

# COVID-19: MANDATORY VACCINATION

*An Annotated Bibliography from the Penn Medicine Center for Evidence-based Practice*

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## Summary

- Mass vaccination is seen as a crucial intervention to control and end the COVID-19 pandemic, especially in the setting of healthcare facilities and congregate residential settings.
- Safe and effective vaccines against the SARS-CoV-2 coronavirus were introduced in late 2020, but a substantial number of people are refusing to be vaccinated. As a result, there have been proposals to make vaccination mandatory for healthcare workers and other groups of people. Such mandates could be imposed as a matter of law or as a condition of continued employment.
- The legal status of such mandates has not been tested, and is discussed in several articles cited in this Annotated Bibliography.
- Other articles discuss ethical issues surrounding a vaccine mandate.
- Relevant articles found in our search include a systematic review of studies on vaccine acceptance and refusal, and a review of strategies to increase acceptance of flu vaccine among healthcare workers.
- Additional references are provided on interventions to build trust in healthcare institutions and increase public confidence in the benefits of vaccination, including in groups of people where vaccine skepticism or refusal runs high.

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## Introduction

The COVID-19 pandemic has claimed over a million lives worldwide, and has led to economic losses in the trillions of dollars. Controlling and halting the pandemic is the necessary first step towards global recovery.

The first vaccines against the SARS-CoV-2 coronavirus were introduced in late 2020 and they are now in mass production. Clinical trial evidence has shown that these vaccines are highly effective in preventing serious COVID-19 disease and reducing the overall burden of COVID-19 disease. Vaccination is particularly important for protecting vulnerable people in healthcare facilities and in long-term care and other congregate living settings.

Vaccination campaigns are now going on throughout the United States and in most other countries, but a substantial number of people have refused to be vaccinated. Vaccine refusal is particularly high among some ethnic and religious minority groups, placing those communities at continued risk from the virus.

Some public health specialists have suggested that to defeat the pandemic, vaccination may need to be made mandatory, either for the entire population or for specific segments such as children, healthcare workers, and persons living or working in congregate living settings. The purpose of this Annotated Bibliography is to identify articles in the peer-reviewed literature that address the feasibility, legal status, and ethics of mandatory vaccination.

## Previous CEP Reports

In December 2020, CEP published an Evidence Review on adverse effects of mRNA vaccines and a Rapid Guidance Summary on SARS-CoV-2 vaccination for women who are pregnant or lactating (Table 1). These reports may be viewed and downloaded at <https://www.uphs.upenn.edu/cep/COVID/indexCOVID.html>

**Table 1. Previous CEP reports on related topics**

Date	Topic	Findings
Dec. 2020	Adverse effects of mRNA vaccines	There is not sufficient evidence to support any conclusions on the comparative safety of different mRNA vaccines. Direct evidence on the comparative safety of mRNA vaccines and other vaccines is lacking. Systemic adverse events such as fatigue, muscle aches, headache, and chills are common; severe systemic events were reported by 5 to 10 percent of trial subjects. Localized adverse events such as pain at the injection side are common. Both systemic and local adverse events usually are resolved within one or two days.
Dec. 2020	COVID-19: Vaccination for women who are pregnant or lactating	Two major US specialty societies recommend shared decision-making to best balance the risks of vaccination with the risks of remaining unvaccinated. They do not consider pregnancy or breastfeeding to be an absolute contraindication to vaccination. Most US medical centers that have taken a position on COVID-19 vaccination endorse the US societies' recommendations for shared decision-making and will offer vaccination to women who are pregnant or breastfeeding.

CEP Rapid Guidance Summary reports on COVID-19-related topics may be downloaded from the [CEP web site](#).

## Methods

### CENTER FOR EVIDENCE-BASED PRACTICE PROTOCOL FOR SYSTEMATIC REVIEW

#### SPECIFIC AIM:

Identify articles of interest relating to mandatory

#### METHODS:

**Study designs:** All articles including reviews, opinion, and commentary

#### Inclusion and exclusion criteria:

**Participants:** Normal-risk adults. Healthcare workers are a population of particular interest

**Interventions:** Requirements for persons to be vaccinated against the SARS-CoV-2 coronavirus. Vaccination as a condition of continued employment is of particular interest.

**Comparisons:** Not applicable

**Outcomes:** Not applicable

**Other:** Published in English. Prioritize information obtained in or applicable to United States

#### Data collection

**Databases:** Medline, EMBASE

**Quality appraisal:** Not applicable

**Data synthesis (calculation of relative risks and confidence intervals, meta-analyses, exploration of heterogeneity):** Not applicable

## Results

### Most relevant articles

2. Rothstein MA, Parmet WE, Reiss DR. Employer-mandated vaccination for COVID-19. *Am J Public Health* 2021. <https://doi.org/10.2105/ajph.2020.306166>

When the US Food and Drug Administration (FDA) decided to grant emergency use authorization (EUA) for the first two vaccines for COVID-19, the United States' response to the pandemic entered a new phase. Initially, the greatest challenge is having enough doses of vaccine and administering them to all who want it. Yet even while many wait expectantly for their turn to be vaccinated, a significant minority of Americans are hesitant. Lack of information or misinformation about the vaccine, a long-standing and well-entrenched antivaccination movement, distrust of public health officials, and political polarization have left many people ambivalent or opposed to vaccination. According to a poll by the Kaiser Family Foundation taken in late November and early December 2020, 27% of respondents surveyed stated that they would "probably" or "definitely" not be willing to be vaccinated.<sup>1</sup> Reflecting the sharp partisan divide that has characterized views about the pandemic, Democrats (86%) were far more likely than Republicans (56%) to be vaccinated.

5. Schumacher S, Salmanton-Garcia J, Cornely OA, Mellinghoff SC. Increasing influenza vaccination coverage in healthcare workers: a review on campaign strategies and their effect. *Infection* 2020 Dec 7; 1-13. <https://doi.org/10.1007/s15010-020-01555-9>

**PURPOSE:** Increasing influenza vaccination coverage in healthcare workers is a challenge. Especially during the ongoing COVID-19 pandemic, high vaccination coverage should be attained. This review analyzed strategies to increase influenza vaccination coverage in healthcare workers., **METHODS:** A literature search using PubMed was conducted and 32 publications on influenza vaccination campaigns for healthcare workers were reviewed for key interventions and resulting vaccination coverage., **RESULTS:** Among key interventions analyzed, mandatory vaccination policies or multifaceted campaigns including a vaccinate-or-wear-a-mask policy as well as mandatory declination reached vaccination coverage in healthcare 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., **CONCLUSION:** Mandatory vaccination policies are effective measures to achieve high overall vaccination coverage. In clinics where policies are infeasible, multifaceted campaigns comprising on-site vaccination, vaccination stands and educational and promotional campaigns as well as incentives should be implemented. Lessons learned from influenza campaigns could be implemented in future SARS-CoV-2 vaccination campaigns.

11. Lin C, Tu P, Beitsch LM. Confidence and receptivity for COVID-19 vaccines: a rapid systematic review. *Vaccines (Basel)* 2020;9(1):16. <https://doi.org/10.3390/vaccines9010016>

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 US 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, socioeconomic, 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 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.

13. Finney Rutten LJ, Zhu X, Leppin AL et al. Evidence-based strategies for clinical organizations to address COVID-19 vaccine hesitancy. *Mayo Clin Proc.* 2021;96 (3):699-707.

<https://doi.org/10.1016/j.mayocp.2020.12.024>

The success of vaccination programs is contingent upon irrefutable scientific safety data combined with high rates of public acceptance and population coverage. Vaccine hesitancy, characterized by lack of confidence in vaccination and/or complacency about vaccination that may lead to delay or refusal of vaccination despite the availability of services, threatens to undermine the success of coronavirus disease 2019 (COVID-19) vaccination programs. The rapid pace of vaccine development, misinformation in popular and social media, the polarized sociopolitical environment, and the inherent complexities of large-scale vaccination efforts may undermine vaccination confidence and increase complacency about COVID-19 vaccination. Although the experience of recent lethal surges of COVID-19 infections has underscored the value of COVID-19 vaccines, ensuring population uptake of COVID-19 vaccination will require application of multilevel, evidence-based strategies to influence behavior change and address vaccine hesitancy. Recent survey research evaluating public attitudes in the United States toward the COVID-19 vaccine reveals substantial vaccine hesitancy. Building upon efforts at the policy and community level to ensure population access to COVID-19 vaccination, a strong health care system response is critical to address vaccine hesitancy. Drawing on the evidence base in social, behavioral, communication, and implementation science, we review, summarize, and encourage use of interpersonal, individual-level, and organizational interventions within clinical organizations to address this critical gap and improve population adoption of COVID-19 vaccination.

14. Gur-Arie R, Jamrozik E, Kingori P. No jab, no job? ethical issues in mandatory COVID-19 vaccination of healthcare personnel. *BMJ GHlob Health* 2021;6 (2): e004877.

<https://doi.org/10.1136/bmjgh-2020-004877>

Mandating COVID-19 vaccination of healthcare personnel (HCP) could maximise vaccine uptake, but risks exacerbating breakdowns in trust between HCP and their institutions.

Ethical arguments for mandating COVID-19 vaccination of HCP appeal to their duties to ‘do no harm’ and to care for patients, but the fulfilment of these duties requires a safe working environment.

We argue for policies aimed at strengthening HCP’s trust in healthcare systems by addressing HCP concerns, including the institutional factors that have put them at risk of infection throughout the COVID-19 pandemic, before considering a COVID-19 vaccine mandate.

17. Gostin LO, Salmon DA Larson HJ. Mandating COVID-19 vaccines. *JAMA* 2021;325(6): 532-533. <https://doi.org/10.1001/jama.2020.26553>

*No abstract or summary.*

20. Osbourne RM, Clark SJ. Should the SARS-CoV-2 vaccine be mandatory for nurses? An ethical debate. *Br J Nurs.* 2021;30(2):116-121. <https://doi.org/10.12968/bjon.2021.30.2.116>

The COVID-19 pandemic has had a devastating impact on the UK, as well as many other countries around the world, affecting all aspects of society. Nurses and other health and care professionals are a group particularly exposed to the virus through their work. Evidence suggests that vaccines form the most promising strategy for fighting this pandemic. Should vaccination against be mandatory for nurses and other health professionals? This article explores this question using an ethical framework.

## Other articles

1. Plotkin SA, Levy O. Considering mandatory vaccination of children for COVID-19. *Pediatrics*. 2021 Mar 11 e2021050531. <https://doi.org/10.1542/peds.2021-050531>
3. Pennings S, Symons X. Persuasion, not coercion or incentivisation, is the best means of promoting COVID-19 vaccination. *J Med Ethics*. 2021 Jan 27. <https://doi.org/10.1136/medethics-2020-107076>
4. Lucia VC, Kelekar A, Afonso NM. COVID-19 vaccine hesitancy among medical students. *J Public Health (Oxf)*. 2020 Dec 26. <https://doi.org/10.1093/pubmed/fdaa230>
6. Kasstan B. Vaccines and vitriol: an anthropological commentary on vaccine hesitancy, decision-making and interventionism among religious minorities. *Anthropol Med*. 2020 Nov 13:1-9. <https://doi.org/10.1080/13648470.2020.1825618>
7. Douglas T, Forsberg L, Pugh J. Compulsory medical intervention versus external constraint in pandemic control. *J Med Ethics*. 2020 Aug 20. <https://doi.org/10.1136/medethics-2020-106435>
8. Savulescu J, Giubilini A, Danchin M. Global ethical considerations regarding mandatory vaccination in children. *J Pediatr*. 2021;231:10-6. <https://doi.org/10.1016/j.jpeds.2021.01.021>
9. Higgins ST, Klemperer EM, Coleman SRM. Looking to the empirical literature on the potential for financial incentives to enhance adherence with COVID-19 vaccination. *Prev Med*. 2021;145:106421. <https://doi.org/10.1016/j.ypmed.2021.106421>
10. Batniji R. Historical evidence to inform COVID-19 vaccine mandates. *Lancet*. 2021;397(10276):791. [https://doi.org/10.1016/s0140-6736\(21\)00267-1](https://doi.org/10.1016/s0140-6736(21)00267-1)
12. Boodoosingh R, Olayemi LO, Sam FA. COVID-19 vaccines: Getting anti-vaxxers involved in the discussion. *World Dev*. 2020;136:105177. <https://doi.org/10.1016/j.worlddev.2020.105177>
15. Wong YJ, Lee SWH. COVID-19: A call for awareness or mandatory vaccination even in pandemics? *J Glob Health*. 2021;11:03005. <https://doi.org/10.7189/jogh.11.03005>
16. Scott EM, Stein R, Brown MF, Hershberger J, Scott EM, Wenger OK. Vaccination patterns of the northeast Ohio Amish revisited. *Vaccine*. 2021;39(7):1058-63. <https://doi.org/10.1016/j.vaccine.2021.01.022>
18. Savulescu J. Good reasons to vaccinate: mandatory or payment for risk? *J Med Ethics*. 2021;47(2):78-85. <https://doi.org/10.1136/medethics-2020-106821>
19. Thomas B, Flood CM. Eliminating religious and philosophical exemptions: the next step in Ontario's campaign against vaccine hesitancy. *Healthc Policy*. 2020;16(2):14-20. <https://doi.org/10.12927/hcpol.2020.26357>
21. Largent EA, Persad G, Sangenito S, Glickman A, Boyle C, Emanuel EJ. US public attitudes toward COVID-19 vaccine mandates. *JAMA Netw Open*. 2020;3(12):e2033324. <https://doi.org/10.1001/jamanetworkopen.2020.33324>
22. Bowen RAR. Ethical and organizational considerations for mandatory COVID-19 vaccination of health care workers: a clinical laboratorian's perspective. *Clin Chim Acta*. 2020;510:421-2. <https://doi.org/10.1016/j.cca.2020.08.003>

23. Ino H. Vaccine mandate in long-term care facilities. *Geriatr Gerontol Int*. 2020;20(10):995-6. <https://doi.org/10.1111/ggi.14023>
24. Blum JD, Talib N. Balancing individual rights versus collective good in public health enforcement. *Med Law*. 2006;25(2):273-81. <https://pubmed.ncbi.nlm.nih.gov/16929806/> [PennText link]
36. Feleszko W, Lewulis P, Czarnecki A, Waszkiewicz P. Flattening the curve of covid-19 vaccine rejection—an international overview. *Vaccines*. 2021;9(1):1-8. <https://doi.org/10.3390/vaccines9010044>
39. Navin MC, Danchin M. Vaccine mandates in the US and Australia: balancing benefits and burdens for children and physicians. *Vaccine*. 2020;38(51):8075-7. <https://doi.org/10.1016/j.vaccine.2020.10.080>
42. [Editorial] COVID vaccine confidence requires radical transparency. *Nature*. 2020;586(7827):8. <https://doi.org/10.1038/d41586-020-02738-y>
45. Kenny K. Mandated immunizations can be a slippery slope. *Pharm Times*. 2020;88(8). <https://www.pharmacytimes.com/view/mandated-immunizations-can-be-a-slippery-slope>
48. González-Melado FJ, Di Pietro ML. The vaccine against COVID-19 and institutional trust. *Enferm Infecc Microbiol Clin*. 2020 Sept 10. <https://doi.org/10.1016/j.eimc.2020.08.001>

## Appendix. Literature Searches

Searches were carried out March 31, 2021.

**Table 2. MEDLINE search**

Search	Syntax	Hits	Included
1	((mandat* or require* or compuls* or obligat*) adj3 (vaccin* or immun*)).mp.	16,506	—
2	(covid* or sars* or corona*).mp.	698,718	—
3	1 AND 2	304	—
4	limit 3 to english language	285	—
	Exclude 7 duplicate references within set	278	24

mp: keyword (title, abstract, subject heading)

**Table 3. Embase search**

Search	Syntax	Hits	Included
1	(mandat* or require* or compuls* or obligat*) near/3 (vaccin* or immun*)	22,184	—
2	covid* or sars* or corona*	992,636	—
3	#1 AND #2	372	—
4	#3 AND [english]/lim AND [2020-2021]/py	195	—
	Title screen of results	—	24
	exclude 19 references duplicating MEDLINE results	—	5