# **UCSF**

# **UC San Francisco Previously Published Works**

# **Title**

Approaches to healthcare personnel exemption requests from coronavirus disease 2019 (COVID-19) vaccination: Results of a national survey

## **Permalink**

https://escholarship.org/uc/item/0bc0t0h6

# **Journal**

Infection Control and Hospital Epidemiology, 43(12)

## **ISSN**

0899-823X

## **Authors**

Talbot, Thomas R Beekmann, Susan E Babcock, Hilary M et al.

# **Publication Date**

2022-12-01

## DOI

10.1017/ice.2022.47

Peer reviewed



# **Original Article**

# Approaches to healthcare personnel exemption requests from coronavirus disease 2019 (COVID-19) vaccination: Results of a national survey

Thomas R. Talbot MD, MPH<sup>1</sup> , Susan E. Beekmann RN, MPH<sup>2</sup> , Hilary M. Babcock MD, MPH<sup>3</sup> and Philip M. Polgreen MD, MPH<sup>2</sup>

<sup>1</sup>Vanderbilt University School of Medicine, Nashville, Tennessee, <sup>2</sup>University of Iowa Carver College of Medicine, Iowa City, Iowa and <sup>3</sup>Washington University School of Medicine, St Louis, Missouri

### **Abstract**

Objective: Although a growing number of healthcare facilities are implementing healthcare personnel (HCP) coronavirus disease 2019 (COVID-19) vaccination requirements, vaccine exemption request management as a part of such programs is not well described.

Design: Cross-sectional survey.

Participants: Infectious disease (ID) physician members of the Emerging Infections Network with infection prevention or hospital epidemiology responsibilities.

Methods: Eligible persons were sent a web-based survey focused on hospital plans and practices around exemption allowances from HCP COVID-19 vaccine requirements.

Results: Of the 695 ID physicians surveyed, 263 (38%) responded. Overall, 160 respondent institutions (92%) allowed medical exemptions, whereas 132 (76%) allowed religious exemptions. In contrast, only 14% (n=24) allowed deeply held personal belief exemptions. The types of medical exemptions allowed varied considerably across facilities, with allergic reactions to the vaccine or its components accepted by 145 facilities (84%). For selected scenarios commonly used as the basis for religious and deeply held personal belief exemption requests, 144 institutions (83%) would not approve exemptions focused on concerns regarding right of consent or violations of freedom of personal choice, and 140 institutions (81%) would not approve exemptions focused on introducing foreign substances into one's body or the sanctity of the body. Most respondents noted plans for additional infection prevention interventions for HCP who received an exemption for COVID-19 vaccination.

Conclusions: Although many respondent institutions allowed exemptions from HCP COVID-19 vaccination requirements, the types of exemptions allowed and how the exemption programs were structured varied widely.

(Received 29 November 2021; accepted 2 February 2022)

Healthcare personnel (HCP) are a priority group for coronavirus disease 2019 (COVID-19) vaccination programs, both due to their potential for exposure to infected patients and their possible contribution to healthcare-associated transmission of the severe acute respiratory coronavirus virus 2 (SARS-CoV-2) virus. As with other pathogens (eg, influenza), increasing numbers of healthcare institutions have implemented polices making COVID-19 vaccination a condition of employment in recognition of the importance of a vaccinated HCP workforce in reducing patient and HCP infections. In addition, statewide requirements for HCP COVID-19 vaccination have been instituted in a variety of states, including California, New York, and Maine. Those healthcare

Author for correspondence: Thomas R. Talbot, E-mail: tom.talbot@vumc.org

Cite this article: Talbot TR, et al. (2022). Approaches to healthcare personnel
exemption requests from coronavirus disease 2019 (COVID-19) vaccination: Results of
a national survey. Infection Control & Hospital Epidemiology, https://doi.org/10.1017/
ice.2022.47

facilities that have yet to establish a mandatory HCP COVID-19 vaccination program will soon follow suit, given the recent Centers for Medicare and Medicaid Services (CMS) Interim Final Rule that requires the establishment of COVID-19 vaccination requirements for HCP.<sup>4</sup>

The allowance of HCP exemptions from such vaccination requirements has garnered increasing scrutiny. Some exemption requests relate to underlying medical conditions that preclude vaccination (eg, significant allergy to a vaccine component). More controversial are exemptions centered upon an individual's religious or deeply held personal beliefs opposed to vaccination. These beliefs may be espoused due to concerns of over vaccine side effects, a perceived lack of vaccine efficacy, aspects of vaccine development (eg, use of fetal cell lines), belief in a higher power that will protect the HCP from illness, or confidence in one's own health and healthy behaviors. Because of their subjectivity, religious and personal belief exemptions provide a unique challenge to

2 Thomas R. Talbot *et al* 

the institutions that allow them, and the specific approaches utilized by healthcare facilities regarding exemptions from HCP COVID-19 vaccination requirements are opaque. In this study, we used a national network of experts in infectious diseases (ID) and healthcare epidemiology to describe current practices surrounding the allowance and interpretation of these exemptions.

### **Methods**

The Infectious Diseases Society of America (IDSA) Emerging Infections Network (EIN) is funded by the Centers for Disease Control and Prevention (CDC) to serve as a provider-based surveillance network for emerging infections and related phenomena.6 A 7-question web-based survey was developed to better understand hospital plans and practices around exemption allowances from HCP COVID-19 vaccine requirements (Appendix online). The survey link was e-mailed to 695 ID physician members of the EIN with infection prevention or hospital epidemiology responsibilities or interests on August 24, 2021. Nonresponding members were sent emailed reminders twice after the initial communication. The survey was open until September 19, 2021. Optout answer options were provided for members who were not aware of COVID-19 exemption plans at their institution or whose primary facility did not require COVID-19 vaccination for HCP. Respondents were not required to answer all questions, so the total responses to individual questions varied. A free-text comment field concluded the survey to allow respondents to provide added details to their institutional exemption processes and experiences. The practice characteristics of members' institutions were obtained from the EIN member database. Categorical variables were compared using the  $\chi^2$  test or the Fisher exact test. Analyses were conducted using SAS version 9.4 software (SAS Institute, Cary, NC).

### **Results**

Of the 695 ID physicians surveyed, 263 (38%) responded. Respondents included both adult (78%) and pediatric (22%) ID specialists (Table 1). Respondents were significantly more likely than nonrespondents to have at least 25 years of ID experience (P < .0003). All US Census divisions were represented, as were a variety of hospital types. Moreover, 59 respondents (22%) indicated that their facility did not require COVID-19 vaccination for HCP at the time of the survey; 6 persons (2%) did not work in an acute-care facility and 25 (10%) were not aware of their institution's HCP COVID-19 vaccination plans. For the description and assessment of the HCP COVID-19 vaccination exemption program, the total possible denominator for each question was 173.

### **Exemption allowances**

Medical exemptions were allowed by 160 respondent institutions (92%), whereas religious exemptions were allowed by 132 (76%) (Table 2). In contrast, deeply held personal belief exemptions were only allowed by 24 respondent institutions (14%). Also, 129 respondents (75%) that noted allowance for medical exemptions also allowed religious exemptions, whereas the overlap between allowances for religious and deeply held personal belief exemptions was small. Only 24 respondent institutions (14%) allowed both types of exemptions.

The types of disciplines or groups responsible for review of HCP exemptions varied widely. Only 61 respondents (35%)

**Table 1.** Practice Characteristics of Survey Respondents (N = 263)

Characteristic	No. (%)
Practice type	
Adult infectious diseases	205 (78)
Pediatric infectious diseases	58 (22)
Region	
New England	19 (7)
Mid Atlantic	48 (18)
East North Central	43 (16)
West North Central	26 (10)
South Atlantic	41 (16)
East South Central	10 (4)
West South Central	17 (6)
Mountain	14 (5)
Pacific	42 (16)
Puerto Rico or Canada	3 (1)
Experience since ID fellowship	
<5 y	48 (18)
5–14 y	57 (22)
15-24 y	61 (23)
≥25 y	97 (37) <sup>a</sup>
Employment	
Hospital/clinic	106 (40)
Private/group practice	52 (20)
University/medical school	94 (36)
VA and military	11 (4)
Primary hospital type	
Community	59 (22)
Nonuniversity teaching	80 (30)
University	99 (38)
VA hospital or DOD	15 (6)

Note. ID, infectious diseases.

 $^{\mathrm{a}}$ Respondents were significantly more likely than nonrespondents to have at least 25 years of ID experience (P = .0003).

reported that their medical exemption review groups included a human resource specialist, and 84 respondents (49%) respondents reported that their religious or personal-belief exemption review groups included a human resource specialist. Furthermore, 119 occupational health specialists (69%) and 55 infection prevention specialists (32%) were part of medical exemption reviews. Only 47 respondents (27%) reported that an occupational health specialist was part of their religious and personal-belief exemption review group, and only 18 respondents (10%) reported that an infection prevention specialist was part of their religious and personal-belief exemption review group. Others reported including representatives from the following disciplines as part of their exemption review group (>1 respondent): legal, risk management, ethics, spiritual care, and administration departments.

Table 2. Exemption Allowances from HCP COVID-19 Vaccination Requirements

Variable	Response	No. (%)
Hospital allows medical exemptions from the HCP COVID-19 requirement	Yes	160 (92)
	No	3 (2)
	Unsure	10 (6)
Hospital allows religious exemptions from the HCP COVID-19 requirement	Yes	132 (76)
	No	20 (12)
	Unsure	21 (12)
Hospital allows deeply held	Yes	24 (14)
personal belief exemptions from the HCP vaccination	No	115 (66)
requirement (ie, for beliefs opposing vaccination)	Unsure	34 (20)
Overlap between medical and	Both allowed	129 (75)
religious exemption allowances	Neither allowed	1 (0.6)
	Medical allowed but religious not allowed	16 (9)
	Religious allowed but medical not allowed	1 (0.6)
	Unsure	26 (15)
Overlap between religious and deeply held personal belief exemption allowances	Both allowed	24 (14)
	Neither allowed	20 (12)
	Religious allowed but personal belief not allowed	84 (49)
	Personal belief allowed but religious not allowed	0 (0)
	Unsure	45 (26)
Overlap between medical, religious, and deeply held	All allowed	24 (14)
personal belief exemption	None allowed	1 (0.6)
allowances	Medical only	16 (9)
	Religious only	1 (0.6)
	Personal belief only	0 (0)
	Medical & religious allowed; personal belief not allowed	83 (48)
	Unsure	48 (28)

Note. HCP, healthcare personnel.

### Medical exemptions

Overall, 129 respondents (74%) reported that their institutions required an attestation to the claimed medical exemption by a licensed medical provider. The types of medical exemptions allowed varied considerably across facilities (Table 3). Allergic reactions to the vaccine or its components were accepted by 145 facilities (84%). Some allowed medical exemptions (more frequently as a temporary deferral) for groups that are now included in CDC recommendations as priority groups for vaccination, including current pregnancy (accepted by 37%), breastfeeding (14%), and infertility history (10%). In contrast, for conditions for which the CDC recommends deferment of COVID-19 vaccination, some institutions did not allow temporary deferral. For example, a history of post–COVID-19 multisystem inflammatory

syndrome (MIS) was not accepted by 63%, and the presence of active COVID-19 infection until no longer infectious was not accepted by 41%.

### Religious/Personal belief exemptions

Only 24 respondents (14%) reported that their institutions required an attestation to the claimed exemption by a religious leader. For selected scenarios commonly encountered as a basis of religious and deeply held personal belief exemptions, 144 institutions (83%) would not approve exemptions focused on concerns of rights for consent or violations of freedom of personal choice (144, 83%) and 140 institutions (81%) would not approve exemptions focused on practicing healthy lifestyles (Table 4). For other scenarios, consensus was lower. Exemptions focused on introducing foreign substances into one's body or the sanctity of the body were only accepted by 46 institutions (27%). Concerns surrounding the use of fetal cell lines in the development of COVID-19 vaccines were only accepted by 14 respondent institutions (8%). However, many respondents expressed uncertainty regarding how these scenarios would be handled by their home institution.

### Interventions for HCP with an approved exemption

Most respondents stated that there were plans for additional infection prevention interventions for those who received an exemption for COVID-19 vaccination at their institutions. Only 11 respondents (6%) stated that no added interventions were planned. Periodic asymptomatic testing for SARS-CoV-2 was noted by 65% of respondents, and additional use of personal protective equipment (eg, masking in areas where fully vaccinated HCP could be unmasked) was planned by 44%. Other interventions included job reassignment from high-risk patient areas (24%), daily symptom tracking (1%), and limitations on work-related travel (1%).

### **Discussion**

Policies that require vaccination against a contagious infectious disease are important components of institutional safety programs in healthcare facilities. The risk of healthcare-associated transmission of COVID-19 (including from asymptomatic HCP) can be ameliorated by receipt of highly effective and safe vaccines against SARS-CoV-2, making a requirement for such vaccines a logical step. The ability for HCP to request an exemption to such policies, whether medical or religious or personal belief in nature, has legal precedent, but little is known about the variety of approaches to these exemption requests. The current study has provided some insight into the utilization and application of exemptions from HCP COVID-19 vaccination requirements at healthcare facilities across the United States.

The allowance of medical exemptions for conditions that may be contraindications to or exacerbated by vaccination is common and expected, given the need to balance the benefits of vaccination against its undesired risks to certain individuals. This flexibility was evident from the survey results, with most institutions allowing medical exceptions. The differences lie in the exact conditions accepted for exemption by respondents' hospitals. Only 2 exemptions, allergy to vaccine components and active COVID-19 infection, were allowed by most institutions. The allowance of exemptions for pregnancy, current breastfeeding, use of infertility treatments, or impending attempts at pregnancy (even though more often allowed as temporary deferrals) runs counter to CDC and other professional society guidance that strongly

4 Thomas R. Talbot *et al* 

Table 3. Respondent's Institution's Approach to Specific Medical Exemption Requests

Condition Used Consideration for Exemption	Allow as a Full Medical Exemption, No. (%)	Allow for Temporary Deferral of Requirement No. (%)
Allergy to COVID-19 vaccine or its components	145 (84)	5 (3)
History of multisystem inflammatory syndrome (MIS)	37 (21)	27 (16)
Current confirmed COVID-19 infection (only allowed until no longer infectious)	33 (19)	70 (40)
History of confirmed COVID-19 infection in past 90 d	20 (12)	46 (27)
History of confirmed COVID-19 infection at any time	7 (4)	10 (6)
Currently pregnant	13 (8)	51 (29)
Currently breastfeeding	6 (3)	19 (11)
Currently trying to get pregnant or planning to in the near future	6 (3)	10 (6)
Undergoing infertility treatment/IVF	4 (2)	14 (8)
Underlying autoimmune disorder	13 (8)	2 (1)
History of Guillain-Barré syndrome	21 (12)	2 (1)
Other	7 (4)	6 (3)
Not answered	21 (12)	72 (42)

Note. IVF, in vitro fertilization.

Table 4. Approaches to Commonly Submitted Religious/Personal Belief Exemption Requests

Scenario	Respondent's Institution Response to Scenario	No. (%)
Scenario 1: "My family and I strongly believe in practicing a healthy lifestyle that includes chiropractic wellness care, vitamins, supplements, exercise and clean eating, and does not include vaccines."	Would approve	6 (3)
	Would not approve	140 (81)
	Not sure of institutional response	27 (16)
Scenario 2: "The administration of vaccines of any kind conflicts with my strongly held religious and moral beliefs. My body is a temple (see 1 Corinthians 3:16). I'm opposed to the introduction of any foreign substance to my body that may unknowingly cause harm in the future."	Would approve	46 (27)
	Would not approve	49 (28)
	Not sure of institutional response	78 (45)
Scenario 3: "The development of modern vaccines using aborted fetal cell lines is morally reprehensible."	Would approve	14 (8)
	Would not approve	97 (56)
	Not sure of institutional response	62 (36)
Scenario 4: "The mandatory administration of this vaccine is in direct violation of my right to give voluntary consent and allow for free power of choice."	Would approve	4 (2)
	Would not approve	144 (83)
	Not sure of institutional response	25 (15)

recommends vaccination of these individuals given the high risk for severe complications from COVID-19 infection among pregnant women.<sup>8</sup> Some survey respondents noted that the allowance of such exemptions could undermine parallel institutional outreach efforts promoting vaccination for pregnant women and those of childbearing age considering pregnancy. This survey was sent to respondents around the same time that professional societies and the CDC released these strong position statements encouraging vaccination of pregnant and childbearing women. Thus, some institutions may have already set their exemption criteria. As opposed to religious exemptions, many institutions required attestation of medical exemptions from a licensed provider. This requirement to discuss a perceived exemption to vaccination with a trusted care provider may have led to fewer such

exemption submissions by allowing personal conversations regarding individual health conditions and vaccination risk. Finally, in the free-text comment section, respondents noted the growing conflict between institutional desires to strengthen HCP vaccination coverage through mandates and the emergence of legislative and regulatory rules actively prohibiting such mandates or disallowing specific exemptions in some states and localities.

Religious exemptions were allowed by fewer of the respondent institutions, but far fewer also allowed exemption for a sincerely held personal belief. Notably, differentiating between a formal religious exemption and a sincerely held personal belief can be challenging because some exemptions classified as "religious" may differ from formal positions of the religion or religious group and could be considered sincerely held personal beliefs instead.

Allowance of such exemptions for HCP has led to potential conflicts between the mission of preventing healthcare-associated transmission of contagious pathogens and the respect for personal autonomy and beliefs. In its 2021 white paper, the Society for Healthcare Epidemiology of America (SHEA), noted the important impact of HCP vaccination in reducing healthcare-associated transmission of contagious pathogens and the safety record of licensed vaccines. It stated that "[o]nly recognized medical contraindications documented by a clinician should be accepted as a reason for not receiving recommended immunizations." This exclusion of religious exemptions as part of other (ie, non-COVID-19) mandatory vaccination programs, however, has been the focus of several legal challenges brought forth by HCP, several of which have been supported by the US Equal Employment Opportunity Commission (EEOC). The EEOC has also provided guidance on mandatory COVID-19 vaccination programs, including those focused on HCP. According to this EEOC guidance, there is a "right for job applicants and employees to request an exception, called a religious or reasonable accommodation, from an employer requirement that conflicts with their sincerely held religious beliefs, practices, or observances. If an employer shows that it cannot reasonably accommodate an employee's religious beliefs, practices, or observances without undue hardship on its operations, the employer is not required to grant the accommodation." Prior litigation has also broadened the application of the EEOC's definition of "religion" to include "moral or ethical beliefs as to what is right and wrong which are sincerely held with the strength of traditional religious views,"11 but they do not fall within a formally organized religion. In our survey, nearly one-third of institutions that allow religious exemptions do not allow exemptions due to these sincerely held personal beliefs, which could create risk based on these prior legal challenges to HCP vaccine mandates.

Due to the increased risk of developing infection, the higher nasopharyngeal SARS-CoV-2 viral load, and the more prolonged duration of viral shedding among unvaccinated persons when compared to those who are fully vaccinated, 12,13 the allowance of vaccine exemptions can create a higher likelihood of healthcare-associated transmission of the virus. In our survey population, some respondent institutions have implemented strategies to reduce this risk. Periodic testing of asymptomatic personnel, which is included in President Biden's executive order focused on mandatory COVID-19 vaccination, 14 was most often cited; however, this strategy can be logistically challenging (ie, ensuring that all HCP are tested, placing untested HCP on leave), costly (especially for larger healthcare institutions), and of unclear benefit (ie, testing captures infection at only a single point in time and the additional risk of such persons in the setting of other infection prevention strategies such as universal masking is unknown). In contrast, a large population of exempted HCP who remain unvaccinated could create undue risk to patients and other HCP who may not mount an effective vaccine response (eg, if immunocompromised), particularly with lapses in other infection prevention measures (eg, incorrect or absent mask wearing or HCP presenteeism). More insight on the most impactful and resource-efficient strategies to manage the risk posed by an exempted unvaccinated HCP is needed to inform these programs.

This project does have some limitations. EIN membership comprises  $\sim$ 20% of ID physicians in the United States, but members elect to join the EIN. Thus, these results may not be fully generalizable. In addition, respondents had significantly more seniority

(as measured by >25 years in ID practice), which may reflect a sample of experts more able to influence institutional decisions around exemptions than younger counterparts. Also, we collected the opinions of ID physicians; the data were not validated by their institutions. Finally, the opinions reflect only those practices in place or planned at the time of survey response. Given the rapidly evolving attitudes surrounding COVID-19 vaccination requirements, especially for HCP, these practices may have subsequently changed. Nonetheless, this analysis does provide important insight to the variety of approaches to exemptions for HCP COVID-19 vaccination.

In conclusion, among survey respondents' institutions where HCP COVID-19 vaccination is a requirement for employment, the use and allowance of exemptions from these policies varies widely. Medical exemptions were more widely accepted compared to those focused on religious or deeply held personal beliefs opposed to vaccination. More complete understanding of best practices addressing HCP exemptions, the impact of exemption allowances on healthcare-associated transmission of contagious infectious diseases, and, ideally, a standardized approach across healthcare facilities to such exemption requests is needed.

**Supplementary material.** To view supplementary material for this article, please visit https://doi.org/10.1017/ice.2022.47

**Acknowledgments.** The findings and conclusions presented in this manuscript are those of the authors and do not necessarily represent the views of the US Centers for Disease Control and Prevention or the Department of Health and Human Services.

**Financial support.** This work was supported by the Centers for Disease Control and Prevention (cooperative agreement no. 1 U50 CK00477).

**Conflicts of interest.** All other authors report no conflicts of interest relevant to this article.

## References

- Talbot TR. COVID-19 vaccination of healthcare personnel as a condition of employment: a logical addition to institutional safety programs. *JAMA* 2021;326:23–24.
- Hospitals, health systems mandating vaccines for workers. Becker's Hospital Review website. https://www.beckershospitalreview.com/workforce/hospitals-health-systems-mandating-vaccines-for-workersjune17.html?origin=bhre&utm\_source=bhre&utm\_medium=email&utm\_content=newsletter&oly\_enc\_id=5390i4378067h3j. Accessed October 26, 2021.
- 3. 13 states or cities requiring COVID-19 vaccinations for healthcare workers. Becker's Hospital Review website. https://www.beckershospitalreview.com/workforce/8-states-cities-requiring-covid-19-vaccination-for-healthcare-workers.html. Accessed October 26, 2021.
- Medicare and Medicaid Programs. Omnibus COVID-19 healthcare staff vaccination. Federal Register website. https://www.Federalregister.Gov/ Documents/2021/11/05/2021-23831/Medicare-and-Medicaid-Programs-Omnibus-Covid-19-Health-Care-Staff-Vaccination. Accessed on November 16, 2021.
- Boone BC, Johnson RT, Rolando LA, Talbot TR. Use of a comprehensive program to review religious and personal seasonal influenza vaccination exemption requests by healthcare personnel. *Infect Control Hosp Epidemiol* 2021;42:507–512.
- 6. Pillai SK, Beekmann SE, Santibanez S, Polgreen PM. The Infectious Diseases Society of America Emerging Infections Network: bridging the gap between clinical infectious diseases and public health. Clin Infect Dis 2014;58: 991–996.

- Perl TM, Talbot TR. Universal influenza vaccination among healthcare personnel: yes we should. Open Forum Infect Dis 2019;6:ofz096.
- COVID-19 vaccines while pregnant or breastfeeding. Centers for Disease Control and Prevention website. https://www.cdc.gov/coronavirus/2019-Ncov/Vaccines/Recommendations/Pregnancy.html. Accessed October 26, 2021.
- 9. Weber DJ, Talbot TR, Weinmann A, et al. Policy Statement from the Society for Healthcare Epidemiology of America (Shea): only medical contraindications should be accepted as a reason for not receiving all routine immunizations as recommended by the centers for disease control and prevention. Infect Control Hosp Epidemiol 2021;42:1–5.
- 10. What you should know about COVID-19 and the ADA, the Rehabilitation Act, and other EEO laws. Section L: Vaccinations— Title VII and religious objections to COVID-19 vaccine mandates. US Equal Employment Opportunity Commission website. https://www.

- eeoc.gov/wysk/what-you-should-know-about-covid-19-and-ada-rehabili tation-act-and-other-eeo-laws#l. Accessed on October 26, 2021.
- Opel DJ, Sonne JA, Mello MM. Vaccination without litigation—addressing religious objections to hospital influenza vaccination mandates. N Engl J Med 2018;378:785–788.
- 12. Thompson MG, Burgess JL, Naleway AL, et al. Prevention and attenuation of COVID-19 with the Bnt162b2 and Mrna-1273 vaccines. N Engl J Med 2021;385:320–329.
- Scobie HM, Johnson AG, Suthar AB, et al. Monitoring incidence of COVID-19 cases, hospitalizations, and deaths, by vaccination status—13 US jurisdictions, April 4–July 17, 2021. Morb Mortal Wkly Rep 2021;70: 1284–1290
- 14. Path out of the pandemic: President Biden's COVID-19 action plan. White House website. https://www.whitehouse.gov/covidplan/. Accessed October 26, 2021.