and confidence in COVID-19 vaccinations
		• A positive statement by President Donald Trump and Dr. Anthony Fauci had significant positive effects on public reactions towards COVID-19 vaccine
		  ○ The effect was found to be four times larger amongst Democrats than Republicans
		  ○ If President Trump endorsed the COVID-19 vaccine, confidence was raised about as much as
			Pre-print (last edited 28 October 2020)

Type of document	Relevance to question	Key findings	Recency or status
		Dr. Fauci's statement amongst Republicans, but confidence among Democrats was lowered • These studies demonstrated that the public opinion toward COVID-19 vaccinations may be responsive to political motivation and support • Further research should be directed towards developing strategies to accurately disseminate information and gain public support within future COVID-19 vaccination campaigns Source	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public o Delivery of the intervention ▪ By whom	• A global survey (13,426 people in 19 countries) showed respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's vaccine advice • Differences in COVID-19 vaccine acceptance rates ranged from almost 90% (in China) to less than 55% (in Russia) Source	Published 20 October 2020
	• Allocating vaccines and ancillary supplies equitably o Allocation rules ▪ Essential workers and/or those in work environments that put them at elevated risk	• This study aimed to 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 Source	Published 6 October 2020
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	• The main objectives of this study were to examine the attitude of participants towards a COVID-19	Published 3 October 2020

Type of document	Relevance to question	Key findings	Recency or status
	○ Target of intervention ▪ General public ○ Delivery of the intervention ▪ Modality of delivery ○ Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission • Administering vaccines in ways that optimize timely uptake ○ With what broader, complementary health interventions	vaccine and highlight any challenges that may pose a barrier to vaccine uptake • The findings from this study reported that an estimated 68% of participants would be open to receiving a COVID-19 vaccine • 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 associated with increased COVID-19 vaccine acceptance • 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 • The indicator that can best predict COVID-19 vaccine acceptance was found to be previous vaccine history; the authors note that interventions (e.g., messages) that relay information regarding the safety of vaccines should help to improve COVID-19 vaccine acceptance Source	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ General public ○ Delivery of the intervention ▪ By whom ○ Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission	• A survey randomly assigned 7,064 respondents in the United States to read pro-vaccine communication materials with information emphasizing personal-health risks, economic costs or collective public-health consequences of not vaccinating, that had the message source (ordinary people or medical experts) also randomly assigned • Messages that emphasize personal-health risks and collective health consequences of not vaccinating were found to significantly increase intentions to vaccinate, and the effects were similar regardless of	Last updated 8 September 2020 (pre-print)

Type of document	Relevance to question	Key findings	Recency or status
	▪ Myths and misinformation about vaccines	the message source and efforts to pre-emptively debunk concerns about safety of expedited clinical trials • Economic cost frames were found to have no discernible effect on vaccine intentions Source	
	• Allocating vaccines and ancillary supplies equitably o Allocation rules ▪ People in social environments that put them at elevated risk for COVID-19 • Administering vaccines in ways that optimize timely uptake o Where ▪ Other community settings	• A heavy lift UAV quadcopter can expand COVID-19 vaccine delivery to Indigenous people living in villages impeded by rugged terrain • The travel time to a village normally accessible via walking a 2km trail that takes almost one hour took an estimated 1.23-1.38 minutes, 1.57-1.66 minutes, and an average of 3.13 minutes, for drones with 100, 250 and 500 vial loads, respectively Source	Last updated 12 January 2021 (pre-print)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ High-risk groups o Delivery of the intervention ▪ By whom o Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission	• A survey of 311 older adults and 216 chronic respiratory patients in the U.K, showed 86% are willing to receive a future vaccine for COVID-19 • The willingness to receive a COVID-19 vaccination was: o Positively associated with the belief that COVID-19 will persist over time o Negatively associated with the perception that the media has over-exaggerated the risks of catching the virus • Perceived facilitators to the COVID-19 vaccination uptake included perceptions of risk to personal health, severity of COVID-19, and health consequences to others from COVID-19 • Concerns about vaccine safety acted as a barrier to COVID-19-vaccination uptake • Content of mass-media interventions to improve vaccine uptake should focus on the behaviour-change techniques (BCTs) of information about	Published 5 September 2020

Type of document	Relevance to question	Key findings	Recency or status
		health, emotional, social and environmental consequences, and salience of consequences Source	

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Delivery of the intervention
	  ▪ Modality of delivery (e.g., social media, text, email, telephone, radio, television, face-to-face by video, face-to-face in person)
		• A chatbot that answers people's questions about COVID-19 vaccines was evaluated and it was found that interacting with a chatbot for a few minutes significantly increased intentions to get vaccinated, and had a positive impact on attitudes towards COVID-19 vaccination
		Source
			Pre-print (last edited 9 January 2021)

	• Administering vaccines in ways that optimize timely uptake ○ With what broader, complementary health interventions	• 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 Source	Published September 29 2020
	• Allocating vaccines and ancillary supplies equitably ○ Allocation rules	• 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	Published 10 September 2020

Type of document	Relevance to question	Key findings	Recency or status
		• To best minimize the spread of COVID-19, transmission blocking vaccines are to be prioritized within adults 20-49 years of age • Redirecting vaccination to only seronegative individuals is recommended to best optimize the impact of each dose Source	
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines o Target of intervention ▪ General public ▪ Individuals who are hesitant about or opposed to vaccination o Delivery of the intervention ▪ By whom	• A nationally representative sample of 3,133 adults in the U.S. evaluating intentions to vaccinate themselves and their children for COVID-19 found that 20% of people in the U.S. would decline a COVID-19 vaccine • Key deterrents to vaccination included general vaccine hesitancy (assessed by not having had a flu shot in the last two years), distrust of vaccine safety, and vaccine novelty • Findings also suggest that inconsistent risk messages from public-health experts and elected officials reduce vaccine uptake Source	Last updated 2 July 2020
	• Administering vaccines in ways that optimize timely uptake o With what injury-compensation program (for vaccine recipients) and liability immunity (for vaccine distributors, planners, and administering staff)	• This study analyzes the use of the Extended Parallel Process Model for understanding the public-health workforce's confidence in vaccines and perceptions of vaccine-injury compensation mechanisms • The analysis reveals the key role of legal protections in boosting confidence in vaccines, since mandatory vaccination for public-health workers is a contentious policy issue Source	Published in June 2013
	• Administering vaccines in ways that optimize timely uptake o With what injury-compensation program (for vaccine recipients) and liability immunity (for vaccine distributors, planners and administering staff)	• The National Vaccine Injury Compensation Program in the U.S. reported an association with increased immunization rates and an improved environment for vaccine research and development, partly due to the program's ability to address liability surrounding immunization	Published 1 March 2006

Type of document	Relevance to question	Key findings	Recency or status
		Source	
	• Administering vaccines in ways that optimize timely uptake ○ With what injury-compensation program (for vaccine recipients) and liability immunity (for vaccine distributors, planners and administering staff)	• The National Childhood Vaccine Injury Act, passed in 1986, was queried whether it should be expanded to include the VICP to cover adult influenza and pneumococcal vaccines • In 1996 it was decided that available data provided no compelling reasons to expand the vaccine injury-compensation program to cover adults • It was also concluded that no data existed that suggested a program expansion would improve vaccination levels in adults, that the data did not indicate a liability crisis, the reported injuries could not be conclusively attributed to the vaccines, and that there was no strong support for vaccine injury-compensation program expansion • Possible expansion of the vaccine injury-compensation program should be revisited if new developments occur and new data is obtained Source	Published June 1998

	• Allocating vaccines and ancillary supplies equitably
	  ○ Allocation rules (to priority populations, including those listed below, as well as to 'lower levels' in a federation and/or to providers who can reach priority populations)
	  ▪ People at increased risk of severe COVID-19 (e.g., older and/or frail adults, those with chronic health conditions)
	  ▪ Children (school aged)
		• Community juries in three Australian locations in 2019 were convened to assess public acceptability and perceived legitimacy of influenza pandemic vaccination distribution strategies
		• It was assumed that vaccines would be provided to predefined priority groups
		• Following this, jurors were asked to recommend one of two strategies for distributing the remaining vaccine doses
		  ○ The first strategy was to directly vaccinate people at higher risk of adverse outcomes from influenza
		  ○ The second strategy was to indirectly protect the population by vaccinating primary school students who are at a high risk for spreading infection
			Published 8 January 21

Type of document	Relevance to question	Key findings	Recency or status
		• All three juries supported the second strategy, which was to vaccinate school children • Justification for the decision was that indirect protection, through the vaccination of school children, benefits more people and is more likely to be accepted by the general public • Limitations of this study included that participants were asked to select between two strategies, and it is possible that they may have selected a different strategy if it were available, and that the participants were not asked whether or not they had school-aged children, which may have had an impact on their decision • The insights of this study may be used to inform COVID-19 vaccination strategies Source	

	• Securing and distributing a reliable supply of vaccines and ancillary supplies
	  ○ National purchasing
	  ○ Distribution within country and to administration sites
		• 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)

	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines
	  ○ Target of intervention
	  ▪ General public
	  ○ Content of messaging
		• The purpose of this randomized controlled trial was to improve the timely uptake of infant vaccines through investigating the effectiveness of a tailored vaccination programme, titled "Vaccines and Your Baby (VAYB)" on new parents	Published 5 November 2020

Type of document	Relevance to question	Key findings	Recency or status
	▪ Data and evidence about safety and about effectiveness in terms of both protection against COVID-19 and protection against transmission ▪ Myths and misinformation about vaccines	• Tailored intervention programs are meant to provide individuals with information that specifically addresses their attitudes and beliefs surrounding vaccination • All participants enrolled in this study were asked to take a pre-intervention survey, with the purpose of gathering information regarding participant "demographics, vaccination values, intentions to vaccinate, and vaccine attitudes and concerns" • The information gleaned from this survey was used to select content to be displayed on the VAYB platform for participants in the intervention, or VAYB group • Participants were also asked to complete the "Parent Attitudes About Childhood Vaccines short (PAC-short)," a validated screening instrument to assess vaccine hesitancy • The study population was divided based on those who were deemed "vaccine hesitant" versus "non-hesitant" • Stratified randomization to the three study arms took place within these two defined groups • The three study arms were defined as follows: o VAYB Group: participants in the VAYB group were given access to a Web-based, tailored vaccination program which provided them with information specifically targeting their attitudes and beliefs surrounding childhood vaccination o UT Group: participants in the UT group received an untailored version of the intervention. They had access to the VAYB platform, but the content of the site remained constant throughout the course of the intervention and was not tailored based on their survey responses	

Type of document	Relevance to question	Key findings	Recency or status
		○ UC Group: participants in this group received usual care • The primary outcome was defined as "up-to-date status for recommended vaccines from birth to 200 days of age" • The results of this study found there to be no positive impact with respect to the use of a tailored messaging intervention on the timely uptake of infant vaccines • However, a sub-group analysis revealed that among participants who were deemed vaccine hesitant, the UT intervention appeared to be more effective at promoting vaccine uptake than the VAYB intervention • The authors hypothesized that this may be the result of the information provided to participants in the VAYB group being limited Source	
	• Allocating vaccines and ancillary supplies equitably ○ Approaches to developing and adjusting allocation rules	• 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)
	• Communicating vaccine-allocation plans and the safety and effectiveness of vaccines ○ Target of intervention ▪ General public ○ Content of messaging ▪ Data and evidence about safety and about effectiveness in terms of both protection	• This study aimed to evaluate the content that is being covered on YouTube videos related to the COVID-19 vaccine • The keywords, "COVID-19 vaccine" were searched on YouTube and the 100 most viewed videos were selected for inclusion in this study	Published 28 June 2020

Type of document	Relevance to question	Key findings	Recency or status
	against COVID-19 and protection against transmission ▪ Myths and misinformation about vaccines	• The content of the included videos was evaluated using 12 categories, including but not limited to: "1) vaccine development process, 2) vaccine development being fast-tracked, 3) time required to develop a vaccine," etc. • Key findings of this study included: o Approximately 75% of the videos included were created by news sources, 16% were uploaded by consumers, and 11% were uploaded by professionals o While only 16% of the included videos were uploaded by consumers, they represented over 25% of total views o Some of these videos were found to contain misinformation regarding the COVID-19 vaccine as well as anti-vaccination sentiment o Videos containing vaccine misinformation accounted for 8% of cumulative views • The authors of this study suggest that public health officials make use of YouTube as a platform and begin disseminating videos related to the safety and effectiveness of the COVID-19 vaccine, and doing so would be an effective way to reach millions of viewers with evidence-based information, ultimately assisting individuals with making an informed decision regarding vaccine uptake Source	
	• Administering vaccines in ways that optimize timely uptake • With what safety monitoring requirements	• This article analyzed the contributions of two active, pediatric hospital-based sentinel networks: o The Canadian Immunization Monitoring Program, Active (IMPACT) established in 1991 o 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
		more than one condition to play multiple roles in informing public-health policy and responding to public-health emergencies (e.g., COVID-19) Source	

	• Administering vaccines in ways that optimize timely uptake
	  ○ With what broader, complementary health interventions
	• Surveillance, monitoring and evaluation, and reporting
	  ○ Identifying and measuring performance indicators
		• Four distinct archetypes of older adult immunization decision-making and implementation in 32 high-and-middle-income countries and two territories were identified
		  ○ 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
		  ○ 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
			Published 27 May 2020

Type of document	Relevance to question	Key findings	Recency or status
		○ 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	
	• Administering vaccines in ways that optimize timely uptake ○ With what broader, complementary health interventions	• 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
	• Administering vaccines in ways that optimize timely uptake ○ With what injury-compensation program (for vaccine recipients) and liability immunity (for vaccine distributors, planners and administering staff)	• Of 1,236 American physicians who were actively seeing children as patients, 85% were aware of the Vaccine Injury Compensation Program and 41% of those felt it provided a high level of litigation protection • Physicians' likelihood of encouraging vaccination to argumentative parents was higher among physicians with lower levels of litigation concern • Physicians' likelihood of encouraging vaccination to argumentative parents was not affected by awareness of the Vaccine Injury Compensation Program Source	Published January 1998

Appendix 3: COVID-19 vaccine roll-out elements from other countries

Country	Securing and distributing a reliable supply of vaccines and ancillary supplies	Allocating vaccines and ancillary supplies equitably	Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	Administering vaccines in ways that optimize timely uptake	Surveillance, monitoring and evaluation, and reporting
Australia	• On 7 January 2021, the Australian Government released its COVID-19 Vaccine National Rollout Strategy, which outlines the targeted number of doses to be administered during each phase: o Phase 1A: 1.4 million o Phase 1B: 14.8 million o Phase 2A: 15.8 million o Phase 2B: 16 million o Phase 3: 13.6 million • Australia has partnered with the University of Oxford/AstraZeneca, Novavax, Pfizer/BioNTech, and COVAX Facility to secure a range of COVID-19 vaccine supply o Australia has secured an estimated 53.8 million doses of the University of Oxford/AstraZeneca vaccine – 3.8 million doses will be imported, while the remaining 50 million will be manufactured	• The COVID-19 Vaccine National Rollout Strategy highlights the priority populations for each of the five phases: o Phase 1A: quarantine and border workers, front-line healthcare workers, and aged-care and disability staff/residents o Phase 1B: older adults aged 70 years and over, other health care workers, adults with pre-existing conditions, high-risk workers (e.g., fire, police, and meat processing staff), and Aboriginal and Torres Strait Islander people o Phase 2A: Adults between 50-69 years of age, Aboriginal and Torres Strait Islander people, and other high-risk workers o Phase 2B: the remaining adult population	• To inform residents, the Government of Australia will be promoting an educational campaign on its COVID-19 vaccination program o This campaign will include medical experts discussing vaccine roll-out, priority populations, and projected timelines o This will be aimed towards priority groups, culturally diverse groups, and Aboriginal and Torres Strait Islander people	• In addition to residential disability and aged-care facilities, a total of 30-50 hospital sites will serve as centres (i.e., Pfizer Hubs) for vaccine administration • According to the Australian COVID-19 Vaccination Policy published on 13 November 2020, future vaccine administration sites may include general practice clinics, general practitioner respiratory clinics, and pharmacies	• All successfully administered COVID-19 vaccinations will be documented into reporting and monitoring systems (e.g., Australian Immunisation Register and My Health Record) • The Australian Government has partnered with Accenture to develop a monitoring program for COVID-19 vaccines

	domestically by CSL Behring ○ The government has secured 51 million doses of the Novavax vaccine, which will be manufactured and imported internationally from Europe ○ Australia has secured 10 million Pfizer/BioNTech vaccine doses, which will be manufactured and imported from the United States, Belgium, and Germany • On 24 December 2020, the government announced that DHL Supply Chain and Linfox will lead the COVID-19 vaccine distribution in Australia, which will be required to track the temperature of the vaccines and manage ancillary supplies (e.g., needles, syringes, and personal protective equipment)	○ Phase 3: residents younger than 18 years of age			
China	• China has established and implemented whole-process traceability systems for COVID-19 vaccines, including in-out inventory registration,	• China implemented a two-step strategy for COVID-19 vaccination ○ The first step is the vaccination of priority populations, including	• On 7 January 2021, China CDC issued the 30 questions and answers about COVID-19 vaccines, covering the vaccine-	• The government of China has implemented the current vaccination systems and regulations for	• The Vaccine Administration Law of the People's Republic of China indicates that the state shall implement

	production, transportation, storage and administration, and to ensure the supply of vaccines through various methods such as precise deployment, accelerated turnover, and matching demand according to the vaccine plan of each province • The pricing of COVID-19 vaccines is developed by vaccine industry based on the attributes of public products and the related costs, and the China government will purchase the COVID-19 vaccines and provide to the public for free • As COVID-19 vaccines are put into use in China, the government will make the vaccine a global public product and supply the vaccines to the world at a fair and reasonable price • Given the availability and affordability of COVID-19 vaccines in developing countries, the government of China will consider providing vaccines in a variety of ways, including donations and unpaid assistance, based on specific circumstances	the workers in the cold-chain industry, port inspection and quarantine, ship piloting, aviation, public transport, fresh markets, healthcare settings, and those who plan to work or study in countries and regions with medium or high risk of COVID-19 infection ○ With COVID-19 vaccines officially approved to enter the market or the yield of vaccines improving steadily, the second step is to put more vaccines into use, inoculating the eligible population as widely as possible, with priority for the elderly and high-risk populations with underlying diseases	allocation plans, vaccination mechanism, effectiveness and safety, current vaccine options, vaccination locations, vaccine-administration protocols, contraindications, adverse events following immunization, transportation and storge, monitoring and documentary, behaviours after vaccination, and risk-mitigation efforts • China's State Council Joint Prevention and Control Mechanism against COVID-19 held press conferences about COVID-19 vaccines separately on 20 October 2020, 19 December 2020, 21 December 2020, 31 December 2020, and 9 January 2021 to issue recent policies and progress updates about vaccines, and answer related questions	COVID-19 vaccines, including the production, transportation, storage, administration, and monitoring • For the vaccination of priority populations, the government will cover all the fees, including vaccine and vaccination costs • After conditional market authorization of COVID-19 vaccines, the government and health insurance fund will cover all the fees, and the reimbursements for other health practice will not be influenced • The administration of COVID-19 vaccines is carried out in vaccination sites that are approved by local health-administration departments ○ Generally, the vaccination sites	whole process electronic traceability systems for vaccines • After vaccine marketing, the vaccine production, transportation, storage and administration shall be recorded and the whole process traceability information, including vaccine types, manufacturers, dosage forms, formulation, batch numbers, expiration dates, and vaccination case records, shall be integrated into the electronic information system • The related vaccine laws have clear regulations on the monitoring, reporting and handling of adverse events following immunization

	• On 7 January 2021, the Chinese Center for Disease Control and Prevention (China CDC) issued the information on transportation, storage and handling best practices for COVID-19 vaccines ○ COVID-19 vaccines must be transported, stored, and handled under proper conditions to maintain the cold chain, and the specific requirements need to be referred to related vaccine laws and regulations, such as the Vaccine Administration Law of the People's Republic of China ○ During the transportation process, the vaccine-transportation institution shall monitor and record the temperature regularly to ensure that the vaccines are in the environment with the prescribed temperature, and when the vaccine is received, the receiving institution shall request and check the		• The government of China disseminates information about COVID-19 vaccines through popular social media, such as WeChat	are set up in the health service centres, township health centres or general hospitals in the jurisdictions ○ For the enterprises and organizations where the priority populations are concentrated, the temporary vaccination sites will be set up ○ The information on vaccination sites (locations and time) will be issued by local health administrative departments or disease prevention-and-control agencies ○ The enterprises and organizations of priority populations will assist the appointment and administration of vaccination ○ Until 9 January 2021, China has set up a total of	

	temperature-monitoring record ○ During the vaccine-storage process, the CDC institutions and vaccination sites shall monitor the temperature of the refrigerators storing the vaccines, and measure and record the temperature twice a day (in the morning and afternoon, with an interval of not less than six hours) • During the vaccine loading and distribution process, the vaccination sites shall use refrigerators and freezers (or freezer bags) to store the vaccines, close their doors (or covers) in a timely way, and limit the number of times the vaccine storage-unit doors are opened			25,392 vaccination sites • During the vaccination process, the recipients should pay attention to and cooperate with the following aspects: ○ Before vaccination, recipients should know the knowledge related to COVID-19 and its vaccines, vaccination process ○ At the time of vaccination, recipients need to bring identification documents, and wear personal protection equipment according to local prevention and control requirements, and truthfully provide information such as health status and vaccination contraindications ○ After vaccination, recipients should stay for 30	

				minutes, keep the skin of the vaccination area clean and avoid scratching; if there is a suspected adverse reaction, immediately report to the vaccination institution and seek medical advice ○ After vaccination, wearing masks is recommended, especially in public and crowded settings; other protective measures such as hand hygiene, ventilation, and social distancing need to be maintained	
France	• France has been allocated a total of 200 million vaccine doses through partnerships secured by the European Commission • Distribution of BioNTech/Pfizer vaccines to administration sites follows one of the following processes:	• Based on the recommendations set forth by the French National Authority for Health, the Ministry for Solidarity and Health announced its vaccine strategy, which outlines a three-phase approach for vaccine allocation:	• On 9 November 2020, the French National Authority for Health issued a press release which stressed the importance of transparency among the general public in the vaccination-campaign process	• The two-dose BioNTech/Pfizer vaccine is only to be administered by nurses and physicians, and the second dose will be administered after 21 days • COVID-19 vaccinations require	• Public Health France has stated that the vaccination campaign will be coupled with publicly available surveillance, monitoring and evaluation indicators ○ Surveillance systems will be updated to help

	○ Delivery from the production plant to one of 11 private platforms capable of storing the vaccine at -80°C. Vaccines are then transported to pharmacies and institutional care facilities (e.g., long-term care) for use, or ○ Direct delivery to one of 100 hospitals in the country that can safely store and administer them • Ancillary supplies were mass ordered prior to the arrival of the COVID-19 vaccine ○ Pharmacies and hospitals are responsible for delivering these supplies to institutional care facilities (e.g., long-term care homes) • It is projected that, during the first phase of the vaccine roll-out, an estimated 10,000 facilities may receive vaccines for use, with up to one million individuals being vaccinated	○ Priority groups in phase one include older adults, residents with disabilities, at-risk staff members in institutional care and healthcare workers ○ Phase two includes individuals aged 65 to 74 years ○ Phase three consists of other at-risk groups from within the population that have yet to be targeted (e.g., teachers and retail staff)		an appointment to be made at a select vaccination centre	track the percentage of individuals that have been vaccinated ○ Additional indicators, such as vaccine efficacy, vaccine-related opinions (e.g., vaccine intentions), and vaccine adherence will also be documented
Germany	• As of 6 January 2021, 367,331 German residents have been vaccinated	• The top-priority group to receive vaccines at the initial stage include:	• A Communications Management Committee has been	• Vaccines are administered in vaccination centres	• According to the National COVID-19 Vaccination Strategy,

	• If all vaccine candidates are approved for use, Germany will have secured a total of 300 million vaccine doses
	  ○ 85 million doses of the BioNTech/Pfizer COVID-19 vaccine are expected to be available by the end of the year
	  ○ Two million doses of the Moderna vaccine are expected to be received by the end of the first quarter
	  ○ 670,000 vaccine doses are expected to be distributed each week over the course of the year
	• Distribution of the BioNTech/Pfizer vaccine to federal states is based on the proportion of the population that reside in those regions
	  ○ BioNTech will deliver the vaccine to one of the designated delivery centres, from where it will then be distributed to regional vaccination centres for administration
	• In collaboration with BioNTech/Pfizer, the Government of Germany is focused on expanding
		○ Individuals aged 80 years and older
		○ Healthcare workers in intensive care, accident, and emergency units, and ambulatory services
		○ Staff/residents of pension, care and nursing homes
		○ Nurses who care for at-risk patients
		• The high-priority group follows second and consists of:
		○ Individuals aged 70 years or older
		○ At-risk individuals who may suffer a severe outcome (e.g., transplant patients and dementia)
		○ Close contacts of long-term care home residents
		○ Public order units in law enforcement
		○ Pregnant women
		○ Individuals living in homeless shelters
		• The third group includes:
		○ Individuals aged 60 years and older
		○ At-risk individuals (e.g., obesity, liver disease or autoimmune condition)
			established on the federal level to help disseminate information relating to vaccine development, roll-out, and timelines
			○ This committee will primarily be targeting priority groups including healthcare workers, vulnerable populations, and the general public
				and in care facilities by mobile teams during the centralized vaccination phases
				○ Federal states are responsible for managing the operations of vaccination centres and ensuring safe management of vaccines
				• When Germany transitions into a decentralized vaccination phase, administration sites may expand to include medical institutions and general-practitioner clinics
				• An individual who suffers damage from the COVID-19 vaccine will receive care in accordance with the Federal Supply Act
					the Robert Koch Institute will collate non-personal data from vaccinated individuals (e.g., age, sex, residence, place and date of vaccination, and vaccine details) into a web-based data portal
					• The Robert Koch Institute and Paul Ehrlich Institute will lead the surveillance and evaluation of COVID-19 vaccines
					• This will include monitoring:
					○ Vaccination rates by conducting online surveys
					○ Vaccine safety through routine pharmacovigilance, surveillance of pregnant women, short-term app-based cohort studies, and long-term hospital-based case-control studies
					○ Vaccine efficacy by using case reports
					○ Digital health data

	its production capacity by creating a new plant in Marburg by February 2021	○ Emergency medical-services staff (e.g., police officers and firefighters) ○ Staff in the education and judiciary sector ○ Staff in retail, the meat-processing industry and seasonal workers			
Israel	• Distribution of Pfizer/BioNtech COVID-19 vaccine started in December 2020, where the government received permission from the manufacturers to repackage doses into tens or hundreds per shipment (instead of 1,000 per shipment) in order to avoid waste and create safer mobilization of doses to remote areas • According to Health Minister, Yuli Edelstein, Israel entered vaccine procurement negotiations early in the pandemic • As of 11 January 2021, approximately 1.8 million out of nine million Israeli residents have received the first dose (including 72% of older adults, and residents in nursing homes and long-term care facilities) and have begun	• The Ministry of Health developed the COVID-19 vaccination policy and initially identified two priority groups ○ First-priority group consists of medical staff (hospitals, health funds, clinics, rescue organizations, national emergency pre-hospital medical and blood services organization) residents of mental healthcare, welfare, and senior institutions and their caregivers, adults aged 60 years and older and their caregivers, and individuals who are immunocompromised ○ Second priority-group includes people with increased risk of COVID-19 (e.g., chronic conditions), and high-exposure	• Current priority and eligible population groups receive text messages from their health maintenance organizations (HMO) (health services that are provided to every citizen through a universal, compulsory medical insurance plan) about information on booking an appointment (either by phone or through the HMO online portal) • The Ministry of Health's website provides information to the general public on vaccine roll-out, priority groups for vaccine, and safety and efficacy	• Roles and responsibilities for administering vaccines are organized according to the following: ○ Four HMOs for vaccinating older adults aged 60 or older and individuals with chronic conditions ○ National emergency services organizations for vaccinating nursing home residents ○ Hospitals and health insurers for vaccinating front-line health workers • Vaccination sites and portable immunization	• Israel has a single electronic medical record system that is shared and accessed by the four HMOs, which provided health data information to identify priority groups among all insured citizens

	to include adults aged 55 and older • Administration of second doses started on 10 January 2021 • Hospitals and medical facilities follow the distribution processes ascribed by their central health maintenance organizations (HMO)	groups (e.g., teachers, prisoners, first-response services) • To simplify the implementation process, the Ministry of Health revised the vaccination allocation to include all Israeli residents aged 60 or older and all health workers from December 2020 to February 2021, with vaccines available to all Israeli residents after this phase		stations in remote areas are designated by the Ministry of Health with assistance from the military and local authorities • The Ministry of Health plans to provide vaccinations 24/7, with health plans responding by recruiting nurses for vaccine administration • Approximately 150,000 Israeli residents are being vaccinated per day	
New Zealand	• Four pre-purchase agreements have been secured ○ 750,000 courses from Pfizer/BioNTech ○ Five million courses from Janssen ○ 3.8 million courses from the University of Oxford/AstraZeneca ○ 5.36 million courses from Novavax • The government has secured enough vaccine doses to vaccinate the entire population of New Zealand as well as the Pacific Islanders	• New Zealand has prepared three different scenarios for vaccine roll-out based on the level of transmission present within country at the time of the roll-out • The allocation plan illustrates that the higher the rate of transmission present, the more the allocation focus will be on close contacts of the infected and people most vulnerable to exposure • The Ministry of Health is working in partnership with the Māori and Pacific neighbours to	• Information on the COVID-19 vaccine strategy and roll-out updates are posted on the New Zealand government's official website	• There are over 12,000 health professionals ready to administer vaccines and more that will be trained	• The National Immunisation Register is being replaced by the National Immunisation Solution to allow health workers to record vaccinations anywhere, anytime, and to fully support the COVID-19 roll-out

	• An inventory management system is being developed for COVID-19 vaccines that will store data on where vaccines are allocated, their volumes, temperatures, and expiration dates to minimize wastage • The Ministry of Health has purchased enough freezers to store more than 1.5 million doses of the Pfizer BioNTech vaccine • No COVID-19 vaccines have been approved as yet in New Zealand	plan for their rollout programs • First priority for vaccination are border workers, the COVID-19 front-line healthcare workers and their household contacts, with the expected timeline for vaccination of this group being the second quarter of 2021 • The aim of New Zealand's government is to start vaccinating the general public in the second half of 2021 • Everyone in the country will have access to COVID-19 vaccines free of charge			
U.K.	• A U.K. Government Vaccination Taskforce was established in April 2020, and the task force signed deals to buy vaccines from multiple developers and suppliers • The task force also expanded the U.K.'s vaccine manufacturing capability to further increase vaccine production • According to a news report, the U.K. has ordered 100 million doses of the Oxford vaccine and	• In December 2020, the United Kingdom Government released advice on priority groups for COVID-19 vaccination, which reported that vaccination priorities should be the prevention of COVID-19 mortality, and the protection of health and social-care staff and systems • Secondary priorities should include vaccination of individuals at increased	• The U.K. government released a vaccine-delivery plan that stated that they are working at the national, regional and local levels to establish partnerships with authorities, communities, healthcare staff and patients to ensure that accessible information is available to the public • It are also working to ensure that local	• Three types of vaccination sites have been established: 1) vaccination centres using large-scale venues such as football stadiums; 2) hospital hubs; and 3) local vaccination services, using primary-care services and pharmacy teams • In largely rural areas, vaccination centres will be a mobile unit	• Adverse events and safety concerns following COVID-19 vaccine administration should be reported to the Medicines and Healthcare Products Regulatory Agency using the established Coronavirus Yellow Card reporting scheme

	40 million doses of the Pfizer vaccine, which together is enough to vaccinate the entire population • As of 16 January 2021, the total number of vaccinations administered in the UK, including both first and second doses, is 4,006,440	risk of hospitalization and increased risk of exposure, and to maintain resilience in essential services. • The order of priority of COVID-19 vaccination is: 1) residents in a care home for older adults and their carers; 2) all those aged 80 and over and front-line health and social-care workers; 3) all those 75 years of age and over; 4) all those 70 years of age and over and clinically extremely vulnerable; 5) all those 65 years of age and over; 6) all individuals aged 16 to 64 with underlying health conditions which put them at a higher risk of serious disease and mortality; 7) all those 60 years of age and over; 8) all those 55 years of age and over; and 9) all those 50 years of age and over	implementation plans are tailored to support all individuals	• To ensure that there is a sufficient workforce to deliver the vaccination program, changes to the Human Medicines Regulations now permit non-registered healthcare professionals to administer the COVID-19 vaccine	
U.S.	• The Department of Health and Human Services (HHS) and the Department of Defense (DoD) jointly lead a vaccine production and distribution strategy called	• The CDC provided recommendations to federal, state and local governments about who should receive COVID-19 vaccines first based on recommendations from the Advisory	• The Operation Warp Speed COVID-19 Vaccine Distribution Strategy, released on 16 September 2020, had a primary focus of engaging with partners,	• OWS's COVID-19 vaccine distribution process utilizes existing networks, partnerships and processes to provide access to vaccines across the United	• The CDC, FDA and other federal partners have many existing systems and data sources to facilitate continuous safety monitoring of vaccines

	Operation Warp Speed (OWS) ○ Its main goal is to deliver 300 million doses of safe and effective vaccines ○ Actions supporting OWS include HHS funding development and manufacturing of vaccine candidates, securing agreements to acquire vaccine doses, and building manufacturing capacity for successful vaccine candidates ○ DoD is partnering with the Centers for Disease Control and Prevention (CDC) and other parts of HHS to coordinate supply, production and distribution of vaccines • HHS announced several agreements with various vaccine-candidate developers in exchange for securing doses pending FDA approval ○ On 21 May 2020 HHS announced up to $1.2 billion in support for AstraZeneca's candidate vaccine in exchange for 300 million doses made	Committee on Immunization Practices (ACIP) ○ On 1 December 2020, ACIP recommended that healthcare personnel and long-term care facility residents be vaccinated first (Phase 1a) • A subsequent update on 20 December 2020 recommended that Phase 1b include persons aged 75 or older and non-healthcare front-line essential workers, and that Phase 1c, include persons aged 65-74 years, persons aged 16-64 with high-risk medical conditions, and other essential workers not covered in Phase 1b	stakeholders, and the public to improve vaccine confidence and uptake • CDC updates and disseminates information about vaccine safety, effectiveness, allocation strategy and distribution process for the general public, as well as additional information for healthcare professionals	States as safely and quickly as possible • The U.S. Food and Drug Administration (FDA) issued an emergency use authorizations (EUA) for the use of the Pfizer-BioNTech Covid-19 vaccine in persons 16 years of age and older on 11 December 2020, and for the use of the Moderna COVID-19 vaccine in persons aged 18 years of age and older on 18 December 2020 • The Pfizer-BioNTech and the Moderna COVID-19 vaccines are being allocated across states and jurisdictions, that follow procedures for ordering first- and second-dose allocations	• The CDC and FDA have also expanded safety monitoring systems and strategies have been developed as an additional layer of safety monitoring to evaluate COVID-19 vaccine safety in real time • These additional strategies include a smartphone-based, post-vaccine health checker for those who have received COVID-19 vaccines called V-safe, which uses text messaging and web surveys from CDC to check in with vaccine recipients as well as provide second dose reminders if needed ○ They also include the CDC's National Healthcare Safety Network (NHSN), an acute and long-term care facility monitoring system, and the FDA monitoring other large insurer/payer databases to

	available for the United States o On 7 July 2020 HHS announced $1.6 billion in funds for large-scale manufacturing of the vaccine candidate by Novavax in exchange for 100 million doses o On 22 July 2020 HHS announced up to $1.95 billion in funds to support the large-scale manufacturing of Pfizer's vaccine candidate in exchange for 100 million doses o On 31 July 2020 HHS announced $2 billion in support of the development and large-scale manufacturing of GlaxoSmithKline's vaccine in exchange for 100 million doses o On 5 August 2020 HHS announced $1 billion in funds to support large-scale manufacturing and delivery of Johnson & Johnson's (Janssen) vaccine candidate in exchange for 100 million doses with the option to acquire more o On 11 August 2020 HHS announced up to				facilitate claims-based data

	\$1.5 billion to support large-scale manufacturing and delivery of Moderna's vaccine candidate in exchange for 100 million doses of the vaccine with the option to purchase more ○ On 11 December 2020 HHS announced an additional 100 million doses through an agreement with Moderna with the option to acquire up to an additional 300 million doses As of 15 January 2021, CDC reports that 31.16 million doses of COVID-19 vaccinations have been distributed and 12.28 million doses have been administered				

Appendix 4: COVID-19 vaccine roll-out elements from Canadian provinces and territories

Province/ territory	Securing and distributing a reliable supply of vaccines and ancillary supplies	Allocating vaccines and ancillary supplies equitably	Communicating vaccine-allocation plans and the safety and effectiveness of vaccines	Administering vaccines in ways that optimize timely uptake	Surveillance, monitoring and evaluation, and reporting

Pan-Canadian	• As of 14 January 2021, Canada has received 765,100 vaccines which includes 588,900 Pfizer/BioNTech vaccines and 176,200 Moderna vaccines
	• As of 18 January 2021, 71.8% of vaccination doses delivered to Canada have been administered
	• Through advance purchasing agreements with seven companies developing COVID-19 vaccines, Canada has secured enough doses for all Canadians who wish to be vaccinated
	  ○ The doses were secured on the advice of the COVID-19 Vaccine Task Force
	• An immunization National Operations Centre within the Public Health Agency of Canada was established as the federal logistical coordination entity for managing COVID-19 vaccine delivery and
		• On 12 January 2021, the National Advisory Committee on Immunization (NACI) issued a statement outlining their most up-to-date recommendations to help guide the COVID-19 vaccine response in Canada
		• In November 2020, NACI released its initial Preliminary guidance on key populations for early COVID-19 immunization report to inform planning for the efficient, effective and equitable allocation of COVID-19 vaccines upon authorization for use in Canada
		  ○ Key populations identified included those at high risk for severe illness or death, those most likely to transmit to those at high risk, essential workers, and
			• In December 2020, the Public Health Agency of Canada released a report stating that federal, provincial and territorial governments are required to provide ongoing access to comprehensive, accurate and clear information about COVID-19 vaccines and immunization plans in partnership with First Nations, Inuit and Metis leaders, health professionals and other stakeholders
			• NACI recommends making further communication efforts (e.g., cultural and linguistically diverse educational resources) to help improve the relay of vaccine information and establish transparency with the general public
			• The Government of Canada's Planning
				• The Government of Canada's Planning guidance for administration of COVID-19 vaccine states that all provinces and territories are responsible for developing processes and preparing their health systems and providers to allocate, deliver, store, distribute and administer vaccines	• The Government of Canada's Planning guidance for administration of COVID-19 vaccine states that the safety approach will build upon the systems in place for monitoring other vaccines
					• Post-marketing surveillance will be undertaken by the Public Health Agency and Health Canada through the following mechanisms:
					  ○ Canada Vigilance Program, which collects and assesses reports of suspected adverse reactions to the vaccines from manufacturers and from healthcare providers,

	collaboration with provinces and territories for vaccine distribution ○ The National Operations Centre is supported by a national team of experts and the Canadian Armed Forces ○ The National Operations Centre has 14 vaccine delivery sites across Canada, and FedEx Express Canada and Innomar Strategies are positioned to support the National Operations Centre with vaccine distribution • The Government of Canada is responsible for securing storage facilities and ancillary supplies ○ A total of 75 million immunization supplies have been secured (e.g., syringes, needles, gauze, and sharps containers) ○ A total of 422 freezers have been purchased	those living or working in conditions with elevated risk for infection • On 18 December 2020, NACI recommended to further sequence its initial subset of key populations using a stage-based approach ○ Stage 1 includes residents/staff of care facilities, adults aged 70 and older (priority will initially be given to those over 80 years of age until supply increases), front-line healthcare and personal-support workers, and at-risk adults in Indigenous communities ○ Stage 2 includes essential workers, other healthcare professionals, and remaining congregate facility residents/staff (e.g., homeless shelters and correctional facilities) • NACI recommends planning the efficient and equitable distribution of COVID-19 vaccines in accordance with the	guidance for administration of COVID-19 vaccine states that multiple strategies, such as local and ethnic media and social media, should be used to provide vaccination information, and that tailored approaches are needed for vulnerable populations ○ Indigenous Services Canada (ISC) is developing resources to guide vaccination delivery, messaging and education • The report also states that outreach should be provided to healthcare providers, and the healthcare sector should be involved in vaccine communication efforts		patients and their families ○ Canadian Adverse Events Following Immunization Surveillance System, which is a post-market vaccine safety monitoring system ○ Immunization Monitoring Program ACTive (IMPACT) network, which monitors for adverse effects from vaccines, vaccine failures and vaccine-preventable diseases ○ External networks such as the Canadian Immunization Research Network will also be involved in the COVID-19 vaccine safety initiatives • The Canadian Vaccine Safety Network, which assesses vaccine

		established sub-prioritization of key populations ○ Under specific circumstances (e.g., when excess doses remain after immunizing all stage one groups in a facility), NACI acknowledges the benefit in vaccinating on-site stage-two populations in lieu of transporting remaining doses to another facility with stage-one individuals to avoid the risk of wastage during delivery • The Government of Canada's Planning guidance for administration of COVID-19 vaccine document stated that vaccines for second doses will be allocated at the same time as the first-dose quantities to ensure sufficient supply for the second dose at the appropriate interval after the first dose.			safety in various age groups following vaccinations • The Special Immunization Clinics Network, which manages patients with adverse events following immunizations
British Columbia	• In January 2021, British Columbia's Centre for Disease Control released a	• The Government of British Columbia reported that it is	• ImmunizeBC has provided evidence-based immunization	• The first phase of COVID-19 vaccine administration, which is	• British Columbia's Centre for Disease Control reported

	plan for vaccine distribution which stated that the province is preparing for a range of COVID-19 vaccines with varying distribution methods • British Columbia is actively preparing for these vaccines by securing freezer capacity • Health Officials in British Columbia reported that a total of 792,695 vaccine doses are expected to be received by the end of March 2021 • Health Officials also reported that between February and March an average of 68,400 doses are expected to be administered per week, between April and June an average of 203,077 doses are expected to be administered per week, and early indications suggest that between July and September 471,538 doses will be administered per week	working closely with the Provincial Health Services Authority, First Nations Health Authority, Health Emergency Management BC, Canadian Red Cross and Canadian Armed Forces to prepare a system that is ready to receive and distribute all vaccine types as they become approved and available • British Columbia's Centre for Disease Control released a plan for vaccine distribution which stated that the first groups to be vaccinated will be residents, staff and essential visitors to long-term care residents; individuals waiting for a long-term care placement; healthcare workers providing care for COVID-19 patients; First Nations communities in remote and isolated locations • The vaccinationprogram will then expand to include community-based seniors; individuals experiencing homelessness or using	and tools specific to COVID-19 for residents of British Columbia • British Columbia's Centre for Disease Control reported that when the vaccine becomes available for the public, information will be shared widely	of the priority populations, is occurring at public-health clinics • Once the larger public immunization begins, a notice from the British Columbia Pharmacy Association reported that community pharmacists will be involved to ensure timely uptake and administration	that they will closely monitor COVID-19 vaccine safety, uptake and effectiveness • Vaccine providers in British Columbia are asked to refer to the B.C. Centre for Disease Controls' reporting adverse events following immunization resource

		shelters; adults in group homes or mental health residential care; long-term care home support recipients and staff; hospital staff, community physicians and medical specialists; Indigenous communities not vaccinated in the first stage			

Alberta	• As of 14 January 2021, Alberta has received 84,175 doses of COVID-19 vaccines from the Government of Canada
	  ○ 67,275 doses of the Pfizer/ BioNTech vaccine
	  ○ 16,900 doses of the Moderna vaccine
	• Alberta is forecasted to receive 24,600 doses of Moderna vaccine the week of 1-7 February and 27,000 doses the week of 22-28 February 2021
	• Forecasted allocations for the Pfizer-BioNTech vaccine are being updated
	• As of 16 January 2021, Alberta has administered 85,935 doses of COVID-19 vaccines (note that the numbers reported did not align with those on the Government of Canada's website, but the dates in
		• Alberta began distributing vaccines in December 2020 in phases with a focus for the first part of phase 1 on workers and residents of acute-care sites in Edmonton and Calgary with the highest COVID-19 concerns (e.g., front-line healthcare workers and residents of long-term care homes)
		• Seniors 75 years and older as well as First Nations and Métis populations will be prioritized for the second part of phase 1 beginning in February 2021
		• Decisions will be made in 2021 on vaccine distribution for phase 2 groups
			• Alberta Health Services (AHS) has a list of frequently asked questions on its website about COVID-19 vaccination, and a webpage with information on what individuals need to know about COVID-19 vaccination	• COVID-19 immunization facilities will be designated by AHS in congregate-care settings
				• The AHS will collaborate with Indigenous Services Canada to designate congregate-care services on reserve
				• Alberta Health Services has an online booking tool for eligible healthcare workers to book immunization appointments
				• Eligible healthcare workers will receive an email with a link to book their immunization appointment online
				• Alberta's guideline for COVID-19 vaccination provides advice for individuals who may
					• Alberta's Immunization Regulation requires health practitioners to report immunizations electronically to Alberta Health within a week, effective 1 January 2021
					• Adverse events following immunization (AEFI) are reported to Alberta Health and Alberta Health Services and posted on Alberta's COVID-19 vaccine distribution website

	which they were reported on the respective websites were different) • The Alberta government has a policy describing the requirements for storing and handling the Pfizer BioNTech and Moderna vaccines, as well as vaccines that require storage between 2C and 8C			experience reactions after immunization, including calling a Health Service hotline • The guideline also describes infection prevention-and-control measures for vaccination venues and healthcare practitioners, including frequent disinfecting and use of PPE • Alberta will be administering second doses of the COVID-19 vaccine within 42 days after the first dose	
Saskatchewan	• As of 14 January 2021, Saskatchewan has received 24,400 doses of COVID-19 vaccines from the Government of Canada o 19,500 doses of the Pfizer BioNTech vaccine o 4,900 doses of the Moderna vaccine • Saskatchewan is forecasted to receive 6,500 doses of Moderna vaccine the week of 1-7 February, and 7,100 doses the week of 22-28 February 2021 • Forecasted allocations for the Pfizer-BioNTech vaccine are being updated	• Saskatchewan's vaccine-distribution framework prioritizes front-line healthcare workers, long-term care residents and staff, residents over age 70, and residents over age 50 living in remote/northern Saskatchewan • These groups began receiving vaccines on 22 December 2020 based on a Pfizer vaccine delivery schedule of 10,725 doses per week • Allocations of the Moderna vaccine have been allocated to the Far	• The Saskatchewan government provides weekly public briefings, COVID-19 news releases, and a number of resources on its website about COVID-19 vaccines and distribution • The Saskatchewan plan indicates that the government's communication focuses on vaccine safety, accurate immunization information, prioritization of vaccination groups, and the importance of	• Vaccines were administered at Regina General Hospital in the pilot phase • In phase 1, vaccines will be administered at long-term care and personal-care homes • During phase 2, vaccines will be administered at mass-vaccination clinics • The Saskatchewan government intends for vaccines to be administered by physicians, nurse practitioners, and pharmacists in phase 2	• Measures have been taken to ensure that Saskatchewan's immunization administration system, Panorama, can record, store and manage COVID-19 vaccination records and enable reminders for second-dose follow-ups • The Saskatchewan government reports on the number of vaccine doses

	• As of 17 January 2021, 20,159 doses have been administered in Saskatchewan
	  ○ 18,407 first doses
	  ○ 1,752 second doses
	• On 15 December 2020 Saskatchewan conducted a pilot of the administration of 1,950 doses of the Pfizer BioNTech vaccine to healthcare workers
	• For the pilot, all vaccine doses were transported to and administered at Regina General Hospital
	• Phase 1 of vaccine distribution began on 22 December 2020 in priority populations, including the Far North
	• Phase 2 is anticipated to begin in April 2021
		North Region of Saskatchewan
		• The goal of the Saskatchewan government is for all residents being vaccinated during phase 2 to be able to access vaccines where they live and work
		• There is no indication that vaccines will be made available through private means
			maintaining existing public-health measures	• Pilot vaccine recipients received their second dose 21 days later during phase 1
				• Saskatchewan's immunization system, Panorama, will be updated to set reminders for second-dose follow-ups
					administered by zone on its website

Manitoba	• As of 6 January 2021, Manitoba received 22,320 doses of the Pfizer vaccine and had immunized 5,165 people • The province states it expects to receive Pfizer vaccine shipments every week, but will maintain some buffer supplies in case of supply fluctuations • The province forecasts vaccinating 2% of the population by the end of	• Manitoba established a trilateral table on vaccine planning, including health experts, senior officials from Indigenous Services Canada, and the Canadian Armed Forces • In addition to the table, the province states there will be smaller fora established to advance priority issues and ensure dialogue to navigate prioritization	• Manitoba maintains a constantly updated webpage dedicated to outlining in detail the specific groups of people currently eligible to book an appointment and receive a vaccine • Eligible Manitobans can call a phone line between 6 a.m. and 8 p.m. to book a vaccination	• Due to logistical challenges, vaccination with the Pfizer vaccine is primarily occurring in Winnipeg • Manitoba plans for six modular and scalable models of vaccine delivery: a pilot site, supersites, focused immunization teams, pop-up/mobile sites, First Nations sites, and distributed delivery	• Manitoba participates in the Public Health Agency of Canada's Canadian Adverse Events Following Immunization Surveillance System • Reports of adverse events following immunization are received by regional Medical Officers of Health from providers and the

	January and 4% by the end of February • Based on planned expansions of capacity, and subject to vaccine availability, Manitoba predicts it could administer 1.8 million vaccinations by the end of April • The province secured more than 60 specialized freezers for the vaccination efforts, and by January should have the capacity to store 1.8 million doses	for First Nations on- and off-reserve • At the end of December 2020, vaccine allocation was focused on healthcare workers with patient contact in critical care, acute care, long-term care homes, and COVID-19 immunization and testing sites • Eligibility criteria for receiving a vaccine were expanded on 5 January 2021 to include more health and social-care workers, laboratory workers, and correctional facilities workers • The province is collaborating with First Nations groups to use the initial Moderna vaccine doses to address First Nations priorities, including vaccination in northern and remote communities	appointment at the supersite	• A 28-day campaign was launched to vaccinate all eligible personal-care home residents in 135 sites across Manitoba, using focused immunization teams who visit locations in all regional health authorities; this campaign uses the Moderna and Pfizer vaccines • Individuals working at personal-care homes are vaccinated at supersites using the Pfizer vaccine • Currently one supersite for vaccine storage, administration and logistics is in operation in Winnipeg, with the capacity to vaccinate thousands of people every week • A second supersite is set to open on 18 January 2021 in Brandon • The province is actively recruiting healthcare and non-healthcare staff to work in immunization clinics and offering a micro-credential course for people to expand their scope of practice to include administering the COVID-19 vaccine	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

Ontario	• As of 12 January 2021, over 144,000 people have received the Pfizer vaccine and over 8,000 have been fully vaccinated (received two doses) • There is a publicly available delivery schedule for the Pfizer vaccine indicating between 50,000 and 143,000 doses will arrive per week for the weeks of January and the first week of February • The province states its capacity to handle vaccination is double what the current vaccine supply is and could be ramped up significantly with minimal notice • The province has published vaccine storage and handling guidance for the Pfizer and Moderna vaccines including information regarding freezer setup, inspections, monitoring of storage equipment, vaccine transport, temperature excursion, and preparation for immunization clinics • Deliveries of the Moderna vaccine are expected every three weeks and are initially prioritized for long-term care and high-	• The provincial government's COVID-19 Vaccine Distribution Task Force, with input from the National Advisory Committee on Immunization, recommends vaccination for all individuals in authorized age groups without contradictions, but due to limited supply prioritization is initially given to certain groups • The vaccine distribution plan for deployment of the Pfizer and Moderna vaccines is divided into three phases • In Phase I, residents and workers in congregate-living settings that care for seniors, healthcare workers, adults in First Nations, Métis, and Inuit populations, and adult chronic home care recipients are prioritized • In Phase II, essential workers (such as first responders and teachers), older adults, at-risk individuals and their caregivers, those living and working in high-risk congregate settings, populations and communities facing	• The province has published vaccine administration guidelines and information packets for healthcare providers regarding the Pfizer and Moderna vaccines • The province maintains a website dedicated to COVID-19 vaccine safety • The province has published a 'What you need to know before your COVID-19 vaccine appointment' information sheet • The COVID-19 Vaccine After Care Sheet includes a section to note the time and date of a patient's second dose • The Centre for Effective Practice has developed the PrOTCT PLAN and other resources to aid in having discussions with patients about COVID-19 vaccination	• General guidelines for vaccination sites and priority populations served are available, but public-health units will determine how best to vaccinate various populations • Vaccine delivery began with, and continues at, hospital-site clinics • Public health-led mass-vaccination sites (including continued hospital sites) can provide vaccination with a focus on people eligible for vaccination due to their occupation (such as healthcare workers and essential workers), as well as most adults once eligible • On-site clinics can provide vaccination for remote communities, First Nations reserves, and adult chronic home care recipients • Primary care/pharmacy/public-health clinics can provide vaccination for populations prioritized due to biological factors (such as older age), and can provide vaccination	• The Pfizer and Moderna vaccine administration guidelines for healthcare providers include guidance regarding adverse events following vaccination • Adverse events following immunization are reported to Public Health Ontario and the Public Health Agency of Canada • In addition, health professionals are required to report adverse events to local public-health units who will investigate and provide support • Guidance has been published for managing healthcare workers with symptoms within 48 hours of receiving COVID-19 vaccination

	risk retirement home populations • Protocols have been established to move the Pfizer vaccine so it can be used in long-term care and high-risk retirement-home settings	barriers and at greater risk (e.g., Black and other racialized populations), and all adults (in decreasing five-year increments) are prioritized for vaccination • In Phase III, all remaining eligible Ontarians can be vaccinated • A First Nations and Indigenous sub-table was established under the provincial COVID-19 Vaccine Distribution Task Force • Plans are being made to begin vaccinations in fly-in First Nations communities, with the smallest and most remote being prioritized and ORNGE participating in the deployment • The principles underlying the province's Ethical framework for COVID-19 vaccine distribution include minimizing harms and maximizing benefits, equity, fairness, transparency, legitimacy and public trust		to all remaining eligible Ontarians in Phase III • Mobile sites can deliver vaccination to populations who need prioritization due to social or geographical factors, such as congregate-living settings, urban Indigenous populations, and racialized communities • Expanded delivery-site plans for January 2021 include adding seven additional hospital sites and two public-health units from which doses can be mobilized for long-term care and high-risk retirement-home populations • Toronto Public Health will open the first municipal vaccination site for front-line healthcare workers on 18 January 2021 • Expanded healthcare professionals (including nurse practitioners, registered nurses, registered practical nurses, pharmacists, pharmacy students and interns, and pharmacy technicians) are able to	

				register and apply to participate in vaccination efforts via Ontario's Matching Portal	

Quebec	• As of 14 January 2021, Quebec has received 162,175 doses of the vaccine and administered 115,704 doses
	• The province is targeting to administer 250,000 doses by 8 February 2021, when the current stage of confinement is set to end
	• The Ministry of Health and Social Services is responsible for the centralized distribution of vaccines
	• The ministry began with distribution of the Pfizer vaccine to more than 20 sites in December 2020
	• Weekly deliveries of Pfizer and/or Moderna vaccines are anticipated from January 2021 onwards
		• According to the Quebec Immunization Committee, five values underpin the choices and objectives of the COVID-19 vaccination campaign in the context of limited vaccine supply: beneficence, equity, justice, reciprocity, and non-maleficence
		• The prioritization of groups for vaccination is based on the following four factors: age, presence of risk factors, profession, and living situation
		• Twelve groups have been preliminarily identified to prioritize vaccine allocation
		  ○ The first priority group includes vulnerable people in long-term care, and intermediate-resources and family-type resources homes
		  ○ The second priority group includes health- and social-care
			• The provincial government maintains a webpage with information about COVID-19 vaccine safety, development, and roll-out plans for Quebec
			• The Ministry of Health and Social Services published vaccination campaign guidelines for healthcare workers to update workers on the priority-based allocation of vaccines, their responsibilities and roles during the vaccination campaign, and resources available to them
			• The Ministry of Health maintains a website dedicated to demystifying beliefs regarding the risks of vaccination
			• The Ministry of Health and Social Services has published a common questions and answers regarding the COVID-19 vaccination
				• COVID-19 vaccination distribution is being handled by the Quebec Immunization Program
				• The Public Health Ethics Committee has published a bulletin stating that mandatory vaccination of healthcare workers is not justifiable
				  ○ The Ministry of Health and Social Services has also confirmed that vaccination will not be mandatory
				• New groups of healthcare professionals have been authorized to administer influenza or COVID-19 vaccines during the health emergency period if they have received appropriate training from the ministry
				• The Ministry of Health and Social Services' digital learning environment includes training related to the
					• The Quebec Vaccination Registry is an electronic database that keeps track of all persons receiving vaccines in Quebec and all vaccines received by Quebec residents who may be out of the province
					• The Quebec Immunization Committee has recommended real-time and continuous monitoring of vaccine efficacy be conducted to make quick changes to plans, if needed
					• The Quebec Nosocomial Infections Committee has made recommendations and produced algorithms regarding how to

		workers who have patient contact ○ The third priority group includes people living in private retirement homes and others in similarly vulnerable living situations ○ The fourth priority group includes rural and remote communities, where people often have chronic illnesses ○ The fifth to seventh priority groups include people aged 80 years and over;, between 70 and 79 years of age, and between 60 and 69 years of age, respectively ○ The eighth priority group includes adults younger than 60 years of age who have a risk factor ○ The ninth priority group includes adults younger than 60 years of age without risk factors but who work in essential services ○ The tenth priority group includes the	campaign document intended for workers in the health- and social-care sectors	COVID-19 vaccination campaign • The Quebec Vaccine Injury Compensation Program compensates people who have experienced bodily injury due to vaccination; however, COVID-19 is not currently on the list of diseases involved (but the program details are noted as being updated)	manage patients and healthcare workers with symptoms following COVID-19 vaccination • Health professionals have been directed to immediately report the following adverse events to their local public health unit if there is any suspicion they may be associated with vaccination: ○ Events requiring medical attention or hospitalization ○ Events leading to permanent disability ○ Events that place patients' lives at risk ○ Events that lead to death

		rest of the adult population ○ The eleventh (children) and twelfth (pregnant women) priority groups are set aside for consideration given the uncertainties regarding vaccination in these populations • The Quebec Immunization Committee has recommended that, given the limited vaccine supply and high levels of virus circulation, one dose of the vaccine be initially given to all people in the first six priority groups ○ It recommends studying the level of lasting protection from one dose and determining if a second dose is to be given, or if additional doses are best allocated to other priority groups • The Ministry of Health and Social Services also issued a directive on 7 January 2021 to use available vaccine doses to immunize the greatest			

		number of people possible, and not save second doses • The Quebec Immunization Committee has recommended that close helpers of vulnerable people (residents of long-term care homes) not be included in initial priority groups (unless they belong to these groups for another reason); it recommends including them alongside essential service workers • The Quebec Immunization Committee has issued guidance regarding the following domains to support the COVID-19 vaccination campaign: o Minimum age for administering mRNA vaccines o Counter-indications and precautions for certain groups of people o Interchangeability of COVID-19 vaccines o Second-dose intervals o Interactions between mRNA vaccines and other products			

		○ Vaccination of people with confirmed COVID-19 infection ○ Clinical manifestations following vaccination			
New Brunswick	• On 14 December 2020, the first shipment of Pfizer BioNtech and Moderna vaccines arrived and the province received 1,950 doses • To ensure optimal storage of the vaccine new ultra-low freezer units have been delivered to regional hospitals • As of 11 January 2021, 7,732 doses have been administered and 1,862 people have been fully vaccinated ○ The approved vaccines for Canada require two doses to be administered up to four weeks apart	• The New Brunswick Ministry of Health created the COVID-19 Vaccine Rollout plan identifying priority groups and the time frame for when each group will receive the vaccine ○ December 2020 – March 2021 prioritizes long-term care residents and staff, healthcare workers with direct COVID-19 patient contact, adults in First Nations communities and older New Brunswick residents ○ Spring 2021 prioritizes residents and staff of other communal settings (homeless shelters, correctional centres), other healthcare workers including pharmacists and first responders, and critical infrastructure	• The New Brunswick Ministry of Health website provides information for the general public on the province's vaccine roll-out plan ○ Information sheets outlining how the Pfizer BioNtech and Moderna vaccines protect against COVID-19 are linked on the website ○ The website provides links for healthcare workers and the general public to Pfizer's official vaccine information site and Moderna's COVID-19 vaccination site	• The website provides vaccine after-care sheets for Pfizer BioNtech and Moderna offering information on what to do after receiving the vaccine • Immunization clinics follow the protocol set forth by the Government of Canada	• Vaccinated individuals receive a record of immunization

		workers (power, water and sewer) ○ In spring or summer 2021 the vaccine will be available to the remainder of the population			
Nova Scotia	• The first shipment of Pfizer BioNtech vaccines arrived on 15 December 2020. ○ The province received 1,950 doses • As of 5 January 2021, 2,700 doses have been administered to front-line healthcare workers and long-term care staff • Five storage sites have been developed with ultra-low freezers to store vaccines safely • During the first phase of the vaccination roll-out the province will be testing several distribution methods so that when larger amounts of the vaccine are delivered in phase two, the province will have established an efficient delivery method ○ The objective is to deliver approximately 10,000 doses per day	• The Nova Scotia Ministry of Health developed a vaccine-distribution strategy prioritizing groups throughout three phases ○ Phase one will run from January to April 2021 and will include front-line healthcare workers who are closely involved in the COVID-19 response, residents, staff and designated caregivers of long-term care facilities, residents and staff of residential-care facilities, adult residential centres and regional rehabilitation centres, seniors living in the community who are 75 years of age or older, healthcare workers (doctors, paramedics) who are in direct contact with patients	• The Government of Nova Scotia website provides information about the vaccine, how its citizens are being prioritized and the three-phase distribution program ○ The website links to the vaccines and treatments for COVID-19 page on the Government of Canada's website	• Dr. Robert Strang, Nova Scotia's chief medical officer of health stated that the province is looking into different models of community-based clinics to ensure the timely delivery of the vaccine	• To ensure the safe transport of the vaccine Dr. Robert Strang stated that preliminary tests were taken to determine the best possible methods for transporting the vaccine to confirm that it remained at a stable temperature

		○ Phase two will begin in May 2021 and will include remaining healthcare workers and essential workers ○ Phase three will begin in summer 2021 and will include individuals who were not prioritized in phase one or two			
Prince Edward Island	• The first shipment of Pfizer BioNtech vaccines arrived on 15 December 2020 ○ The province received 1,950 doses • The total doses of COVID-19 vaccine administered by 12 January 2021 was 4,226 (3,072 people have received one dose and 1,154 people have received two doses) ○ Those who received the vaccine were front-line healthcare workers with direct COVID-19 exposure and staff of long-term care facilities	• The Prince Edward Island Ministry of Health developed its COVID-19 vaccination distribution policy by identifying and prioritizing key populations • A three-phase plan has been put in place ○ Phase one will run between December 2020 and March 2021, and will include residents and staff of long-term and community care, healthcare workers at higher risk of COVID-19 exposure, seniors 80 years of age and older, Indigenous adults, residents and staff of other residential or shared-living facilities, and truck drivers and	• Information for the general public about the vaccination status, safety of the vaccine and the vaccination roll-out are provided on the Government of Prince Edward Island website ○ Information sheets regarding the Pfizer BioNtech and Moderna vaccine can be downloaded from the Prince Edward Island Government website	• Public-health nurses will administer the vaccine to individuals in phase one ○ Vaccinations are by scheduled appointments to ensure COVID-19 public-health measures remain in place ○ As more vaccines arrive, designated clinics will be set up across the province to ensure people are vaccinated quickly	• A telephone number was made available to the general public to answer any health-related questions about COVID-19

		other rotational workers ○ Phase two will take place between April 2021 and June 2021 and will include anyone in priority groups remaining from phase one, healthcare workers not included in phase one, seniors 70 years of age and older, and essential workers ○ Phase three will take place in summer and fall 2021 and will include anyone in priority groups remaining from phase two and the general public			
Newfoundland and Labrador	• The first shipment of Pfizer BioNtech vaccines arrived on 15 December 2020 ○ The province received 1,950 doses ○ Front-line workers with COVID-19 exposure were first to receive vaccination • As of 13 January 2021, 5,291 doses have been administered (3,796 have received one dose and 1,495 have received two doses)	• The Newfoundland and Labrador Ministry of Health developed a phased approach to administering the vaccine prioritizing specific populations ○ Phase one will include healthcare workers with high exposure to COVID-19, residents of long-term care facilities as well as long-term care staff, individuals 85 years of age and older, and	• The first shipment of Pfizer BioNtech vaccines arrived on 15 December 2020 ○ The COVID-19 immunization plan on the Government of Newfoundland and Labrador website provides information for the general public on the vaccines and vaccine administration and safety	• The COVID-19 immunization will be run by public-health nurses	• Vaccination after-care information sheets for the Pfizer BioNtech and Moderna vaccines can be downloaded from the Government of Newfoundland and Labrador website ○ Attached to each information sheet is an immunization record to be filled out after

	• The first shipment of the vaccine was sent to Eastern Health Hospital as it has an ultra-low temperature freezer to store the vaccine • Ultra-low freezers will be delivered to the three other hospitals so that the vaccine can be delivered	individuals living in remote and/or isolated Indigenous communities ○ Phase two will prioritize healthcare workers not included in phase one, residents of long-term care facilities as well as long-term care staff and essential workers ○ Phase three will include the general public	○ Information sheets outlining how the Pfizer BioNtech and Moderna vaccines protect against COVID-19 are linked on the website		receiving the vaccination
Yukon	• As of 28 December 2020, the Yukon has received 7,200 doses of the COVID-19 Moderna vaccine ○ During the first two weeks of January, vaccines were administered to staff and residents of long-term care homes based in Whitehorse ○ As of 4 January 2021, 310 residents of the Yukon have been vaccinated ○ As of 18 January 2021, COVID-19 vaccine clinics will be available to priority groups and residents of specific rural communities in the Yukon, and	• The Yukon COVID-19 Vaccine Strategy aims to vaccinate 75% of the adult population within the first three months of 2021 ○ Allocation will be determined in partnership with First Nation governments, municipal authorities and other stakeholders • Priority will be given to four key populations, including: ○ Staff and individuals residing in group-living settings for vulnerable groups or older adults ○ Individuals working in healthcare settings	• The Government of Yukon will provide accurate and updated information to Yukoners through news conferences and Yukon.ca updates ○ A public awareness campaign will also be coordinated through radio, news and social media	• The Government of Yukon's Department of Health and Social Services is the designated authority in delivering vaccines to Yukoners ○ Public and primary-care nurses, community health-centre staff, Health and Social Services' Emergency Preparedness team, Community Services' Emergency Measures Organization, Yukon Hospital Corporation staff and other personnel will be central to administering the vaccine	• Panorama, the territory-wide electronic information system, will be used to monitor timing for a second dose, identify vaccine uptake and record adverse vaccine reactions

	community vaccination dates have been set for other communities across the Yukon as well
	• On 10 December 2020, the Minister of Health announced that 50,400 doses of the vaccine will be received by March
	  ○ 75% of the population in Yukon is expected to be vaccinated during this time period
	• Vaccines will be distributed to the Yukon and across Canada by the Immunization National Operation Centre for COVID-19
	  ○ The Government of Yukon has partnered with experts under the Joint Task Force North to plan for vaccine distribution
		and personal-support workers
		  ○ Older adults not living in group settings
		  ○ Individuals, specifically those who are Indigenous, living in rural or remote communities
		• Vaccine-distribution plans are in the process of development for individuals over age 18 who do not belong to priority groups
				• Vaccine clinics will be established at centralized locations for COVID-19 vaccine roll-out
				  ○ The flu clinic in Whitehorse will be used as a template for COVID-19 vaccine administration
				  ○ Approximately 14,000 Yukoners are aimed to be vaccinated in a six-week period
				  ○ Screeners and greeters will be present at all COVID-19 vaccine clinics
				  ○ Mobile clinics will be used to reach individuals in specific remote and rural communities across the Yukon
				  ○ Vaccines will be directly administered to residents in long-term care homes and to those who are homebound
				• The Government of Yukon will work closely with First Nation governments, NGOs, community leaders, and community health	

				centres to reach all Yukoners	

Northwest Territories	• As of 28 December 2020, Northwest Territories has received 7,200 doses of Moderna vaccine
	  ○ 75% of the adult population is expected to be vaccinated by March
	  ○ As of 8 January 2020, all long-term care residents and staff across Northwest Territories have been vaccinated
	• The Government of Northwest Territories will be working in joint partnership with the National Operation Centre and Joint Task Force North to plan for vaccine delivery
	• Central points in Northwest Territories have been established to distribute the vaccine across the territory
		• The Government of Northwest Territories aims to immunize 75% of eligible vaccine recipients by the first quarter of 2021
		• A phased approach will be used to administer the vaccine and priority will be given to high-risk groups including individuals who:
		  ○ Are seniors
		  ○ Have chronic conditions or co-morbidities
		  ○ Reside in remote communities
		  ○ Have a high risk of transmitting or contracting a severe case of COVID-19
		  ○ Are residents of Northwest Territories but work outside the territory frequently
			• Residents of Northwest Territories will be provided with updates to the vaccine strategy, evidence or recommendations through multiple plain-language materials
			  ○ An update of vaccine information and allocation in the Northwest Territories will be posted on a weekly basis
			• Local health personnel will be made available to community residents to answer questions about the vaccine before mobile-vaccine clinics arrive
			  ○ A qualified health professional will also connect with local leadership to provide up-to-date and reliable information, as well as to answer questions
			• Interpreters and translators will be available to provide accessible information in Indigenous languages
				• The Government of Northwest Territories aims to work alongside Indigenous governments, local healthcare providers and community leaders to create a culturally appropriate vaccine-distribution strategy, specifically for Indigenous people, and to design vaccine clinics that meet community needs
				• Mobile-vaccine clinics comprised of eight healthcare workers and support staff will be sent to all 33 communities across Northwest Territories to assist local health providers with vaccine administration
				• Mobile clinics will stay in the communities as long as needed and will return for the second dose
				  ○ All healthcare personnel across Northwest Territories must complete the Education Program for Immunization Competencies (EPIC)
					• The territory will continue to use previously established monitoring and reporting systems to keep track of vaccine delivery and administration
					• All information is submitted to the Chief Public Health Officer of Northwest Territories before being forwarded to the Public Health Agency of Canada
					• The Canadian Vaccine Monitoring System will be used to share and exchange information with other jurisdictions on adverse vaccine events

				in order to administer the Moderna vaccine ○ Healthcare providers are also required to participate in sessions about the historical experiences of Indigenous communities with communicable diseases, and strategies to provide culturally appropriate care ○ Social-distancing precautions will be implemented at all clinics	
Nunavut	• As of 30 December 2020, Nunavut has received 6,000 doses of the Moderna vaccine ○ As of 14 January 2020, vaccines have been delivered to two communities for administration to priority groups ○ An additional 6,000 doses are expected to arrive by 1 February 2020 • Nunavut's vaccine strategy is still under development and more information is not publicly available	• Priority will be given to elders 65 years or older and individuals living in shelters • 75% of the total territorial population is expected to be vaccinated by March 2021 • Nunavut's vaccine strategy is still under development and more information is not publicly available	• The Government of Nunavut has hosted some public sessions since announcing the COVID-19 vaccine to answer questions from the public • Nunavut's vaccine strategy is still under development and more information is not publicly available	• Elders' facility clinics will be created to vaccinate seniors • In these clinics, health staff will go directly to the site to administer vaccines • The Department of Health will carry out a mass-immunization program to vaccinate individuals living in Nunavut, but further details on the program are not available • Nunavut's vaccine strategy is still under development and more information is not publicly available	• Nunavut's vaccine strategy is still under development and more information is not publicly available

Appendix 5: 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)	The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Moderna COVID-19 Vaccine — United States, December 2020 **Abstract** On December 18, 2020, the Food and Drug Administration issued an Emergency Use Authorization (EUA) for the Moderna COVID-19 vaccine. On December 19, 2020, after a transparent, evidence-based review of available data, the Advisory Committee on Immunization Practices (ACIP) issued an interim recommendation for use of the Moderna COVID-19 vaccine in persons aged ≥18 years for the prevention of COVID-19. Use of all COVID-19 vaccines authorized under an EUA, including the Moderna COVID-19 vaccine, should be implemented in conjunction with ACIP's interim recommendations for allocating initial supplies of COVID-19 vaccines.
	The Advisory Committee on Immunization Practices' Ethical Principles for Allocating Initial Supplies of COVID-19 Vaccine — United States, 2020 **Abstract** To reduce the spread of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19), and its associated impacts on health and society, COVID-19 vaccines are essential. The U.S. government is working to produce and deliver safe and effective COVID-19 vaccines for the entire U.S. population. The Advisory Committee on Immunization Practices (ACIP)* has broadly outlined its approach for developing recommendations for the use of each COVID-19 vaccine authorized or approved by the Food and Drug Administration (FDA) for Emergency Use Authorization or licensure (*1*). ACIP's recommendation process includes an explicit and transparent evidence-based method for assessing a vaccine's safety and efficacy, as well as consideration of other factors, including implementation (*2*). Because the initial supply of vaccine will likely be limited, ACIP will also recommend which groups should receive the earliest allocations of vaccine. The ACIP COVID-19 Vaccines Work Group and consultants with expertise in ethics and health equity considered external expert committee reports and published literature and deliberated the ethical issues associated with COVID-19 vaccine allocation decisions. The purpose of this report is to describe the four ethical principles that will assist ACIP in formulating recommendations for the allocation of COVID-19 vaccine while supply is limited, in addition to scientific data and implementation feasibility: 1) maximize benefits and minimize harms; 2) promote justice; 3) mitigate health inequities; and 4) promote transparency. These principles can also aid state, tribal, local, and territorial public health authorities as they develop vaccine implementation strategies within their own communities based on ACIP recommendations.
	Framework for Equitable Allocation of COVID-19 Vaccine **Abstract**

Type of document	Abstract and link to full text
	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, socio-economic condition, or other contributing factors. Framework for Equitable Allocation of COVID-19 Vaccine offers an overarching framework for vaccine allocation to assist policymakers 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.
	Preparing countries for COVID-19 vaccine introduction **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.
	Advice on priority groups for coronavirus vaccination in Norway **Abstract** The Norwegian Ministry of Health and Care Services has commissioned the Norwegian Institute of Public Health to organize the national coronavirus immunization program. As a partial delivery of the assignment, the Norwegian Institute of Public Health has established an external expert group in ethics and prioritization (henceforth: the ethics advisory group). This ethics advisory report describes the external group's working process and conclusions concerning the order of priority of the vaccines in the first phase of the Norwegian Coronavirus Immunisation Programme. The overall objective of this ethics advisory report has been to establish clear goals for what the Coronavirus Immunisation Programme should achieve, as well as to make recommendations for which groups should be given priority in the first phase of the program. The advisory group has proceeded from values, to goals and lastly to priority categories. The following five values were adopted as the core values to guide prioritization: equal respect, welfare, equity, trust and legitimacy. Five goals were then proposed and ranked in order of their importance: 1) Reduce the risk of death. 2) Reduce the risk of severe illness. 3) Maintain essential services and critical infrastructure. 4) Protect employment and the economy. 5) Re-open society. Based on these values and goals, three categories for prioritization were established: risk factors for severe illness and death, the infectious situation and occupation. The ethics advisory group has suggested dynamic health priorities based on the Norwegian Government's long-term

Type of document	Abstract and link to full text
	scenario for the course of the pandemic and recommended that risk groups and healthcare personnel should be prioritized in pandemic scenarios 1–2a, and that in the event of widespread infection (scenario 2b–), the priority order should instead be healthcare personnel, risk groups and critical societal functions. These three priority groups are in accordance with the values, goals and priority categories proposed by the ethics advisory group in this document. These are preliminary recommendations for the order of priority for coronavirus vaccines in Norway, and the ethics advisory group has taken into account that the recommendations may need to be revised if there are significant changes to the empirical evidence.
	Advice to the National Public Health Emergency Team (NPHET): The factors influencing, and measures to improve, vaccination uptake Abstract • A COVID-19 vaccine, when used in combination with public-health measures such as physical distancing, face masks, respiratory etiquette and hand hygiene, has the potential to reduce the burden of illness. • With a number of COVID-19 vaccines currently under consideration by the European Medicines Agency (EMA), it is important to understand the factors that influence and the measures that improve vaccine uptake. • A rapid evidence review to identify factors influencing vaccine uptake found: o A number of overarching themes, namely: perceived risks and benefits, knowledge, social influences and patient-specific factors (for example socio-demographic factors). These were found to act as either barriers or facilitators depending on the context. o Perceived benefit from vaccination and recommendations from healthcare professionals were consistently found to be important facilitators for vaccination uptake. o Interventions (including multicomponent interventions) can successfully increase vaccine uptake across a range of eligible groups. Studies included both individual-level and system-level interventions. These interventions vary greatly in terms of intensity. None related to mass-media campaigns. o Consideration must be given to the resource requirements and the acceptability of interventions to the target population. • Given the novelty of COVID-19 and the societal experiences following months of public-health measures aimed to contain the pandemic, evidence from other vaccines (for example, seasonal influenza, routine childhood vaccines) is likely to have limited applicability to COVID-19 vaccination uptake, preferences and behaviours. • A vaccination campaign should build on what Ireland has already achieved in relation to COVID-19, which has largely been based upon knowledge and consensus rather than penalties and enforcement. Trust, communication and knowledge are core to informed decision-making. • Healthcare workers are an important at-risk population group as well as a recognized and trusted source of information and influence. In advance of any vaccination program commencing, healthcare workers should be provided with the necessary information to support them to make informed decisions for themselves, and to act as a trusted source of information for others. • Given the importance of social influence on an individual's behaviour, key opinion leaders in the community including GPs, community pharmacists, public-health nurses, and religious and sports leaders should be provided with evidence-based information and tools to build community engagement.

Type of document	Abstract and link to full text

	• As with other successful vaccination strategies in Ireland, potential barriers to equitable access should be minimized. For example, taking account of the location and settings where the vaccine is provided.
	• Communication campaigns should focus on providing information on the following aspects specific to COVID-19 vaccines:
	  ○ vaccine technology and how it may differ from other vaccines (for example, mRNA vaccines);
	  ○ currently available evidence regarding safety and efficacy of the vaccines; and
	  ○ rigour of the process used by the EMA to scientifically evaluate the safety and effectiveness of the vaccines to make a decision whether to approve them for use, and requirements for the post-marketing continuous evaluation of benefit and risk.
	• Evidence in relation to the effectiveness and safety of COVID-19 vaccines obtained through ongoing surveillance should be made available in a proactive, open and accountable manner to maintain public trust.

	COVID-19 vaccine introduction readiness assessment tool **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 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.
	Fair allocation mechanisms for COVID-19 vaccines through the COVAX Facility **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: 1. An initial proportional allocation of doses to countries until all countries reach enough quantities to cover 20% of their population; and 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. 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.
	Flu vaccination: Increasing uptake

Type of document	Abstract and link to full text
	Abstract This guideline covers how to increase uptake of the free flu vaccination among people who are eligible. It describes ways to increase awareness and how to use all opportunities in primary and secondary care to identify people who should be encouraged to have the vaccination.
	Guidance on developing a national deployment and vaccination plan for COVID-19 vaccines **Abstract** The Guidance on National Deployment and Vaccination Planning is intended to help countries develop their plan for COVID-19 vaccine introduction.
	WHO SAGE roadmap for prioritizing uses of COVID-19 vaccines in the context of limited supply **Abstract** Given the urgency and wide-ranging effects of the COVID-19 pandemic, SAGE has developed an approach to help inform deliberation around the range of recommendations that may be appropriate under different epidemiologic and vaccine supply conditions. To assist in developing recommendations for use of vaccines against COVID-19, SAGE proposes a Roadmap for Prioritizing Uses of COVID-19 Vaccines that considers priority populations for vaccination based on epidemiologic setting and vaccine-supply scenarios. This Roadmap builds on the WHO SAGE values framework for the allocation and prioritization of COVID-19 vaccination
	Behavioural considerations for acceptance and uptake of COVID-19 vaccines **Background** On 15 October 2020, the WHO Technical Advisory Group (TAG) on Behavioural Insights and Sciences for Health held a special meeting with the WHO Department of Immunization, Vaccines and Biologicals to discuss behavioural considerations in relation to COVID-19 vaccine acceptance and uptake. The discussion focused on a series of key questions around achieving high and equitable uptake of vaccines through evidence-based and behaviourally informed strategies. This report is the product of the discussion held by WHO TAG members during the meeting. It covers only the topics that were addressed at the meeting. Following the meeting, the considerations and recommendations made by the members were refined through an iterative process that involved drafting by a core group, literature review and rounds of feedback from all the members. The considerations made by the TAG members during the meeting that were not supported by published evidence were removed with the consensus of the members. The review process was finalized on 15 November 2020. The TAG members serve in their personal capacity and have completed a declaration of interest form that was subject to evaluation and approval prior to their nomination in July 2020. This meeting report represents exclusively the views and opinions of the TAG members and does not represent the decisions or policies of WHO.

Type of document	Abstract and link to full text
Full systematic reviews	Strategies to overcome vaccine hesitancy: A systematic review *(pre-print)* Background: Vaccination, albeit a necessity in the prevention of infectious diseases, requires appropriate strategies for addressing vaccine hesitancy at an individual and community level. However, there remains a glaring scarcity of available literature in that regard. Therefore, this review aims to scrutinize globally tested interventions to increase the vaccination uptake by addressing vaccine hesitancy at various stages of these interventions across the globe, and help policymakers in implementing appropriate strategies to address the issue. Methods: A systematic review of descriptive and analytic studies was conducted using specific keyword searches to identify literature containing information about interventions directed at vaccine hesitancy. The search was done using PubMed, Global Health and Science Direct databases. Data extraction was based on study characteristics such as author details, study design, and type, duration, and outcome of an intervention. Results: A total of 105 studies were identified of which 33 studies were included in the final review. Community-based interventions, monetary incentives, and technology-based health literacy demonstrated significant improvement in the utilization of immunization services. On the other hand, media-based intervention studies did not bring about a desired change in overcoming vaccine hesitancy. Conclusion: This study indicates that the strategies should be based on the need and reasons for vaccine hesitancy for the targeted population. A multidimensional approach involving community members, families and individuals is required to address this challenging issue.
	Improving vaccination uptake among adolescents **Abstract** Objectives: To evaluate the effects of interventions to improve vaccine uptake among adolescents. Search methods: In October 2018, we searched the following databases: CENTRAL, MEDLINE Ovid, Embase Ovid, and eight other databases. In addition, we searched two clinical trials platforms, electronic databases of grey literature, and reference lists of relevant articles. For related systematic reviews, we searched four databases. Furthermore, in May 2019, we performed a citation search of five other websites. Main results: We included 16 studies (eight individually randomized trials, four cluster randomized trials, three non-randomized trials, and one controlled before-after study). Twelve studies were conducted in the U.S.A., while there was one study each from Australia, Sweden, Tanzania, and the U.K. Ten studies had unclear or high risk of bias. We categorized interventions as recipient-oriented, provider-oriented, or health systems-oriented. Conclusion: Various strategies have been evaluated to improve adolescent vaccination including health education, financial incentives, mandatory vaccination, and class-based school vaccine delivery. However, most of the evidence is of low to moderate certainty. This implies that while this research provides some indication of the likely effect of these interventions, the likelihood that the effects will be substantially different is high. Therefore, additional research is needed to further enhance adolescent immunization strategies, especially in low- and middle-income countries where there are limited adolescent vaccination programs. In addition, it is critical to understand the factors that influence hesitancy, acceptance and demand for adolescent vaccination in different settings. This is the topic of an ongoing Cochrane qualitative evidence synthesis, which may help to explain why and how some interventions were more effective than others in increasing adolescent HPV vaccination coverage.
	Interventions to increase influenza vaccination rates of those 60 years and older in the community

Type of document	Abstract and link to full text
	Abstract To assess access, provider, system, and societal interventions to increase the uptake of influenza vaccination in people aged 60 years and older in the community. We included three new RCTs for this update (total 61 RCTs; 1,055,337 participants). Trials involved people aged 60 years and older living in the community in high-income countries. Heterogeneity limited some meta-analyses. We assessed studies as at low risk of bias for randomization (38%), allocation concealment (11%), blinding (44%), and selective reporting (100%). Half (51%) had missing data. We assessed the evidence as low quality. We identified three levels of intervention intensity: low (e.g., postcards), medium (e.g., personalized phone calls), and high (e.g., home visits, facilitators). We identified interventions that demonstrated significant positive effects of low (postcards), medium (personalized phone calls), and high (home visits, facilitators) intensity that increase community demand for vaccination, enhance access, and improve provider/system response. The overall GRADE assessment of the evidence was moderate quality. Conclusions are unchanged from the 2014 review.
	Patient reminder and recall interventions to improve immunization rates **Abstract** To evaluate and compare the effectiveness of various types of patient reminder and recall interventions to improve receipt of immunizations. The 75 included studies involved child, adolescent and adult participants in outpatient, community-based, primary care, and other settings in 10 countries. Patient reminder or recall interventions, including telephone and autodialer calls, letters, postcards, text messages, combination of mail or telephone, or a combination of patient reminder or recall with outreach, probably improve the proportion of participants who receive immunization (risk ratio (RR) of 1.28, 95% confidence interval (CI) 1.23 to 1.35; risk difference of 8%) based on moderate-certainty evidence from 55 studies with 138,625 participants. Patient reminder and recall systems in primary-care settings are likely to be effective at improving the proportion of the target population who receive immunizations.
	Community pharmacies as sites of adult vaccination: A systematic review **Abstract** Vaccine-preventable deaths among adults remain a major public-health concern, despite continued efforts to increase vaccination rates in this population. Alternative approaches to immunization delivery may help address under-vaccination among adults. This systematic review assesses the feasibility, acceptability and effectiveness of community pharmacies as sites for adult vaccination. We searched five electronic databases (PubMed, EMBASE, Scopus, Cochrane, LILACS) for studies published prior to June 2016 and identified 47 relevant articles. We found that pharmacy-based immunization services (PBIS) have been facilitated by state regulatory changes and training programs that allow pharmacists to directly provide vaccinations. These services are widely accepted by both patients and pharmacy staff, and are capable of improving access and increasing vaccination rates. However, political and organizational barriers limit the feasibility and effectiveness of vaccine delivery in pharmacies. These studies provide evidence to inform policy and organizational efforts that promote the efficacy and sustainability of PBIS.
	Impact of pharmacists as immunizers on vaccination rates: A systematic review and meta-analysis **Abstract**

Type of document	Abstract and link to full text
	To complete a systematic review of the literature on the impact of pharmacists as educators, facilitators and administrators of vaccines on immunization rates. We identified 2,825 articles searching the following databases from inception until October 2015: PubMed, EMBASE, Cochrane Libraries, Cumulative Index to Nursing and Allied Health Literature, International Pharmaceutical Abstracts, and Google Scholar. Grey literature was identified through use of the Canadian Agency for Drugs and Technology in Health "Grey Matters" search tool. Content from relevant journals and references of included studies were also searched. Inclusion criteria were clinical or epidemiologic studies in which pharmacists were involved in the immunization process. Studies were excluded if no comparator was reported. Two reviewers independently completed data extraction and bias assessments using standardized forms. Thirty-six studies were included in the review; 22 assessed the role of pharmacists as educators and/or facilitators, and 14 assessed their role as administrators of vaccines. All studies reviewed found an increase in vaccine coverage when pharmacists were involved in the immunization process, regardless of role (educator, facilitator, administrator) or vaccine administered (e.g., influenza, pneumococcal), when compared to vaccine provision by traditional providers without pharmacist involvement. Limitations of the results include the large number of non-randomized trials and the heterogeneity between study designs. Pharmacist involvement in immunization, whether as educators, facilitators, or administrators of vaccines, resulted in increased uptake of immunizations.
	Vaccination programs: Requirements for child care, school, and college attendance **Abstract** The Community Preventive Services Task Force recommends vaccination requirements for child care, school, and college attendance based on strong evidence of effectiveness in increasing vaccination rates and in decreasing rates of vaccine preventable disease (VPD) and associated morbidity and mortality. These findings are based on studies demonstrating effectiveness of vaccination requirements for attendance in a variety of settings, for an array of recommended vaccines, and in populations ranging in age from early childhood to late adolescence.
	Interventions to reduce inequalities in vaccine uptake in children and adolescents aged <19 years: A systematic review **Abstract** Background: In high-income countries, substantial differences exist in vaccine uptake relating to socio-economic status, gender, ethnic group, geographic location and religious belief. This paper updates a 2009 systematic review on effective interventions to decrease vaccine uptake inequalities in light of new technologies applied to vaccination and new vaccine programs (e.g., human papillomavirus in adolescents). Methods: We searched MEDLINE, Embase, ASSIA, The Campbell Collaboration, CINAHL, The Cochrane Database of Systematic Reviews, Eppi Centre, Eric and PsychINFO for intervention, cohort or ecological studies conducted at primary/community-care level in children and young people from birth to 19 years in OECD countries, with vaccine uptake or coverage as outcomes, published between 2008 and 2015. Results: The 41 included studies evaluated complex multicomponent interventions (n=16), reminder/recall systems (n=18), outreach programs (n=3) or computer-based interventions (n=2). Complex, locally designed interventions demonstrated the best evidence for effectiveness in reducing inequalities in deprived, urban, ethnically diverse communities. There is some evidence that postal and telephone reminders are effective, however, evidence remains mixed for text-message reminders, although these may be more effective

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	in adolescents. Interventions that escalated in intensity appeared particularly effective. Computer-based interventions were not effective. Few studies targeted an inequality specifically, although several reported differential effects by the ethnic group. Conclusions: Locally designed, multicomponent interventions should be used in urban, ethnically diverse, deprived populations. Some evidence is emerging for text-message reminders, particularly in adolescents. Further research should be conducted in the U.K. and Europe with a focus on reducing specific inequalities.
	Effectiveness of interventions that apply new media to improve vaccine uptake and vaccine coverage **Abstract** Vaccine-preventable diseases (VPD) are still a major cause of morbidity and mortality worldwide. In high- and middle-income settings, immunization coverage is relatively high. However, in many countries coverage rates of routinely recommended vaccines are still below the targets established by international and national advisory committees. Progress in the field of communication technology might provide useful tools to enhance immunization strategies. Objective: To systematically collect and summarize the available evidence on the effectiveness of interventions that apply new media to promote vaccination uptake and increase vaccination coverage. Design: We conducted a systematic literature review. Studies published from January 1999 to September 2013 were identified by searching electronic resources (Pubmed, Embase), manual searches of references and expert consultation. Study setting: We focused on interventions that targeted recommended vaccinations for children, adolescents and adults and: (1) aimed at increasing community demand for immunizations; or (2) were provider-based interventions. We limited the study setting to countries that are members of the Organisation for Economic Cooperation and Development (OECD). Main outcome measures: The primary outcome was a measure of vaccination (vaccine uptake or vaccine coverage). Considered secondary outcomes included willingness to receive immunization, attitudes and perceptions toward vaccination, and perceived helpfulness of the intervention. Results: Nineteen studies were included in the systematic review. The majority of the studies were conducted in the U.S. (74%, n = 14); 68% (n = 13) of the studies were experimental, the rest having an observational study design. Eleven (58%) reported results on the primary outcome. Retrieved studies explored the role of: text messaging (37%); smartphone applications (n.1, 5%); YouTube videos (n.1, 5%); Facebook (n.1, 5%); targeted websites and portals (n.4, 21%); software for physicians and health professionals (n.4, 21%); and email communication (n.1, 5%). There is some evidence that text messaging, accessing immunization-campaign websites, using patient-held web-based portals and computerized reminders increase immunization coverage rates. Insufficient evidence is available on the use of social networks, email communication and smartphone applications. Conclusion: Although there is great potential for improving vaccine uptake and vaccine coverage by implementing programs and interventions that apply new media, scant data are available and further rigorous research - including cost-effectiveness assessments - is needed.
	Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: A synthesis of qualitative evidence **Abstract** The specific objectives of the review were to identify, appraise and synthesize qualitative studies exploring: parents' and informal caregivers' views and experiences regarding communication about childhood vaccinations and the manner in which it is communicated; and the influence that vaccination communication has on parents' and informal caregivers' decisions regarding childhood vaccination.

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	We searched MEDLINE (OvidSP), MEDLINE In-process and Other Non-Index Citations (Ovid SP), Embase (Ovid), CINAHL (EbscoHOST), and Anthropology Plus (EbscoHost) databases for eligible studies from inception to 30 August 2016. We developed search strategies for each database, using guidelines developed by the Cochrane Qualitative Research Methods Group for searching for qualitative evidence, as well as modified versions of the search developed for three related reviews of effectiveness. There were no date or geographic restrictions for the search. We have high or moderate confidence in the evidence contributing to several review findings. Further research, especially in rural and low- to middle-income country settings, could strengthen evidence for the findings where we had low or very low confidence. Planners should consider the timing for making vaccination information available to parents, the settings where information is available, the provision of impartial and clear information tailored to parental needs, and parents' perceptions of health workers and the information provided.
	Strategies for addressing vaccine hesitancy: A systematic review **Abstract** The purpose of this systematic review is to identify, describe and assess the potential effectiveness of strategies to respond to issues of vaccine hesitancy that have been implemented and evaluated across diverse global contexts. Methods: A systematic review of peer reviewed (January 2007-October 2013) and grey literature (up to October 2013) was conducted using a broad search strategy, built to capture multiple dimensions of public trust, confidence and hesitancy concerning vaccines. This search strategy was applied and adapted across several databases and organizational websites. Descriptive analyses were undertaken for 166 (peer reviewed) and 15 (grey literature) evaluation studies. In addition, the quality of evidence relating to a series of PICO (population, intervention, comparison/control, outcomes) questions defined by the SAGE Working Group on Vaccine Hesitancy (WG) was assessed using Grading of Recommendations Assessment, Development and Evaluation (GRADE) criteria; data were analyzed using Review Manager. Results: Across the literature, few strategies to address vaccine hesitancy were found to have been evaluated for impact on either vaccination uptake and/or changes in knowledge, awareness or attitude (only 14% of peer reviewed and 25% of grey literature). The majority of evaluation studies were based in the Americas and primarily focused on influenza, human papillomavirus (HPV) and childhood vaccines. In low- and middle-income regions, the focus was on diphtheria, tetanus and pertussis, and polio. Across all regions, most interventions were multi-component and the majority of strategies focused on raising knowledge and awareness. Thirteen relevant studies were used for the GRADE assessment that indicated evidence of moderate quality for the use of social mobilization, mass media, communication tool-based training for healthcare workers, non-financial incentives, and reminder/recall-based interventions. Overall, our results showed that multicomponent and dialogue-based interventions were most effective. However, given the complexity of vaccine hesitancy and the limited evidence available on how it can be addressed, identified strategies should be carefully tailored according to the target population, their reasons for hesitancy, and the specific context.
	Increasing appropriate vaccination: Client reminder and recall systems **Abstract** The Community Preventive Services Task Force recommends client reminder and recall interventions based on strong evidence of effectiveness in improving vaccination rates: (1) in children, adolescents and adults; (2) in a range of settings and populations; (3) when applied at different levels of scale - from individual practice settings to entire communities; (4) across a range of intervention

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	characteristics (e.g., reminder or recall, content, theoretical basis and method of delivery); and (5) whether used alone or with additional components.
	Increasing appropriate vaccination: Home visits to increase vaccination rates The Community Preventive Services Task Force recommends client or family incentive rewards, used alone or in combination with additional interventions, based on sufficient evidence of effectiveness in increasing vaccination rates in children and adults. The Community Preventive Services Task Force recommends home visits based on strong evidence of their effectiveness in increasing vaccination rates. The task force notes, however, the economic evidence showing that home visits can be resource-intensive and costly relative to other options for increasing vaccination rates. Evidence on effectiveness was considered strong based on a body of evidence that included studies of home visits delivered to all clients or to those unresponsive to other interventions, home visits focused on vaccination alone or in combination with other health concerns, and home visits that provided vaccinations on-site or referred clients to vaccination services outside the home.
	Increasing appropriate vaccination: Standing orders **Abstract** The Community Preventive Services Task Force recommends standing orders for vaccinations on the basis of strong evidence of effectiveness in increasing vaccination rates among adults and children, when used alone or with additional interventions, and across a range of settings and populations.
	Increasing appropriate vaccination: Client or family incentive rewards **Abstract** The Community Preventive Services Task Force recommends client or family incentive rewards, used alone or in combination with additional interventions, based on sufficient evidence of effectiveness in increasing vaccination rates in children and adults.
	A systematic review of interventions for reducing parental vaccine refusal and vaccine hesitancy **Abstract** Unvaccinated individuals pose a public-health threat to communities. Research has identified many factors associated with parental vaccine refusal and hesitancy toward childhood and adolescent immunizations. However, data on the effectiveness of interventions to address parental refusal are limited. We conducted a systematic review of four online databases to identify interventional studies. We used criteria recommended by the WHO's Strategic Advisory Group of Experts on immunization (SAGE) for the quality assessment of studies. Intervention categories and outcomes were evaluated for each body of evidence, and confidence in overall estimates of effect was determined. There is limited evidence to guide implementation of effective strategies to deal with the emerging threat of parental vaccine refusal. There is a need for appropriately designed, executed and evaluated intervention studies to address this gap in knowledge.
	Increasing coverage of appropriate vaccinations: A community guide systematic economic review

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	Abstract Context: Population-level coverage for immunization against many vaccine-preventable diseases remains below optimal rates in the U.S. The Community Preventive Services Task Force recently recommended several interventions to increase vaccination coverage based on systematic reviews of the evaluation literature. The present study provides the economic results from those reviews. Evidence acquisition: A systematic review was conducted (search period, January 1980 through February 2012) to identify economic evaluations of 12 interventions recommended by the task force. Evidence was drawn from included studies; estimates were constructed for the population reach of each strategy, cost of implementation, and cost per additional vaccinated person because of the intervention. Analyses were conducted in 2014. Evidence synthesis: Reminder systems, whether for clients or providers, were among the lowest-cost strategies to implement and the most cost-effective in terms of additional people vaccinated. Strategies involving home visits and combination strategies in community settings were both costly and less cost-effective. Strategies based in settings such as schools and MCOs that reached the target population achieved additional vaccinations in the middle range of cost-effectiveness. Conclusions: The interventions recommended by the task force differed in reach, cost and cost-effectiveness. This systematic review presents the economic information for 12 effective strategies to increase vaccination coverage that can guide implementers in their choice of interventions to fit their local needs, available resources and budget.
	Increasing appropriate vaccination: Community-based interventions implemented in combination **Abstract** The Community Preventive Services Task Force recommends community-based interventions implemented in combination to increase vaccinations in targeted populations, on the basis of strong evidence of effectiveness in increasing vaccination rates. The conclusion of strong evidence was based on findings from 18 studies that evaluated coordinated interventions to: increase community demand, enhance access to vaccination services, and reduce missed opportunities by vaccination providers In 13 of the 18 studies, the community-based effort combined one or more interventions to increase community demand for vaccinations with one or more interventions to enhance access to vaccination services. The task force notes that implementing manual outreach and tracking or home visits can be resource-intensive and costly, relative to other options for increasing vaccination rates. Such interventions should be used only when there is demonstrated need, and resources are available.
	Increasing appropriate vaccination: Vaccination requirements for child care, school, and college attendance **Abstract** The Community Preventive Services Task Force recommends vaccination requirements for child care, school, and college attendance based on strong evidence of effectiveness in increasing vaccination rates and in decreasing rates of vaccine preventable disease (VPD) and associated morbidity and mortality. These findings are based on studies demonstrating effectiveness of vaccination requirements for attendance in a variety of settings, for an array of recommended vaccines, and in populations ranging in age from early childhood to late adolescence.
	Do interventions containing risk messages increase risk appraisal and the subsequent vaccination intentions and uptake? – A systematic review and meta-analysis

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	Abstract Purpose: There is good evidence that for many behaviours, increasing risk appraisal can lead to a change in behaviour, heightened when efficacy appraisals are also increased. The present systematic review addressed whether interventions presenting a risk message increase risk appraisal and an increase in vaccination intentions and uptake. Method: A systematic search identified randomized controlled trials of interventions presenting a risk message and measuring risk appraisal and intentions and uptake post-intervention. Random-effects meta-analyses investigated the size of the effect that interventions had on vaccination risk appraisal and on vaccination behaviour or intention to vaccinate, and the size of the relationship between vaccination risk appraisal and vaccination intentions and uptake. Results: Eighteen studies were included and 16 meta-analysed. Interventions overall had small significant effects on risk appraisal (d = 0.161, p = .047) and perceptions of susceptibility (d = 0.195, p = .025), but no effect on perceptions of severity (d = −0.036, p = .828). Interventions showed no effect on intention to vaccinate (d = 0.138, p = .195) and no effect on vaccination behaviour (d = 0.043, p = .826). Interventions typically did not include many behaviour-change techniques (BCTs), with the most common BCT unique to intervention conditions being 'Information about Health Consequences'. Few of the included studies attempted to, or successfully increased, efficacy appraisals. Conclusions: Overall, there is a lack of good-quality primary studies, and existing interventions are suboptimal. The inclusion of additional BCTs, including those to target efficacy appraisals, could increase intervention effectiveness. The protocol (CRD42015029365) is available from http://www.crd.york.ac.uk/PROSPERO/.
	Process interventions for vaccine injections: Systematic review of randomized controlled trials and quasi-randomized controlled trials **Abstract** Background: This systematic review evaluated the effectiveness of process interventions (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. Design/methods: Databases were searched using a broad search strategy to identify relevant randomized and quasi-randomized controlled trials. Critical outcomes were pain, fear, distress (when applicable), and use of pain management interventions. Data were extracted according to procedure phase (preprocedure, acute, recovery, combinations of these) and pooled using established methods. Analyses were conducted using standardized mean differences (SMD) and risk ratios (RR). Results: Thirteen studies were included. Results were generally mixed. On the basis of low- to very-low-quality evidence, the following specific critical outcomes showed significant effects suggesting: (1) clinicians should be educated about vaccine-injection pain management (use of interventions: SMD 0.66; 95% confidence interval [CI]: 0.47, 0.85); (2) parents should be present (distress preprocedure: SMD -0.85; 95% CI: -1.35, -0.35); (3) parents should be educated before the vaccination day (use of intervention preprocedure: SMD 0.83; 95% CI: 0.25, 1.41 and RR, 2.08; 95% CI: 1.51, 2.86; distress acute: SMD, -0.35; 95% CI: -0.57, -0.13); (4) parents should be educated on the vaccination day (use of interventions: SMD 1.02; 95% CI: 0.22, 1.83 and RR, 2.42; 95% CI: 1.47, 3.99; distress preprocedure+acute+recovery: SMD -0.48; 95% CI: -0.82, -0.15); and (5) individuals 3 years of age and above should be educated on the day of vaccination (fear preprocedure: SMD -0.67; 95% CI: -1.28, -0.07).

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	Conclusions: Educating individuals involved in the vaccination procedure (clinicians, parents of children being vaccinated, individuals above 3 years of age) is beneficial to increase use of pain-management strategies, reduce distress surrounding vaccination, and to reduce fear. When possible, parent presence is also recommended for children undergoing vaccination.

	Vaccination programs: Healthcare system-based interventions implemented in combination
	
	Abstract
	The Community Preventive Services Task Force recommends health care system-based interventions implemented in combination on the basis of strong evidence of effectiveness in increasing vaccination rates in targeted client populations. Based on findings from 37 of the 64 included studies, the task force further recommends a combination that includes the following.
	
	At least one intervention to increase client demand for vaccinations, such as:
	• Client reminder and recall systems
	• Clinic-based client education
	• Manual outreach and tracking
	
	And one or more interventions that address either, or both, of the following strategies:
	• Interventions to enhance access to vaccinations
	  ○ Expanded access in healthcare settings
	  ○ Reduced client out-of-pocket costs
	  ○ Home visits
	
	• Interventions directed at vaccination providers or systems:
	  ○ Provider reminders
	  ○ Standing orders
	  ○ Provider assessment and feedback
	
	Interventions listed as examples for each strategy were those that showed the greatest effect on vaccination rates.

	Economic review of immunization information systems to increase vaccination rates **Abstract** Context: A recent systematic review found that use of an immunization information system (IIS) is an effective intervention to increase vaccination rates. The purpose of this review was to evaluate costs and benefits associated with implementing, operating, and participating with an IIS. The speed of technology change has had an effect on costs and benefits of IIS and is considered in this review.

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	Evidence Acquisition: An economic evaluation for IIS was conducted using methods developed for Community Guide systematic reviews. The literature search covered the period from January 1994 to March 2012 and identified 12 published articles and two government reports. Evidence Synthesis: Most studies involving cost data evaluated (1) system costs of building an IIS, and (2) cost of exchanging immunization data; most economic benefits focused on administrative efficiency. Conclusions: A major challenge to evaluating a technology-based intervention is the evolution that comes with technology improvements and advancements. Although the cost and benefit data may be less applicable today due to changes in system technology, data-exchange methods, availability of vendor support, system functionalities, and scope of IIS, it is likely that more up-to-date estimates and comprehensive estimates of benefits would support the findings of cost savings in this review. More research is needed to update and address limitations in the available evidence and to enable assessment of economic costs and benefits of present-day IIS. The purpose of this study was to evaluate costs and benefits associated with implementing, operating, and participating with an immunization information system.
	Vaccination programs: Schools and organized child-care centers **Abstract** • The Community Preventive Services Task Force (CPSTF) recommends school and organized child-care-centre-located vaccination programs based on strong evidence of effectiveness in increasing vaccination rates, and in decreasing rates of vaccine-preventable disease and associated morbidity and mortality. • The updated CPSTF recommendation is based on findings from 27 studies in which vaccination programs in schools or child-care centres: o Provided vaccinations on site o Were administered by a range of providers including school health personnel, health-department staff, and other vaccination providers o Were delivered in a variety of different school and organized child-care settings o Delivered one or more of a range of vaccines recommended for children and adolescents, and o Included additional components such as education, reduced client out-of-pocket costs, and enhanced access to vaccination services School- and organized child-care-centre-located vaccination programs may be most useful in improving immunization rates among children and adolescents for new vaccines, and vaccines with new, expanded recommendations (such as the annual immunization for seasonal influenza) where background rates are likely to be very low and improvements in coverage are needed.

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	Does policy change to allow pharmacist provision of influenza vaccination increase population uptake? A systematic review **Abstract** Objective: The aims of this study were to estimate the effect of pharmacists' vaccinating for influenza on overall vaccination rates, and to assess whether any effect differs for at-risk sub-groups compared with the general population. Methods: A systematic review was undertaken, adhering to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. Databases were searched during July 2019 and included Medline (Ovid), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus and the Cochrane Library. Results: The largest difference reported in overall population vaccination rates associated with pharmacists undertaking influenza vaccinations was an increase of 10%; the smallest showed no discernible effect. The effect was graduated: pharmacists with the most autonomy demonstrated the largest rate increases. There was evidence of substitution by pharmacists, but the effect size was small. Conclusions: The effect of allowing pharmacists to administer influenza vaccinations appears positive, but small. Given that pharmacists are likely to provide vaccinations at a lower cost than doctors, there may be cost-savings to the health system and consumers. Future research may include evaluating pharmacist-provided vaccinations compared with (or in combination with) other strategies, such as advertising, to increase access and uptake across the range of providers, as well as ongoing research to address vaccine hesitancy. What is known about the topic? In Australia, and many other countries, community pharmacies provide an alternative and accessible option for influenza vaccination; however the effect on overall vaccination rates remains unclear. What does this paper add? This systematic review of the international literature suggests that pharmacist-provided vaccinations increase uptake; substitution of doctors by pharmacists may result in cost savings. What are the implications for practitioners? The findings of this study are important for health policymakers and health workforce researchers aiming to maximize population vaccination rates and workforce efficiency. In the absence of available Australian data, data from the international experience of legislating pharmacists to vaccinate against influenza are summarized and critiqued. Results can be used when determining the best health workforce and policy mix with regard to the vaccination workforce.
Rapid reviews	Confidence and receptivity for COVID-19 vaccines: A rapid systematic review **Abstract** While COVID-19 continues raging worldwide, effective vaccines are highly anticipated. However, vaccine hesitancy is widespread. Survey results on uptake intentions vary and continue to change. This review compared trends and synthesized findings in vaccination receptivity over time across U.S. and international polls, assessing survey-design influences and evaluating context to inform policies and practices. Data sources included academic literature (PubMed, Embase, and PsycINFO following PRISMA guidelines), news and official reports published by 20 October 2020. Two researchers independently screened potential peer-reviewed articles and syndicated polls for eligibility; 126 studies and surveys were selected. Declining vaccine acceptance (from >70% in March to <50% in October) with demographic, socio-economic, and partisan divides was observed. Perceived risk, concerns over vaccine safety and effectiveness, doctors' recommendations, and inoculation history were common factors. Impacts of regional infection rates, gender, and personal COVID-19 experience were inconclusive. Unique COVID-19 factors included political party orientation, doubts toward expedited development/approval process, and perceived political interference. Many receptive participants preferred to wait until others have

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	taken the vaccine; mandates could increase resistance. Survey wording and answer options showed influence on responses. To achieve herd immunity, communication campaigns are immediately needed, focusing on transparency and restoring trust in health authorities.
	COVID-19: Accessibility of mass vaccination **Abstract** Abstract not provided
	Covid-19: Models of mass vaccination in non-healthcare settings **Abstract** Abstract not provided
	Covid-19: Communication to address concerns and encourage vaccine uptake **Abstract** Abstract not provided
	Covid-19: Recruiting and training a skilled workforce to deliver mass vaccination **Abstract** Abstract not provided.
	Covid-19: Safe management of post vaccination recovery in non-healthcare settings **Abstract** Abstract not provided
	COVID-19 vaccine deployment: Behaviour, ethics, misinformation, and policy strategies **Abstract** The rapid review focuses on behavioural aspects of deployment, suggesting government should begin to tackle these challenges immediately to ensure effective vaccine coverage. It makes the following policy recommendations: Start an open, transparent dialogue over vaccine deployment with the general public to address uncertainties about efficacy and safety, and provide clarity on the longer timescale of vaccination roll-out to build support and understanding. Make vaccinations convenient and build on existing immunization programs, such as ensuring they are available at weekends and evenings at GP surgeries and other appropriate sites, where GPs could identify those with comorbidities, log vaccinations or issue reminders. Centralized mass sites and roving teams are likely to be less effective.

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	Implement a decentralized local vaccination program, with toolkits to support local authorities in community engagement including tailored, appealing, visual and multi-language messages to reach diverse populations and mobilize local communities. Phased and ethical vaccine deployment, adopting transparent principles of priority groups and ensure these are sufficiently debated with the public to build understanding – starting with age- and comorbidity-based priority groups, health and care workers, but also look beyond those groups to high-risk occupations (e.g., teachers, bus drivers, retail workers) and vulnerable groups in crowded situations (e.g., homeless, prisons). Counter misinformation and fill real knowledge voids by empowering the public to spot and report misinformation, ensuring accountability for media companies to remove harmful information, and punish those who spread misinformation.
	Deployment and vaccination plan for COVID-19 **Abstract** No abstract provided
	How might expectations be managed among groups not prioritised for early vaccination? **Abstract** Despite extensive searching of databases and grey literature no U.K. sources or recent sources were identified. One qualitative focus group study was identified which was conducted in Canada. The following key points were identified from the source: 1) clearly communicate the reasons why different groups have been prioritized for vaccination to help increase public support; and 2) ensure vaccination priorities are strictly observed to avoid bad sentiment amongst non-priority groups.
	COVID-19 and child vaccination: A systematic approach to closing the immunization gap **Abstract** The COVID-19 pandemic threatens to set back major successes that have been achieved in global vaccine initiatives. We conducted a rapid review and synthesis of the literature on immunization provision and utilization since the onset of the COVID-19 pandemic. A total of 11 papers comprising peer-reviewed articles and key policies and guidelines, published between January 1 and June 15, 2020, were analyzed. Widespread disruptions of routine immunization and vaccination campaigns were reported, leaving millions of children worldwide at risk of measles outbreaks. We present an expanded model of the World Health Organization's Global Routine Immunization Strategic Plan (GRISP) action areas as a tool to help countries quickly adapt to immunization challenges in the presence of COVID-19, and close the emerging immunization coverage gaps.
	What might be effective methods of communicating with the public (including healthcare professionals) to address concerns about the vaccine and encourage uptake? **Abstract** No abstract provided
	How could post vaccination recovery (other than clinical management of adverse reactions and anaphylaxis) be safely managed in non-healthcare mass vaccination settings?

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	Abstract No abstract provided
	Communicating with the public about vaccines: Implementation considerations **Abstract** No abstract provided
	Vaccination communication between healthcare workers and older adults: implementation considerations **Abstract** No abstract provided
	Effects of digital interventions for promoting vaccine uptake **Abstract** No abstract provided
	What are the barriers and facilitators to individuals' willingness to be vaccinated for COVID-19? (not yet available online) **Abstract** • There is a growing body of evidence documenting individuals' willingness to receive a COVID-19 vaccine and the factors underlying their willingness. • Eighteen surveys conducted across the globe from March to July 2020 found individuals' willingness to receive a COVID-19 vaccine varied greatly. The proportion of respondents positively inclined towards receiving a COVID-19 vaccine ranged from 58% in a U.S.-based sample to 93% in an Indonesian-based sample. • Facilitators associated with increased willingness to receive a COVID-19 vaccine include greater perceived risk from COVID-19, various population characteristics (e.g., being male, older, educated, with higher income), and valuing healthcare providers' recommendations. • Barriers to willingness included low-perceived risk from COVID-19, being of Lantino or Black racial/ethnic background, and concerns about vaccine safety. • Barriers and facilitators mapped most commonly to several theoretical domains including: beliefs about consequences; social/professional role and identity; emotion; knowledge; social influences; environmental context and resources; and behavioural regulation. • Communication strategies may consider various behaviour change techniques to address determinants of individuals' willingness to receive a COVID-19 vaccine, including information about health consequences, social support or encouragement, prompts/cues, among others.
	Interim framework for COVID-19 vaccine allocation and distribution in the U.S.

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Guidance developed using some type of evidence synthesis and/or expert opinion	**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 U.S. 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 two tiers.
	The public's role in COVID-19 vaccination: Human-centered recommendations to enhance pandemic vaccine awareness, access, and acceptance in the United States **Abstract** Given the social and economic upheavals caused by the COVID-19 pandemic, political leaders, health officials, and members of the public are eager for solutions. One of the most promising, if they can be successfully developed, are vaccines. While the technological development of such counter-measures is currently underway, a key social gap remains. Past experience in routine and crisis contexts demonstrates that uptake of vaccines is more complicated than simply making the technology available. Vaccine uptake, and especially the widespread acceptance of vaccines, is a social endeavour that requires consideration of human factors. To provide a starting place for this critical component of a future COVID-19 vaccination campaign in the United States, the 23-person *Working Group on Readying Populations for COVID-19 Vaccines* was formed. One outcome of this group is a synthesis of the major challenges and opportunities associated with a future COVID-19-vaccination campaign and empirically informed recommendations to advance public understanding of access to and acceptance of vaccines that protect against SARS-CoV-2. While not inclusive of all possible steps that could or should be done to facilitate COVID-19 vaccination, the working group believes that the recommendations provided are essential for a successful vaccination program.
	Key aspects regarding the introduction and prioritisation of COVID-19 vaccination in the EU/EEA and the U.K. **Summary**

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	This document provides an overview of the key aspects related to the initial phases following the introduction of one or more COVID-19 vaccines in the European Union and European Economic Area (EU/EEA) and the United Kingdom (U.K). The aim is to support but not define EU policy on COVID-19 vaccination. The key components for a successful national and EU-level COVID-19 vaccine deployment are: • a robust COVID-19 disease surveillance system; • post-marketing studies on effectiveness and impact; • active and passive monitoring of adverse events following immunization; • robust and timely vaccination coverage data; • evidence-based decision-making; • legal and regulatory frameworks for vaccines deployment; • vaccine-delivery infrastructure and supply-chain management; • monitoring of vaccine acceptability and behavioural research; • communication plans; • ethical and equitable access to vaccination. These components are those usually adopted when a new vaccine is available on the market and integrated into national vaccination schedules. COVID-19, caused by the virus SARS-CoV-2, is a new disease, and no vaccine is yet available for it, posing great challenges to the early development of national vaccination strategies. Patterns of exposure to SARS-CoV-2, as well as the incidence, burden and geographical distribution of COVID-19, will influence choices about vaccine deployment. There is currently a lack of certainty and knowledge about the characteristics of COVID-19 vaccines that could become available in the EU/EEA and the U.K., as well as remaining gaps in the scientific knowledge of the virus and the disease. Vaccination plans and strategies will therefore need to be adapted as more information becomes available. Once vaccines against COVID-19 are available, their supply is likely to be limited, at least initially. Supply capacity, both initially and over time, will thus determine vaccine usage and delivery prioritization. Deployment will need to be adjusted accordingly to promptly optimize vaccine allocation and ensure vaccine availability to those most in need. The following non-mutually exclusive approaches for vaccine deployment can be considered when building vaccination strategies, taking into account different levels of vaccine supply and stages of the pandemic: • focusing on selected groups (e.g,. individuals at risk of severe COVID-19, essential workers, vulnerable groups); • vaccinating according to age strata (e.g., all individuals above a certain age);

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	• targeting groups with an increased risk of exposure and onward transmission of SARS-CoV-2 (e.g. exposure in professional settings, younger adults); • prioritizing geographical regions with high incidence of COVID-19; • deploying the vaccine to control active outbreaks; • performing adaptive approaches to be modulated according to circumstances; • conducting a universal vaccination strategy. Given the anticipated initial shortage, countries will need to identify priority groups for vaccination. A broader characterization of these groups will need to further categorize them into different priority tiers. The identification of the priority groups, and of the tiers within them, will depend on several factors, including the disease's epidemiology at the time of vaccine deployment, the evidence of risk of severe disease and of exposure to COVID-19, the preservation of essential societal services and equity principles, among others. In the process of developing an iterative approach for vaccine deployment with varying supply, mathematical modelling may aid public health experts in identifying priority groups for vaccination, and in assessing different scenarios and the impact of alternative vaccination strategies. Lessons learned from the 2009 H1N1 influenza pandemic should also be considered.
	Overview of COVID-19 vaccination strategies and vaccine deployment plans in the EU/EEA and the UK **Summary** This report provides an initial overview of the national COVID-19 vaccination strategies and vaccine deployment plans in the countries of the European Union and European Economic Area (EU/EEA) and the United Kingdom (U.K.). This overview is based on results from an ECDC survey and meeting among members of the EU/EEA National Immunisation Technical Advisory Groups (NITAG) Collaboration in October 2020, and a survey undertaken by the Health Security and Vaccination unit of the European Commission's Directorate-General for Health and Food Safety with members of the EU Health Security Committee (HSC) in November 2020. This report provides insights into the main aspects of national deployment plans currently under development in countries. The information presented will continue to evolve in the coming weeks and months as countries further develop their vaccine deployment plans and more information becomes available on the different characteristics of various COVID-19 vaccines. Initial considerations for priority groups and underlying evidence • All 31 EU/EEA countries and the U.K. responding to the ECDC survey have started evaluating available information with the goal of establishing interim recommendations for first-priority groups for vaccination. As of 30 November 2020, nine countries had

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	already published interim recommendations for priority groups (Austria, Belgium, Czechia, France, Luxembourg, the Netherlands, Spain, Sweden and the U.K.). • Countries responding to the ECDC and the HSC surveys and those that have already published recommendations have primarily prioritized elderly people (with various lower age cut-off across countries), healthcare workers and those persons with certain comorbidities. Some countries have started to prioritize further among the priority groups selected for first vaccination, as it is probable that vaccine doses will be in limited supply in the initial phase of the vaccination campaigns. • Prioritization groups may also be modified as more evidence becomes available about the COVID-19 disease epidemiology and characteristics of vaccines, including information on vaccine safety and efficacy by age and target group. • Modelling different options for vaccine efficacy for different outcomes (including severe disease, mild disease, infection and infectivity, and death) and vaccine uptake in EU populations, as well as different scenarios for prioritization, is an important step that will inform decisions on vaccination strategies and estimate their possible impact. Logistical considerations • For the roll-out of future COVID-19 vaccines, many countries will make use of existing vaccination structures and delivery services as much as possible. Responses from the HSC survey showed that some countries were planning to train more people to carry out the vaccinations. • Several countries indicated that there is a need to procure additional equipment for the cold-chain requirements due to the ultra-low temperature required for some of the COVID-19 vaccines. • Most countries reported that COVID-19 vaccines will be provided free of charge for their citizens. Monitoring systems for vaccine coverage, safety, effectiveness, and acceptance Electronic immunization registries for the monitoring of individual and population-level vaccine uptake are available at the national or subnational level in 14 countries, and developments towards such national systems are ongoing in 10 further countries. Two countries have an insurance-based system that will be used for the monitoring of vaccine uptake. Documentation regarding which vaccine product has been administered and when is key to the success of vaccination programs. Such documentation is also important for monitoring any safety signals, such as an adverse event following immunization (AEFI) that may arise for any of the vaccine products. Information in these registries could serve as the basis for immunisatzon cards. Limitation of the information collected The information collected in this report is not intended to be exhaustive. Most of the countries are currently in the development phase of their deployment plans, and the questions in the surveys were also mostly open-ended in nature, so some information may not have been captured. ECDC is planning to issue a new interim report in January.
	Joint Committee on Vaccination and Immunisation: advice on priority groups for COVID-19 vaccination, 30 December 2020 **Abstract** No abstract provided

Type of document	Abstract and link to full text
	COVID-19 vaccination programme: Information for healthcare practitioners **Abstract** No abstract provided
Protocols for reviews that are underway	No highly relevant protocols identified
Single studies in areas where no reviews were identified	The effect of frames on COVID-19 vaccine hesitancy **Abstract** In order to control the spread of infectious diseases such as COVID-19, it will be important to develop a communication strategy to counteract "vaccine hesitancy". This paper reports the results of a survey experiment testing the impacts of several types of message content: the safety and efficacy of the vaccine itself, the likelihood that others will take the vaccine, and the possible role of politics in promoting the vaccine. In an original survey of 1,123 American M-Turk respondents, we provided six different information conditions suggesting the safety and efficacy of the vaccine, the lack of safety/efficacy of the vaccine, the suggestion that most others would take the vaccine, the suggestion that most others would not take the vaccine, the suggestion that the vaccine is being promoted to gain greater control over individual freedom, and the suggestion that it is being rushed for political motivations. We compared the responses for those in the treatment groups with a control group who received no additional information. In comparison to the control group, those who received information about the safety/efficacy of the vaccine were more likely to report that they would take the vaccine, those who received information that others were reluctant to take the vaccine were more likely to report that they themselves would not take it, that other Americans would not take it, and that it was not important to get the vaccine, and those who received information about political influences on vaccine development expressed hesitancy to take it. Communication of effective messages about the vaccine will be essential for public-health agencies that seek to promote vaccine take-up.
	Global, regional, and national estimates of target population sizes for covid-19 vaccination: descriptive study **Abstract** Objective To provide global, regional, and national estimates of target population sizes for coronavirus disease 2019 (COVID-19) vaccination to inform country-specific immunization strategies on a global scale. Design Descriptive study. Setting 194 member states of the World Health Organization.

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	Population Target populations for COVID-19 vaccination based on country-specific characteristics and vaccine objectives (maintaining essential core societal services; reducing severe COVID-19; reducing symptomatic infections and stopping virus transmission). Main outcome measure Size of target populations for COVID-19 vaccination. Estimates use country-specific data on population sizes stratified by occupation, age, risk factors for COVID-19 severity, vaccine acceptance, and global vaccine production. These data were derived from a multipronged search of official websites, media sources, and academic journal articles. Results Target population sizes for COVID-19 vaccination vary markedly by vaccination goal and geographical region. Differences in demographic structure, presence of underlying conditions, and number of essential workers lead to highly variable estimates of target populations at regional and country levels. In particular, Europe has the highest share of essential workers (63.0 million, 8.9%) and people with underlying conditions (265.9 million, 37.4%); these two categories are essential in maintaining societal functions and reducing severe COVID-19, respectively. In contrast, Southeast Asia has the highest share of healthy adults (777.5 million, 58.9%), a key target for reducing community transmission. Vaccine hesitancy will probably impact future COVID-19 vaccination programs; based on a literature review, 68.4% (95% confidence interval 64.2% to 72.6%) of the global population is willing to receive COVID-19 vaccination. Therefore, the adult population willing to be vaccinated is estimated at 3.7 billion (95% confidence interval 3.2 to 4.1 billion). Conclusions The distribution of target groups at country and regional levels highlights the importance of designing an equitable and efficient plan for vaccine prioritization and allocation. Each country should evaluate different strategies and allocation schemes based on local epidemiology, underlying population health, projections of available vaccine doses, and preference for vaccination strategies that favour direct or indirect benefits.
	Reserving coronavirus disease 2019 vaccines for global access: cross sectional analysis **Abstract** Objective To analyze the premarket purchase commitments for coronavirus disease 2019 (COVID-19) vaccines from leading manufacturers to recipient countries. Design Cross sectional analysis. Data sources

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	World Health Organization's draft landscape of COVID-19 candidate vaccines, along with company disclosures to the U.S. Securities and Exchange Commission, company and foundation press releases, government press releases, and media reports. Eligibility criteria and data analysis Premarket purchase commitments for COVID-19 vaccines, publicly announced by 15 November 2020. Main outcome measures Premarket purchase commitments for COVID-19 vaccine candidates and price per course, vaccine platform, and stage of research and development, as well as procurement agent and recipient country. Results As of 15 November 2020, several countries have made premarket purchase commitments totaling 7.48 billion doses, or 3.76 billion courses, of COVID-19 vaccines from 13 vaccine manufacturers. Just over half (51%) of these doses will go to high-income countries, which represent 14% of the world's population. The U.S. has reserved 800 million doses but accounts for a fifth of all COVID-19 cases globally (11.02 million cases), whereas Japan, Australia and Canada have collectively reserved more than one billion doses but do not account for even 1% of current global COVID-19 cases globally (0.45 million cases). If these vaccine candidates were all successfully scaled, the total projected manufacturing capacity would be 5.96 billion courses by the end of 2021. Up to 40% (or 2.34 billion) of vaccine courses from these manufacturers might potentially remain for low- and middle-income countries – less if high-income countries exercise scale-up options and more if high-income countries share what they have procured. Prices for these vaccines vary by more than 10-fold, from $6.00 (£4.50; €4.90) per course to as high as $74 per course. With broad country participation apart from the U.S. and Russia, the COVAX Facility – the vaccines pillar of the World Health Organization's Access to COVID-19 Tools (ACT) Accelerator – has secured at least 500 million doses, or 250 million courses, and financing for half of the targeted two billion doses by the end of 2021 in efforts to support globally coordinated access to COVID-19 vaccines. Conclusions This study provides an overview of how high-income countries have secured future supplies of COVID-19 vaccines, but that access for the rest of the world is uncertain. Governments and manufacturers might provide much needed assurances for equitable allocation of COVID-19 vaccines through greater transparency and accountability over these arrangements.
	Inadequate intention to receive COVID-19 vaccination: Indicators for public health messaging needed to improve uptake in UK **Abstract** Data promising effective COVID-19 vaccines have accelerated the U.K.'s mass-vaccination program. The U.K. public's attitudes to the government's prioritization list are unknown, and achieving critical population immunity will require the remaining majority to accept both vaccination and the delay in access of up to a year or more. This cross-sectional observational study sent an online questionnaire to registrants of the U.K. National Health Service's largest personal health record. Question items covered willingness for COVID-19 vaccine uptake and attitudes to prioritization. Among 9,122 responses, 71.5% indicated wanting a vaccine, below what previous

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	modelling indicated as critical levels for progressing towards herd immunity. 22.7% disagreed with the prioritization list, though 70.3% were against being able to expedite vaccination through payment. Age and female gender were, respectively, strongly positively and negatively associated with wanting a vaccine. Teachers and Black, Asian and Minority Ethnic (BAME) groups were most cited by respondents for prioritization. This study identifies factors to inform the public-health messaging critical to improving uptake.
	A threat- and efficacy-based framework to understand confidence in vaccines among the public-health workforce **Abstract** The Extended Parallel Process Model (EPPM) is an established threat- and efficacy-based behavioural framework for understanding health behaviours in the face of uncertain risk. A growing body of research has applied this model to understand these behaviours among the public-health workforce. In this manuscript, we aim to explore the application of this framework to the public-health workforce, with a novel focus on their confidence in vaccines and perceptions of vaccine injury-compensation mechanisms. We characterize specific connections between EPPM's threat and efficacy dimensions and relevant vaccine policy frameworks, and highlight how these connections can usefully inform training interventions for public-health workers to enhance their confidence in these vaccine policy measures.
	Update on vaccine liability in the United States: Presentation at the national vaccine program office workshop on strengthening the supply of routinely recommended vaccines in the United States, 12 February 2002 **Abstract** Two decades ago, a liability crisis brought on by concerns about the safety of diphtheria and tetanus toxoids and pertussis vaccine led to supply shortages and calls for rationing of the vaccine. Vaccine prices skyrocketed, and research on new products was threatened. In response, Congress created the National Vaccine Injury Compensation Program, which is tort reform legislation designed to compensate individuals quickly, easily, and generously. Since 1988, the Vaccine Injury Compensation Program has stabilized the marketplace, as evidenced by high immunization rates, stable pricing, and an increasing number of vaccine candidates in development. Although current vaccine shortages do not appear to be related to issues of liability, a new wave of tort litigation alleging that some vaccines cause autism has led to speculation that history could repeat itself.
	Should the vaccine injury compensation program be expanded to cover adults? **Abstract** In 1996, the National Vaccine Advisory Committee (NVAC) asked for a review of the pros and cons of including adult influenza and pneumococcal vaccines in the Vaccine Injury Compensation Program (VICP). The authors, as staff to the subcommittees charged with undertaking this assessment, looked at the following questions: (a) would inclusion in VICP of these two vaccines, used primarily by adults, increase adult vaccination levels?; (b) is this federal involvement warranted based on the liability burden for these vaccines?; (c) does the risk of adverse events following vaccinations warrant inclusion of these vaccines?; and (d) is there consensus among stakeholders favouring their inclusion? To address these questions, the authors reviewed information on adult vaccines, including data on lawsuits filed and reports of injuries, and sought input from interested groups. They found no evidence that the use of influenza and pneumococcal vaccines would increase if they were included in VICP. They found a low liability burden for these vaccines that serious

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	events were rare, and that no consensus existed among stakeholders. After considering the staff report, NVAC chose, in 1996, not to advise the Department of Health and Human Services to include adult vaccines in VICP.
	Timing of COVID-19 vaccine approval and endorsement by public figures (pre-print) **Abstract** The global spread of COVID-19 has created an urgent need for a safe and effective vaccine. However, even if a safe and medically effective vaccine is developed, hesitancy by citizens to receive it would undercut its effectiveness as a tool for limiting the spread of COVID-19.(1,2,3) A potential driver of hesitancy in the United States is the politicization of a potential vaccine, including when one might be approved with respect to the presidential election and which public figures are endorsing its safety and efficacy.(4,5) Using a pair of randomized survey experiments, we show that announcing approval of a COVID-19 vaccine one week before the election compared to one week after considerably reduces both beliefs about its safety and efficacy and willingness to receive it. However, endorsement by Dr. Anthony Fauci increases reported beliefs about safety and willingness to receive a vaccine among all partisan sub-groups. Further, an endorsement by Dr. Fauci increased uptake and confidence in safety even if a vaccine receives pre-election approval. The results here suggest that perceptions of political influence in COVID-19-vaccine approval could significantly undermine the viability of a vaccine as a strategy to end the pandemic.
	A global survey of potential acceptance of a COVID-19 vaccine **Abstract** Several coronavirus disease 2019 (COVID-19) vaccines are currently in human trials. In June 2020, we surveyed 13,426 people in 19 countries to determine potential acceptance rates and factors influencing acceptance of a COVID-19 vaccine. Of these, 71.5% of participants reported that they would be very or somewhat likely to take a COVID-19 vaccine, and 61.4% reported that they would accept their employer's recommendation to do so. Differences in acceptance rates ranged from almost 90% (in China) to less than 55% (in Russia). Respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's advice to do so.
	Influences on Attitudes Regarding Potential COVID-19 Vaccination in the United States **Abstract** The COVID-19 pandemic continues to ravage the world, with the United States being highly affected. A vaccine provides the best hope for a permanent solution to controlling the pandemic. However, to be effective, a vaccine must be accepted and used by a large majority of the population. The aim of this study was to understand the attitudes towards and obstacles facing vaccination with a potential COVID-19 vaccine. To measure these attitudes a survey was administered to 316 respondents across the United States by a survey corporation. Structural equation modelling was used to analyze the relationships of several factors with attitudes toward potential COVID-19 vaccination. Prior vaccine usage and attitudes predicted attitudes towards COVID-19 vaccination. Assessment of the severity of COVID-19 for the United States was also predictive. Approximately 68% of all respondents were supportive of being vaccinated for COVID-19, but side effects, efficacy and length of testing remained concerns. Longer testing, increased efficacy and development in the United States were significantly associated with increased vaccine acceptance. Messages promoting COVID-19

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	vaccination should seek to alleviate the concerns of those who are already vaccine-hesitant. Messaging directed at the benefits of vaccination for the United States as a country would address the second predictive factor. Enough time should be taken to allay concerns about both short- and long-term side effects before a vaccine is released.
	Assessments of heavy lift UAV quadcopter drone to support COVID-19 vaccine cold chain delivery for indigenous people in remote areas in South East Asia **Abstract** Vaccine delivery is one important aspect needed to be strengthened within health systems. One of the main challenges in COVID-19 vaccine delivery is how to cover Indigenous populations in remote and isolated forests in Southeast Asia. Another issue in COVID-19 cold-chain delivery is requirement for a carrier that can maintain the suitable storage temperature. Related to this condition, COVID-19 vaccine should be delivered using heavy vaccine cooler box and this demand delivery system equipped with heavy lift capacity. In here, this study proposes and assesses the potential use of heavy lift UAV quadcopter to expand the COVID-19 vaccine delivery to Indigenous people living in villages that are impeded by rugged terrain. The landscape and terrain analysis show that access to the villages was dominated by 15%-45% slopes, and the available access is only a 1.5 m width trail. To transport 500 vials with 10 kg carrier along 2 km trail, it requires two persons to walk for one hour. By using drones, a straight-line route with a length of 1.5 km can be developed. There were at least three drone types available commercially to lift a 10 kg load, and several drones with payload capacity below 10 kg. For carrying 100 vials to a village using drones, it is estimated the required delivery time was 1.23-1.38 minutes. Around 1.57-1.66-minute delivery times were required to transport 250 vials. For carrying the maximum and full loads of 500 vials or equals to 10 kg load, a drone requires an average of 3.13-minute delivery times. This required drone delivery time is significantly below the required time by walking that is almost one hour. Drones were limited by flight operational times. All required delivery times for each drone assessed in this study were still below the drone operational time. The lowest drone operational time was 16 minutes and this is still higher than the time required for a drone to deliver the vaccine. Considering the effectiveness and anticipating vaccination, the UAV quadcopter drone is a feasible option to support COVID-19 vaccine delivery to reach Indigenous people in isolated areas.
	Towards intervention development to increase the uptake of COVID-19 vaccination among those at high risk: Outlining evidence-based and theoretically informed future intervention content **Abstract** Objectives: Development of a vaccine against COVID-19 will be key to controlling the pandemic. We need to understand the barriers and facilitators to receiving a future COVID-19 vaccine so that we can provide recommendations for the design of interventions aimed at maximizing public acceptance. Design: Cross-sectional U.K. survey with older adults and patients with chronic respiratory disease. Methods: During the U.K.'s early April 2020 'lockdown' period, 527 participants (311 older adults, mean age = 70.4 years; 216 chronic respiratory participants, mean age = 43.8 years) completed an online questionnaire assessing willingness to receive a COVID-19 vaccine, perceptions of COVID-19, and intention to receive influenza and pneumococcal vaccinations. A free text response (n = 502) examined barriers and facilitators to uptake. The Behaviour Change Wheel informed the analysis of these responses, which were coded

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	to the Theoretical Domains Framework (TDF). Behaviour change techniques (BCTs) were identified. Results: Eighty-six per cent of respondents want to receive a COVID-19 vaccine. This was positively correlated with the perception that COVID-19 will persist over time, and negatively associated with perceiving the media to have over-exaggerated the risk. The majority of barriers and facilitators were mapped onto the 'beliefs about consequences' TDF domain, with themes relating to personal health, health consequences to others, concerns of vaccine safety, and severity of COVID-19. Conclusions: Willingness to receive a COVID-19 vaccination is currently high among high-risk individuals. Mass-media interventions aimed at maximizing vaccine uptake should utilize the BCTs of information about health, emotional, social and environmental consequences, and salience of consequences.
	Web-Based Tailored Messaging to Increase Vaccination: A Randomized Clinical Trial **Abstract** Background To increase vaccine acceptance, we created a web-based "Vaccines and Your Baby" intervention (VAYB) that provided new parents with vaccine information messages tailored to vaccine beliefs and values. We evaluated the effectiveness of the VAYB by comparing timely uptake of infant vaccines to an untailored version of the intervention (UT) or usual care intervention (UC) only. Methods Between April 2016 and June 2019, we conducted a randomized clinical trial. Pregnant women and new parents were randomly assigned to the VAYB, UT, or UC arms. In the VAYB and UT arms, participants were exposed to interventions at four time points from pregnancy until their child was 15 months of age. The primary outcome was up-to-date status for recommended vaccines from birth to 200 days of age. A modified intent-to-treat analysis was conducted. Data were analyzed with logistic regression to generate odds ratios (ORs) and 95% confidence intervals (CIs). Results We enrolled 824 participants (276 VAYB, 274 UT, 274 UC), 143 (17.4%) of whom were lost to follow-up. The up-to-date rates in the VAYB, UT, and UC arms were 91.44%, 92.86%, and 92.31%, respectively. Infants in the VAYB arm were not more likely to be up to date than infants in the UC arm (OR = 0.89; 95% CI, 0.45–1.76) or in the UT arm (OR = 0.82; 95% CI, 0.42–1.63). The odds of being up to date did not differ between UT and UC arms (OR = 1.08; 95% CI, 0.54–2.18). Conclusions Delivering web-based vaccine messages tailored to parents' vaccine attitudes and values did not have a positive impact on the timely uptake of infant vaccines.
	YouTube Coverage of COVID-19 vaccine development: implications for awareness and uptake

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	Abstract This study examined 100 widely viewed YouTube videos on COVID-19 vaccination. Information such as length, format, upload source, content, and cumulative views was coded. As of 6 April 2020, the videos were viewed >33 million times. Almost 75% were uploaded by news sources (garnering >20 million views). While only 16% were uploaded by consumers, these videos garnered over 25% of cumulative views (n = 8,581,186 views). The majority of videos mentioned the vaccine manufacturing process (61.0%) and 45.0% speculated on the amount of time needed to have a vaccine ready for use, which most often was thought to be one to two years. Even once the biological and technical aspects of vaccine development and manufacturing are accomplished, the benefits conferred on population health will also depend on public willingness to be vaccinated. Ongoing tracking of YouTube is needed to identify what is communicated about vaccines for COVID-19. To the extent that public health officials learn how to create videos about the safety and effectiveness of a COVID-19 vaccine, which attract viewers, this could help increase awareness and interest about vaccination and help individuals make an informed decision about vaccine uptake.

Appendix 6: 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 In support of a compensation plan for vaccine-associated injuries. Infectious Diseases and Immunization Committee, Canadian Paediatric Society Flu vaccines: Increasing uptake Guidance on the prevention of viral Hepatitis B and C among people who inject drugs Evidence to recommendations for COVID-19 vaccines: Evidence framework Response to measles outbreaks in measles mortality reduction settings
Full systematic reviews	The association between influenza vaccination and the risk of SARS-CoV-2 infection, severe illness, and death: A Systematic review of the literature Universal influenza vaccination in children The effects, safety and acceptability of compact, pre-filled, autodisable injection devices when delivered by lay health workers Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: A synthesis of qualitative evidence Update on the National Vaccine Injury Compensation Program Global landscape analysis of no-fault compensation programmes for vaccine injuries: A review and survey of implementing countries Interventions to improve vaccination uptake and cost effectiveness of vaccine strategies in newly arrived migrants Immunization information systems to increase vaccination rates: Cost analysis

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	The effect of pay-for-performance compensation model implementation on vaccination rate: A systematic review Assessing strategies for increasing urban routine immunization coverage of childhood vaccines in low- and middle-income countries: A systematic review of peer-reviewed literature Increasing appropriate vaccination: Community-wide education when used alone (2010 archived review) Increasing appropriate vaccination: Home visits to increase vaccination rates (2009 archived review) Increasing appropriate vaccination: Standing orders (2009 archived review) Increasing appropriate vaccination: Vaccination requirements for child care, school, and college attendance (2009 archived review) Increasing appropriate vaccination: Client reminder and recall systems (2008 archived review) Increasing appropriate vaccination: Reducing client out-of-pocket costs for vaccinations (2008 archived review) Increasing appropriate vaccination: Provider reminders (2008 archived review) Increasing appropriate vaccination: Client or family incentive rewards (2011 archived review) Increasing appropriate vaccination: Provider education when used alone (2010 archived review) Systematic review of the incremental costs of interventions that increase immunization coverage Vaccine communication campaigns: A systematic review of the literature based on experimental methodology (2009-2019) *(unavailable)* Interpretative immune targets and contemporary position for vaccine development against SARS-CoV-2: A systematic review Systematic review of the efficacy, effectiveness and safety of newer and enhanced seasonal influenza vaccines for the prevention of laboratory-confirmed influenza in individuals aged 18 years and over
Rapid reviews	SARS-CoV-2 vaccine development: Current status

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	Resource allocation and pandemic response: An evidence synthesis to inform decision making Does BCG vaccination protect against acute respiratory infections and COVID-19? A rapid review of current evidence The most promising therapeutics for COVID-19 The most promising vaccines for COVID-19 Needed: Less influenza vaccine hesitancy and less presenteeism among health care workers in the COVID-19 era Ongoing trials for Bacille Calmette-Guérin (BCG) vaccines in the prevention of COVID-19 Ongoing trials for novel vaccines in the prevention of COVID-19 Influenza vaccination and risk of subsequent non-influenza respiratory viruses: Safety Needleless injectors for the administration of vaccines: A review of clinical effectiveness COVID-19 and child vaccination: A systematic approach to closing the immunization gap Australia needs a vaccine injury compensation scheme: Upcoming COVID-19 vaccines make its introduction urgent Performance of the United States Vaccine Injury Compensation Program (VICP): 1988–2019 Vaccine injury redress programmes. An evidence review Encouraging travellers to take preventive measures against travel-related communicable diseases: A rapid review of the literature Why is cervical screening coverage falling in the UK and what has primary care done to increase uptake of cervical screening?

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	What are the factors influencing health care workers' uptake of flu immunisation? Scoping report - universal influenza vaccination in children Réponses rapides dans le cadre de la Covid-19 - Démarche médicale pour la vaccination contre la Covid-19 – Premières phases Covid-19 vaccines
Guidance developed using some type of evidence synthesis and/or expert opinion	Designing and implementing an immunization information system COVID-19 vaccination: a guide for social care staff Training recommendations for COVID-19 vaccinators COVID-19 vaccination: women of childbearing age, currently pregnant or breastfeeding Flu vaccination: Who should have it this winter and why
Protocols for reviews that are underway	Vaccine communication campaigns: A systematic review of the literature based on experimental methodology (2000-2019) The use of supplementary immunisation activities to improve uptake of current and future vaccines in low-income and middle-income countries: A systematic review protocol Barriers, supports, and effective interventions for uptake of human papillomavirus and other vaccines within global and Canadian Indigenous peoples: A systematic review protocol *(from 2018)* Interventions targeted on healthcare workers to address vaccine hesitancy: Systematic review *(from 2019)* Seasonal and pandemic influenza vaccine hesitancy among health care professionals: An integrative review of the literature from 2009 - 2019 Systematic literature review and network meta-analysis regarding safety, tolerability and immunogenicity of covid-19 vaccines Safety and immunogenicity of COVID-19 vaccines: A systematic review and network meta-analysis with a focus on the effect of elderly and pediatric populations

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	The impact of the COVID-19 pandemic on immunization campaigns and programs
Titles/questions for reviews that are being planned	Role of BCG vaccination for prevention of COVID 19 Global research on vaccine hesitancy: a bibliometric study (2000-2020) VH-19 Factors associated with Hong Kong adults' likelihood of accepting COVID-19 vaccination Coronavirus vaccination acceptability study (CoVAccS) COVID Vaccination Attitudes
Single studies in areas where no reviews were identified	Mistrust in biomedical research and vaccine hesitancy: the forefront challenge in the battle against COVID-19 in Italy 'Vaccine hesitancy' among university students in Italy during the COVID-19 pandemic Contingent assessment of the COVID-19 vaccine Attitudes toward a potential SARS-CoV-2 vaccine: A survey of U.S. adults Factors associated with U.S. adults' likelihood of accepting COVID-19 vaccination Are we ready when COVID-19 vaccine is available? Study on nurses' vaccine hesitancy in Hong Kong Survey data for COVID-19 vaccine preference analysis in the United Arab Emirates The SARS-CoV-2 vaccine pipeline: An overview Financing vaccines for global health security An mRNA vaccine against SARS-CoV-2: Preliminary report BCG vaccination and mortality of COVID-19 across 173 Countries: An ecological study Factors determining COVID-19 pneumonia severity in a country with routine BCG vaccination

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	Effect of an inactivated vaccine against SARS-CoV-2 on safety and immunogenicity outcomes: Interim analysis of two randomized clinical trials Impact of routine infant BCG vaccination on COVID-19 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 Mandated Bacillus Calmette-Guérin (BCG) vaccination predicts flattened curves for the spread of COVID-19 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 Safety and immunogenicity of an inactivated SARS-CoV-2 vaccine, BBIBP-CorV: A randomised, double-blind, placebo-controlled, phase 1/2 trial 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 Safety and immunogenicity of two RNA-based COVID-19 vaccine candidates 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 Safety and COVID-19 symptoms in individuals recently vaccinated with BCG: A retrospective cohort study Silver lining of COVID-19: Heightened global interest in pneumococcal and influenza vaccines, an infodemiology study Designing pull funding for a COVID-19 vaccine Contingent assessment of the COVID-19 vaccine Emerging manufacturers engagements in the COVID−19 vaccine research, development and supply

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	Impact of COVID-19 and Health System Performance on Vaccination Hesitancy: Evidence from a Two-Leg Representative Survey in the UK Preparing for a COVID-19 vaccine: Identifying and psychologically profiling those who are vaccine hesitant or resistant in two general population samples Rationalizing vaccine injury compensation The case for a vaccine injury compensation program for Canada The National Vaccine Injury Compensation Program: Striking a balance between individual rights and community benefit Vaccine Injury Compensation Programs: Rationale and an overview of the Québec program A new wave of vaccines for non-communicable diseases: What are the regulatory challenges? Use of a new global indicator for vaccine safety surveillance and trends in adverse events following immunization reporting 2000–2015 Economic and immunisation safety surveillance characteristics of countries implementing no-fault compensation programmes for vaccine injuries The Smallpox Vaccine Injury Compensation Program Balancing vaccine science and national policy objectives: Lessons from the National Vaccine Injury Compensation Program Omnibus Autism Proceedings Closing the door to lost earnings under the National Childhood Vaccine Injury Act of 1986 Smallpox Vaccine Injury Compensation Program: Smallpox (vaccinia) Vaccine Injury Table. Interim final rule National Vaccine Injury Compensation Program: Revisions to the vaccine injury table. Final rule Compensation for vaccine-related injuries. Health and Public Policy Committee, American College of Physicians

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	Compensation under the National Childhood Vaccine Injury Act Compensation programs for vaccine-related injury abroad: A comparative analysis National Childhood Vaccine Injury Compensation Act Compensation programs after withdrawal of the recommendation for HPV vaccine in Japan A global vaccine injury compensation system Compensation for vaccination accidents No-fault vaccine insurance: Lessons from the National Vaccine Injury Compensation Program Should the vaccine injury compensation program be expanded to cover adults? Performance of the United States Vaccine Injury Compensation Program: 1988-2019 No-fault compensation following adverse events attributed to vaccination: A review of international programmes Mandatory vaccination and no-fault vaccine injury compensation schemes: An identification of country-level policies Vaccine injury compensation programs worldwide No-Fault Compensation In New Zealand: Harmonizing Injury Compensation, Provider Accountability, And Patient Safety No-fault compensation for adverse events following immunization: a review of Chinese law and practice Designing a no-fault vaccine-injury compensation programme for Canada: lessons learned from an international analysis of programmes Seizures, encephalopathy, and vaccines: Experience in the National Vaccine Injury Compensation Program

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Wilson MG, DeMaio P, Wang Q, Gauvin FP, Alam S, Ahmad A, Bain T, Bhuiya A, Drakos A, Sharma K, Whitelaw S, Lavis JN. Appendices for COVID-19 living evidence profile #1 (version 1): What is known about anticipated COVID-19 vaccine roll-out elements? Hamilton: McMaster Health Forum, 20 January 2021.

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