

EVIDENCE SYNTHESIS BRIEFING NOTE

TOPIC: COVID-19 VACCINE UPTAKE AMONG HEALTH CARE WORKERS

Information finalized as of January 22, 2021.^a

This Briefing Note was completed by the Research, Analysis, and Evaluation Branch (Ministry of Health) based on information provided by members of the COVID-19 Evidence Synthesis Network. Please refer to the [Methods](#) section for further information.

Purpose: This note provides a summary of Canadian and international experiences with vaccination hesitancy among health care workers (HCW) during the novel coronavirus disease (COVID-19) pandemic, and interventions used to increase vaccination uptake.

Key Findings:

- An emerging body of evidence from across the globe (e.g., United States, France, Egypt, Saudi Arabia, China, Hong Kong) has begun to document HCWs' willingness to receive a COVID-19 vaccine, and the factors underlying their willingness. Emerging research suggests that the proportion of HCWs positively inclined toward receiving a COVID-19 vaccine ranges from 27.7% to 81.5%.
- Differences in vaccine acceptance were associated with individual and group characteristics, which should be addressed to avoid exacerbating health inequities.
 - **Barriers:** Female gender; Black, Latinx, Conservative/Republican HCWs; rural work settings; concerns about COVID-19 vaccine safety; concerns about vaccine effectiveness; and concerns about expedited development/approval process; experience with racial discrimination.
 - **Enablers:** Male gender; older age; physician profession; presence of comorbidities or chronic diseases; fear of COVID-19; perceived risk; stronger vaccine confidence; belief that COVID-19 vaccine will likely to stop the pandemic; social contacts' decisions to have vaccine; and use of CDC updates.
 - **Interventions to Increase Uptake:** Multi-faceted vaccine campaigns (i.e., influenza, hepatitis B, other vaccines) have reached an absolute vaccination coverage among HCWs of over 90%; campaigns solely based on education and promotion or on-site-vaccination did not regularly exceed an absolute vaccination coverage of 40%.

Limitations:

- No identified studies reported specific interventions to increase COVID-19 vaccination uptake among HCWs. Since the distribution of vaccinations began in early December 2020, there likely has not been an opportunity to examine interventions to address COVID-19 vaccine hesitancy.

Analysis for Ontario:

- Since a large proportion of HCWs reported plans to delay vaccine uptake due to concerns about expedited development, forthcoming vaccination campaigns could address this aspect of COVID-19 vaccine hesitancy.
- 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.
- COVID 19 vaccination campaigns must be sensitive to individuals' past-experiences of discrimination by identifying appropriate channels of communication and sites for vaccine distribution to reach those who may mistrust the vaccination campaign.

Supporting Evidence

[Table 1](#) summarizes published and grey literature on vaccine hesitancy among health care workers (HCWs) during the COVID-19 pandemic, and interventions to increase vaccination uptake. In the Appendix, [Table 2](#) summarizes the results of emerging research on COVID-19 vaccine perception, acceptance, and hesitancy among HCWs. [Table 3](#) provides details of interventions used to increase COVID-19 update among HCWs. In addition, guidance from the US Centers for Disease Control and Prevention on building confidence in COVID-19 vaccines among HCWs is provided in [Table 4](#).

Table 1: COVID-19 Vaccine Hesitancy and Uptake Among Health Care Workers

Scientific Evidence	<p>COVID-19 Vaccination Acceptance</p> <ul style="list-style-type: none"> • An emerging body of evidence has begun to document HCWs’ willingness to receive a COVID-19 vaccine and the factors underlying their willingness. <ul style="list-style-type: none"> ○ Nine single studies conducted across the globe (United States, France, Egypt, Saudi Arabia, China, Hong Kong) and two systematic reviews (international) reported HCWs willingness to receive a COVID-19 vaccine varied greatly; one systematic review suggested the overall proportion of HCWs positively inclined towards receiving a COVID-19 vaccine ranged from 27.7% to 81.5%.¹ <p>Barriers and Enablers of Vaccine Uptake</p> <ul style="list-style-type: none"> • Overall, knowledge of the factors that affect intention of HWCs to accept COVID-19 vaccination is limited.² Overall attitudes toward vaccination were positive but specific concerns regarding the COVID-19 vaccine are prevalent. Differences in vaccine acceptance were noted between individual and group characteristics.³ <ul style="list-style-type: none"> ○ Barriers: Selected barriers include: female gender; Black, Latinx, Conservative/Republican HCWs; rural work setting; concerns regarding COVID-19 vaccine safety (e.g., unknown risks, insufficient data, known side effects); concerns about vaccine effectiveness; and concerns about expedited development/approval process; experience with racial discrimination.^{4,5,6,7,8} ○ Enablers: Selected enablers include: male gender; older age; physician profession; presence of comorbidities or chronic diseases; fear of COVID-19; perceived risk; stronger vaccine confidence; belief that COVID-19 vaccine will likely to stop the pandemic; social contacts’ decisions to have vaccine; and reliance on CDC website for COVID 19 updates.^{9,10,11,12,13,14} <ul style="list-style-type: none"> ▪ After an FDA advisory committee voted to recommend an emergency use authorization, the proportion of HCWs in a Pennsylvania health system intending to receive a COVID-19 vaccine increased (i.e., 79% of HCWs [n = 1,155]).¹⁵ <p>Interventions to Increase COVID-19 Uptake</p> <ul style="list-style-type: none"> • No identified studies reported interventions for increasing COVID-19 vaccination uptake among HCWs. Since the distribution of vaccinations began in early December 2020, there likely has been little opportunity to examine interventions to address COVID-19 vaccine hesitancy.¹⁶ <ul style="list-style-type: none"> ○ Key interventions to increase HCW uptake of other vaccines (i.e., influenza, hepatitis B, other vaccines) included: Provision of free vaccine; easy access to the vaccine; educational activities and/or reminders and/or incentives; management or organizational
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	changes; and long-term implementation of the strategy, such as mandatory vaccination policies. ^{17,18}
International Scan	<p>Recommendations to Increase COVID-19 Vaccine Confidence</p> <ul style="list-style-type: none"> The US Centers for Disease Control and Prevention (CDC) outlined six steps to build COVID-19 vaccine confidence among HCWs: 1) encourage senior leaders to be vaccine champions; 2) host discussions where personnel at different levels can provide input and ask questions; 3) share key messages with staff through emails, breakroom posters, and other channels; 4) educate health care teams about COVID-19 vaccines, how they are developed and monitored for safety, and how teams can talk to other about the vaccines; 5) educate non-medical staff about the importance of getting vaccinated; and, 6) make the decision to get vaccinated visible, and celebrate it.¹⁹
Canadian Scan	<ul style="list-style-type: none"> Recent preliminary survey data of a long-term care home staff from British Columbia found that 57% intended to get the COVID-19 vaccine when it became available.²⁰

Methods

The COVID-19 Evidence Synthesis Network is comprised of groups specializing in evidence synthesis and knowledge translation. The group has committed to provide their expertise to provide high-quality, relevant, and timely synthesized research evidence about COVID-19 to inform decision makers as the pandemic continues. The following members of the Network provided evidence synthesis products that were used to develop this Evidence Synthesis Briefing Note:

- Ontario Health
- McMaster Health Forum

For more information, please contact the [Research, Analysis and Evaluation Branch \(Ministry of Health\)](#).

APPENDIX

Table 2: COVID-19 Vaccine Perception, Acceptance, and Hesitancy Among Healthcare Workers^a

Jurisdiction	Study Design	Participants	Study Purpose	Results/Conclusions
United States (Preprint Study)	<ul style="list-style-type: none"> Online questionnaire of 3,479 participants. Data collected between October 7 and November 9, 2020. 	<ul style="list-style-type: none"> Direct patient care providers (physician/nurse/medical student/advanced practice provider): 1,573 Direct medical providers (registered nurses, patient care technicians, paramedics, rehabilitation services, nutritionist, etc.): 1,207 Administrative staff with no direct patient contact: 295 Others with no direct patient contact: 404 	<ul style="list-style-type: none"> Assess HCWs' attitudes about COVID-19 vaccination to better address barriers to widespread vaccination acceptance. 	<p><u>Willingness to take COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> 36% of the 3,479 HCWs reported they were willing to take the vaccine as soon as it became available; 56% of HCWs were unsure or would wait to review more data. <p><u>Vaccine acceptance:</u></p> <ul style="list-style-type: none"> Vaccine acceptance increased with increasing age, education, and income level. <ul style="list-style-type: none"> Lower acceptance was noted in females (31%), Black (10%), Latinx (30%) and Conservative/Republican (21%) HCWs, and those working in a rural setting (26%); Direct medical care providers had higher vaccine acceptance (49%). <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> Most common concerns regarding COVID-19 vaccination were: <ul style="list-style-type: none"> Safety (69%), effectiveness (69%), and speed of development/approval (74%).²¹
United States (Preprint Study)	<ul style="list-style-type: none"> Cross sectional online survey of US residents over 18 years of age. The survey was implemented between December 13 and 23, 2020. Participants were individuals belonging to priority groups for vaccine distribution. Vaccine hesitancy was measured using a Likert scale ranging from 1 (low hesitancy) to 6 (high hesitancy). 	<ul style="list-style-type: none"> Participants included a large fraction of people working in the health care sector (61%; n = 2,650). 	<ul style="list-style-type: none"> Examine predictors of COVID-19 vaccine hesitancy, including sociodemographic factors, comorbidity, risk perception, and experience of discrimination. 	<p><u>Overall results:</u></p> <ul style="list-style-type: none"> Responses were received from 2,650 respondents (response rate 84%) from all 50 states and Puerto Rico, American Samoa, and Guam. The majority were between 25 and 44 years of age (66%), male (53%), and working in the health care sector (61%). Most were White and non-Hispanic (66%) respondents followed by Black non-Hispanic (14%) and Hispanic (8%) respondents. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> Experience with racial discrimination was a predictor of vaccine hesitancy. Participants reporting racial discrimination had 21% increased odds of being at a higher level of hesitancy compared to those who did not report such experience.²²

^a Ten of the 11 articles and systematic reviews included in [Table 2](#) are preprint studies and have not been peer-reviewed. They report new health research that has yet to be evaluated and so should be read with caution and not be used to guide clinical practice.

Jurisdiction	Study Design	Participants	Study Purpose	Results/Conclusions
<p>State of Pennsylvania United States (Preprint Study)</p>	<ul style="list-style-type: none"> Survey of 16,158 employees in large Pennsylvania health system (response rate 61%). Survey data collected in December 2020. 	<ul style="list-style-type: none"> 58% of respondents reported working in a clinical or other direct patient-facing role, in settings including: <ul style="list-style-type: none"> ○ Ambulatory settings and clinics; ○ Inpatient care; ○ Intensive Care Units; and ○ Emergency Departments. 	<ul style="list-style-type: none"> Assess vaccine acceptance among HCWs in the large Pennsylvania health system, and their intentions to receive a vaccine when it is offered to them. 	<p><u>Willingness of HCWs to receive COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> 55% of HCWs serving in patient-facing and other roles would decide to receive a COVID-19 vaccine when offered; 16.4% of HCWs would not; 28.5% of HCWs reported being undecided. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> 90.3% of hesitant respondents reported concerns about unknown risks and insufficient data. Other commonly reported concerns included: <ul style="list-style-type: none"> ○ Known side effects (57.4%); ○ Wanting to wait until they see how it goes with others (44.4%). After a Food and Drug Administration (FDA) advisory committee voted to recommend an emergency use authorization, there was a substantial increase in self-reported intent to receive a COVID-19 vaccine. Among respondents who completed the survey after that point in time, 79% reported their intention to receive a COVID-19 vaccine (n = 1,155).²³²⁴
<p>Los Angeles, CA (US) (Preprint Study)</p>	<ul style="list-style-type: none"> Online survey. Averaged a 9-statement Likert scale matrix scored from 1 (“strongly disagree”) to 5 (“strongly agree”). Surveys were completed online between September 24 and October 16, 2020. 	<ul style="list-style-type: none"> 609 University of California, Los Angeles (UCLA) Health System employees. 	<ul style="list-style-type: none"> Examine HCW’s attitudes about vaccine safety, efficacy, and acceptability in the context of the COVID-19 pandemic, including acceptance of a novel coronavirus vaccine. 	<p><u>Vaccine confidence among HCWs:</u></p> <ul style="list-style-type: none"> Respondents were overwhelmingly confident about vaccine safety (4.47 on the Likert scale); effectiveness (4.44); importance, self-protection, and community health (4.67). <p><u>Willingness of HCWs to receive COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> 47.3% of respondents reported unwillingness to participate in a coronavirus vaccine trial, and 66.5% intended to delay vaccination. <ul style="list-style-type: none"> ○ Compared with doctors, nurses were 4.15 times more likely to report intent to delay COVID-19 vaccine uptake; 2.45 times more likely than other personnel with patient contact roles, and 2.15 times more likely than those without patient contact. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> Primary variables impacting HCWs’ decisions to undergo vaccination included: <ul style="list-style-type: none"> ○ 76% reported evolving SARS-CoV-2 science; ○ 57.6% current political climate; and ○ 83.4% fast-tracked vaccine development timeline.²⁵
<p>France</p>	<ul style="list-style-type: none"> Online survey. 	<ul style="list-style-type: none"> Participants included: <ul style="list-style-type: none"> ○ Physicians, nurse practitioners, physician 	<ul style="list-style-type: none"> Determine proportion of people who intend to get vaccinated against 	<p>COVID-19 Vaccination</p> <p><u>Willingness to receive COVID-19 vaccine:</u></p>

Jurisdiction	Study Design	Participants	Study Purpose	Results/Conclusions
	<ul style="list-style-type: none"> Data collected between March 26 to April 20, 2020. 3,259 participants answered the survey (64.7% of respondents were women). 	<p>assistants, or certified registered nurse anesthetists (39.9%);</p> <ul style="list-style-type: none"> Nurses (33.8%); Other patient contact roles (16.6%); and Personnel without patient contact (9.8%). 	<p>COVID-19 in France or to participate in a vaccine clinical trial.</p>	<ul style="list-style-type: none"> 77.6% of participants (2,512) reported they would 'certainly' or 'probably agree' to get vaccinated against COVID-19. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> Vaccine acceptance: Older age, male gender, fear about COVID-19, being a health care worker and individual perceived risk were associated with COVID-19 vaccine acceptance. <p>Clinical Trials</p> <p><u>Willingness to participate in COVID-19 vaccine trial:</u></p> <ul style="list-style-type: none"> Vaccine agreement: 47.6% of participants (1,550) reported they will 'certainly' or 'probably agree' to participate in a COVID-19 vaccine clinical trial. <p><u>Barriers/enablers of vaccine trial participation:</u></p> <ul style="list-style-type: none"> Potential acceptance: Older age, male gender, being a health care worker and individual perceived risk were associated with potential acceptance to participate in a COVID-19 vaccine clinical trial.²⁶
Egypt (Preprint Study)	<ul style="list-style-type: none"> A cross-sectional online survey of HCWs. 	<ul style="list-style-type: none"> Participants included 496 HCWs: <ul style="list-style-type: none"> Physicians; Nurses; Students. 	<ul style="list-style-type: none"> Examine COVID-19 vaccine approval among HCWs and identify the causes of vaccine agreement and disagreement. 	<p><u>Vaccine acceptance among HCWs:</u></p> <ul style="list-style-type: none"> 13.5% totally agree to receive the vaccine, 32.4% somewhat agree, and 40.9% disagreed to take the vaccine. <ul style="list-style-type: none"> History of chronic diseases was recorded in 40.4%, and definite history of drug/food allergy in 10.1%. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> Barriers included: feared non-safety (57%), fear of genetic mutation (20.3%), recent techniques (17.7%), and belief that the vaccine is ineffective (16.6%). The most trusted vaccine was the mRNA-based vaccine.²⁷
Saudi Arabia (Preprint Study)	<ul style="list-style-type: none"> Online national survey of HCWs in Saudi Arabia. 	<ul style="list-style-type: none"> Participants included: <ul style="list-style-type: none"> 637 physicians (42.1%); 757 nurses and midwives (50.1%); and 118 technicians, respiratory therapists and pharmacists (7.8%). 	<ul style="list-style-type: none"> Examined HCWs' perception, acceptance, confidence, and hesitancy regarding the COVID-19 vaccine. 	<p><u>Willingness of HCWs to receive COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> Most HCWs were willing to receive COVID-19 vaccines once available. <ul style="list-style-type: none"> Out of 1,512 HCWs who completed the study questionnaire—944 (62.4%) women and 568 (37.6%) men—1,058 (70%) were willing to receive COVID-19 vaccines. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> HCWs who believed vaccines were rushed without evidence-informed testing were found to be 60% less inclined to accept COVID-19 vaccines. Willingness to be vaccinated was significantly associated with: <ul style="list-style-type: none"> Male HCWs, HCWs who believe in vaccine safety, HCWs who believe that COVID vaccines are the most likely way to

Jurisdiction	Study Design	Participants	Study Purpose	Results/Conclusions
				stop the pandemic, and HCWs who rely on Centers for Disease Control and Prevention website for COVID-19 updates. ²⁸
China (Preprint Study)	<ul style="list-style-type: none"> Internet-based, region-stratified survey. Data collected on March 17 and 18, 2020. 	<ul style="list-style-type: none"> Participants included 189 individuals in the general population and 352 HCWs from 26 Chinese provinces: <ul style="list-style-type: none"> HCWs from hospitals, Center for Disease Control and Prevention (CDC) or health community centers. 	<ul style="list-style-type: none"> Examine HCWs' acceptance and preference for the COVID-19 vaccination. 	<p><u>Overall results:</u></p> <ul style="list-style-type: none"> HCWs developed a more in-depth understanding of COVID-19 infection and showed a higher tolerance to the future vaccination than the general population. <p><u>Willingness of HCWs to receive COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> 76.4% of HCWs (vs. 72.5% in the general) showed their willingness to receive vaccination. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> Among HCWs, disease trend, social contacts' decisions, high possibility of being infected were significantly associated with increased probability of choosing vaccination. Among general population, vaccine safety and social contacts' decisions were significantly associated with increased probability of choosing vaccination.²⁹
Hong Kong (Preprint Study)	<ul style="list-style-type: none"> Cross-sectional online survey among nursing staff in Hong Kong. Conducted during main COVID-19 outbreak between mid-March and late April 2020. 	<ul style="list-style-type: none"> Study included nurses working in public or private medical facilities: <ul style="list-style-type: none"> Registered nurses; Enrolled nurses; and Trainees. 	<ul style="list-style-type: none"> Examined nurses' influenza vaccine uptake and intention to receive COVID-19 vaccine when available; and examined the corresponding psychological antecedents. 	<p><u>Willingness of HCWs to receive COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> Among 1,205 nurses, 63% intended to take COVID-19 vaccine. The influenza vaccination coverage of the nurses was 49%. <p><u>Barriers/Enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> COVID-19 vaccination intention was associated with younger age, more confidence, less complacency, and more collective responsibility towards the vaccine. COVID-19 vaccination intention was associated with greater work stress.³⁰
International (Preprint Study)	<ul style="list-style-type: none"> Systematic review and meta-analysis. Eleven studies were included in the review. 	<ul style="list-style-type: none"> Participants included 8,847 HCWs: <ul style="list-style-type: none"> Physicians; Nurses; Assistant nurses; Paramedical staff; Pharmacists; and Others. 	<ul style="list-style-type: none"> Estimate the intention of HCWs to accept COVID-19 vaccination and determine related factors. 	<p><u>Willingness of HCWs to receive COVID-19 vaccine:</u></p> <ul style="list-style-type: none"> The overall proportion of HCWs that intend to accept COVID-19 vaccination was 55.9% with a wide range among studies from 27.7% to 81.5%. Intention of HCWs to accept COVID-19 vaccination was higher in studies with moderate quality and in studies that were conducted in Europe. <p><u>Barriers/enablers of vaccine acceptance:</u></p> <ul style="list-style-type: none"> HCWs' willingness to get vaccinated: male gender, older age, physician profession, fewer work experiences, comorbidity among HCWs, seasonal influenza vaccination, stronger vaccine confidence, positive attitude towards a COVID-19 vaccine, fear about COVID-19, individual perceived risk about

Jurisdiction	Study Design	Participants	Study Purpose	Results/Conclusions
				COVID-19, and contact with suspected or confirmed COVID-19 patients. ³¹
International (Preprint Study)	<ul style="list-style-type: none"> • Systematic review. • Thirty studies from 33 different countries were included in the review, along with a recent survey from Jordan and Kuwait. 	<ul style="list-style-type: none"> • Participants included the general population and HCWs. <ul style="list-style-type: none"> ○ Nurses (3 studies); ○ Doctors (1 study); ○ Health care workers (1 study); ○ General practitioners (GP); and GP trainees (1 study). 	<ul style="list-style-type: none"> • Provide an up-to-date assessment of COVID-19 vaccination acceptance rates among the general public and HCWs worldwide. 	<p>Vaccination acceptance among HCWs:</p> <ul style="list-style-type: none"> • Eight surveys among HCWs (doctors, nurses) were identified, with vaccine acceptance rates ranging from 27.7% in the Democratic Republic of the Congo to 78.1% in Israel. <p>Vaccination acceptance rates among the general public:</p> <ul style="list-style-type: none"> • In a majority of survey studies among the general public (62%), the acceptance of COVID19 vaccination showed a level of $\geq 70\%$. <ul style="list-style-type: none"> ○ Highest COVID-19 vaccine acceptance rates were found in Ecuador (97.0%), Malaysia (94.3%), Indonesia (93.3%) and China (91.3%). ○ Lowest COVID-19 vaccine acceptance rates were found in Kuwait (23.6%), Jordan (28.4%), Italy (53.7), Russia (54.9%), Poland (56.3%), US (56.9%), and France (58.9%).³²

Table 3: Interventions to Increase Vaccine Uptake Among Health Care Workers³³

Author, Year	Study Design	Type of Vaccine	Intervention	Results/Conclusions
Paterson et al., 2016	Systematic review	<ul style="list-style-type: none"> • Influenza vaccine (15 studies); • Hepatitis B (one study); and • Non-vaccine specific (one study). 	<ul style="list-style-type: none"> • Interventions included: <ul style="list-style-type: none"> ○ Decision-aids (one study) ○ Information campaigns (e.g., education courses, talks or meetings, posters, individual e-mails or hospital webpages) (four studies) • Combination of interventions (e.g., access to on-site vaccination, lectures about vaccinations, declination form, free vaccination etc.) (13 studies). 	<ul style="list-style-type: none"> • The following elements increased uptake: <ul style="list-style-type: none"> ○ Provision of free vaccine; ○ Easy access to the vaccine, (e.g., through mobile carts or on-site vaccination); ○ Knowledge and behaviour modification through educational activities and/or reminders and/or incentives; ○ Management or organizational changes, such as the assignment of personnel dedicated to the intervention programme; and ○ Long-term implementation of the strategy, requiring active declination and mandatory immunization policies.³⁴
Schumacher et al., 2020	Systematic review	<ul style="list-style-type: none"> • Influenza vaccine (32 studies) 	<ul style="list-style-type: none"> • Interventions included: <ul style="list-style-type: none"> ○ Educational and promotional aspects (six studies). ○ Incentives were emphasized as a key intervention in one study. In six other studies, incentives were used as part of multifaceted campaigns. ○ Organizational aspects that facilitated access to the vaccine were implemented in eight studies; however, on site vaccination was highlighted as a main intervention in only four campaigns. ○ Policies as key interventions (15 studies). • Multifaceted strategies (three or more interventions): <ul style="list-style-type: none"> ○ Education, promotion, incentive, organization, and policies) (seven studies). 	<ul style="list-style-type: none"> • Among key interventions analyzed, mandatory vaccination policies or multifaceted campaigns including a vaccinate or 'wear-a-mask' policy as well as mandatory declination forms submitted by unvaccinated health care workers reached an absolute vaccination coverage in health care workers of over 90%. • Although campaigns solely based on education and promotion or on-site-vaccination did not regularly exceed an absolute vaccination coverage of 40%, a substantial relative increase in vaccination coverage was reached by implementation of these strategies.³⁵

Table 4: Recommendations and Guidance from International Health Authorities

Jurisdiction	Organization	Intervention
United States	<ul style="list-style-type: none"> • Centers for Disease Control and Prevention (CDC) 	<ul style="list-style-type: none"> • The CDC suggested the following strategies for building confidence in COVID-19 vaccines among health care personnel: <ul style="list-style-type: none"> ○ Encourage senior leaders to be vaccine champions; ○ Host discussions where personnel at different levels can provide input and ask questions; ○ Share key messages with staff through emails, breakroom posters, and other channels; ○ Educate health care teams about COVID-19 vaccines, how they are developed and monitored for safety, and how teams can talk to others about the vaccines; ○ Educate non-medical staff about the importance of getting vaccinated; and ○ Make the decision to get vaccinated visible and celebrate it.³⁶
United States	<ul style="list-style-type: none"> • CDC COVID-19 Response Vaccine Task Force 	<ul style="list-style-type: none"> • One of the three components of the US National Strategy to reinforce confidence in COVID-19 vaccines is to promote confidence among health care personnel in their decision to get vaccinated, and to recommend vaccination to their patients. The CDC stated three tactics for this: <ul style="list-style-type: none"> ○ Engage national professional associations, health systems, and health care personnel often and early to ensure a clear understanding of the vaccine development and approval process, new vaccine technologies, and the benefits of vaccination; ○ Ensure health care systems and medical practices are equipped to create a culture that builds confidence in COVID-19 vaccination; and ○ Strengthen the capacity of health care professionals to have empathetic vaccine conversations, address myths and common questions, provide tailored vaccine information to patients, and use motivational interviewing techniques when needed.³⁷

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