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Commentary

Moving vaccination beyond partisan politics

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The landscape of COVID-19 vaccine mandates has been changing rapidly over the past year, highlighting the need for evidence-based recommendations for vaccine advocates and policymakers in order to successfully implement mandates. This Commentary provides an historical lens through which to understand current opposition to mandates and offers suggestions for future research using community-based participatory research, legal epidemiology, and systems science to guide the potential development of mandates.

1. Historical opposition to vaccine requirements

Throughout history, opposition to vaccine mandates has focused on arguments related to personal liberty. In response to smallpox vaccine mandates in Great Britain in the 1850s and 1860s, the Anti-Vaccination League and Anti-Compulsory Vaccination League of Great Britain formed with a mission focused on infringement of personal liberty and freedom of choice [1]. Inspired in part by these Leagues and increased enforcement of smallpox vaccine mandates, the Anti-Vaccination Society of America and regional leagues formed in the United States (U.S.) in the 1870s; they were ultimately successful in prompting the repeal of mandates in six states [1].

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In the 1900s, the issue of personal liberty as related to vaccine mandates reached the U.S. Supreme Court, which affirmed the constitutionality of state and local smallpox vaccine mandates. The first case, *Jacobson v. Massachusetts*, decided in 1905, dealt with a challenge brought by Reverend Henning Jacobson with the backing of the Anti-Vaccination Society to a smallpox vaccination order issued by the Cambridge Board of Health under a Massachusetts law. Jacobson argued that this order to protect the public's health trampled his personal liberty rights guaranteed by the U.S. Constitution. The Supreme Court disagreed and upheld the law as a valid exercise of state police power to protect the community from a dangerous disease; police powers, provided under the 10th Amendment, allow states to pass laws to protect the health, safety, and general welfare of their citizens. The second case, decided in 1922, *Zucht v. King*, was brought by parents of a child who was excluded from school due to her unvaccinated status. The parents challenged a local ordinance that required vaccination for schoolchildren as a violation of the 14th Amendment's due process and equal protection clauses. Relying on its precedent in *Jacobson*, the Supreme Court rejected the challenge, finding that it was "within the police power of a State to provide for compulsory vaccination."

Since these Supreme Court rulings, all 50 U.S. states and the District of Columbia have passed statutes requiring children to be immunized with specified vaccines in order to attend school, with all states providing exemptions for medical reasons and a few states allowing exemptions for religious or other personal beliefs [2]. Prior research suggests school vaccine mandates are effective

at increasing vaccination rates, particularly if exemptions are limited. For example, after implementation of a California law eliminating non-medical exemptions for school-mandated vaccines, the proportion of kindergarten students with all required vaccines increased from 92.8% in the 2015–2016 school year to 95.1% in 2017–2018 [3]. However, this study also found that rates of medical exemptions increased 250% during this same time period, suggesting that parents with personal belief objections may have obtained fraudulent medical exemptions as opposed to getting their children vaccinated and highlighting the importance of limiting exemptions when mandating vaccination [3].

In the case of the California law, it is noteworthy that, prior to its implementation, over 90% of kindergarten students were already fully vaccinated, indicating widespread public support for the required vaccines. Indeed, examining the history of vaccine mandates and opposition to these mandates suggests they are usually pragmatic only when there is already widespread public support for obtaining the vaccine(s) in question. A prime example of this is the human papillomavirus (HPV) vaccine for pre-teen girls. Despite its newness and low levels of existing support, from 2006 to 2008 24 states introduced legislation to make the vaccine mandatory for girls attending school [4]. These bills were met with such strong opposition that lawmakers have continued to shy away from mandating the vaccine even as concerns about gender equity and long-term safety data have been resolved [4].

2. COVID-19 vaccine legislation

As noted in the previous section, opposition to vaccine mandates has long existed. However, the current climate in the U.S. marks the first time in which opposition to vaccine mandates has been etched into law prior to a vaccine's full approval by the Food and Drug Administration (FDA); several states had banned COVID-19 vaccine mandates prior to the August 23, 2021 FDA approval of the Pfizer-BioNTech vaccine and January 31, 2022 approval of the Moderna vaccine. As of early May 2022, according to the National Academy for State Health Policy, 19 states have banned school COVID-19 vaccine mandates, 14 have banned vaccine mandates for state workers, 1 has banned mandates for private workers, and 24 have banned vaccine passports or other proof of vaccination. In addition, a significant number of states have passed laws or taken actions that may limit the authority of government officials to support vaccination. For example, as reported in *The Washington Post*, in May 2021 Dr. Michelle Fiscus was terminated as the Medical Director of Vaccine-Preventable and Infectious Disease at the Tennessee Department of Health after Republican legislators took offense to her distribution of a memo to COVID-19 vaccine providers that included information regarding Tennessee's Mature Minor Doctrine, which may allow adolescents aged 14–17 years of age to receive a COVID-19 vaccine without parental consent.

Partisan politics, fomented under the Trump administration and intensified during the Biden administration, appears to play a significant role in this opposition to vaccine mandates and other public health actions. This political motivation is evidenced by actions such as the vote, led by Republicans, in the U.S. Senate in March 2022 to roll back the COVID-19 vaccine mandate for health care workers in federally funded facilities which had been upheld by the Supreme Court earlier in the year [5]. Further suggesting that opposition to COVID-19 vaccine mandates is politically motivated, Republican governors who have supported vaccine mandates for other highly contagious viruses (e.g., measles) have expressed angry opposition to COVID-19 vaccine mandates announced by the Biden Administration [6]. These partisan politics have led not only to opposition to COVID-19 vaccine mandates, but to low

uptake of the vaccine by individuals who identify as Republican [7].

In addition to the impact of the legislation itself, restrictions on the authority of local and state public health agencies to issue vaccine mandates may undermine the public's confidence in COVID-19 and other vaccination efforts. Thus, while working with political scientists to develop political solutions that depolarize vaccination, it is vital for researchers to develop methods that may better inform legislative actions.

3. Methods to inform vaccine policy

As noted above, the history of opposition to vaccine mandates suggests mandates are only pragmatic when there is already widespread support for obtaining the vaccine in question. Thus, in order for COVID-19 vaccine mandates to be a viable option, it is important to increase vaccine acceptance through community-based participatory research (CBPR). This is an approach in which the values, assets, and needs of a community are assessed and addressed through an equal partnership between community members and academics. While traditional approaches may create solutions for a community, CBPR aims to create solutions *within* a community. As public health agencies and policymakers contemplate COVID-19 vaccine mandates, especially at the local level, a CBPR approach will help to elucidate and leverage community assets and key partners to better incorporate local beliefs, values, and input, which may lessen backlash. Indeed, this approach has been found to increase acceptance of other “controversial” vaccines, such as the HPV vaccine [8]. A CBPR approach may also help identify trusted messengers, such as teachers or faith leaders, that can depolarize vaccination and address high levels of mistrust in national, state, and local public health agencies that exist in part because of inconsistent responses and messaging around COVID-19 [9].

Another important step is to view mandates through the lens of legal epidemiology, which is the “scientific study of law as a factor in the cause, distribution, and prevention of disease and injury in a population” [10]. Legal epidemiology provides a framework that strengthens causal inferences in observational research by comparing multiple jurisdictions with differing laws, affected subgroups, and outcomes, as well as changes in law over time [10]. In the vaccine mandate context, researchers could first use policy surveillance, the systematic, scientific collection and analysis of laws of public health significance [10], to create a rigorous database of state laws and regulations related to vaccine mandates. Researchers could then use legal prevention and control—the study of laws as interventions, including the study of the implementation of laws of public health significance [10]—to examine the human factors behind successful implementation of vaccine mandates, including the use of community-engaged methods to obtain support for mandates and effective health communication campaigns related to vaccination.

Finally, the potential impact of COVID-19 vaccine mandates, including unintended consequences such as political backlash, could be evaluated using systems science methods, which account for interdependence and multilevel factors that affect disease transmission and health outcomes. Previously, techniques such as agent-based modeling have been used to demonstrate the impact of increased non-medical exemptions for school vaccine mandates on potential measles outbreaks [11]. Such an approach could be applied to enactments or prohibitions on COVID-19 vaccine mandates. These models, as well as other systems science methods including social network analysis, could also be applied to better understand the influence of varying rates of community vaccination on disease transmission and attitudes toward COVID-19 vaccine mandates. Social network analysis could also be applied

to social media data to examine clustering of anti-vaccine topics and information flow about vaccines [12].

4. Conclusion

There is no one solution to guide public health agencies and policymakers in creating COVID-19 vaccine mandates in the current climate of misinformation, distrust, and partisan politics. However, using more rigorous, holistic, and inclusionary research in the creation of such mandates may better inform legislative actions. In summary, we suggest a combination of three approaches: (1) partnerships with community partners that will result in ownership of community-derived policy recommendations, (2) examining potential mandates within a legal epidemiology framework to determine potential health-related impacts, and (3) utilizing systems science methods to model potential effects, including unintended consequences such as political backlash related to enacting or not enacting mandates. Such approaches can generate the data necessary to support stronger, evidence-based vaccine policies as well as provide the confidence for public health trust and communication.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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