POINT: Should Childhood Vaccination Against Measles Be a Mandatory Requirement for Attending School? Yes

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A measles outbreak linked to California's Disneyland has led to > 300 cases in at least seven states, Mexico, and Canada through March 2015. Most cases occurred in people choosing to forego vaccination.^{1,2} The costs associated with this outbreak exceed those borne by individuals opting out of vaccination: > 10% of the California cases occurred in children too young to be vaccinated, schools and daycares were forced either to close or to enforce policies excluding unvaccinated and vulnerable children for multiple weeks, and health departments spent scores of personnel hours—and hundreds of thousands of dollars from limited budgets—containing the spread of this vaccine-preventable illness.^{1,2}

Measles vaccination should be mandated. We define “mandate” as the strongly preferred, legally enforced

option of government to require the recommended series of vaccinations be completed by every child as a condition of entry into larger social settings, such as regulated daycares and schools. We recommend mandatory vaccination as a state-enforced preference for treatment, restricting the grounds available to refuse, and using enforcement measures for nonparticipation, such as exclusion from certain services (eg, school) or imposing fiscal penalties (eg, denial or reduction of a child care tax exemption).³ However, we do not believe a measles mandate should result in either forced vaccination or criminal action against nonparticipants.

Measles is among the most transmissible viral illnesses: It can live for up to 2 h outside the body in the air or on surfaces, individuals are considered contagious before becoming symptomatic, and early symptoms are nonspecific.⁴ Complications (although rare) may be severe, especially in children, and no treatments are available. Consequently, some estimate community vaccination coverage levels must be 96% to 99% to protect against measles.⁵ Furthermore, given shifts in psychology surrounding infectious diseases as they become less prevalent, increased and geographically clustered rates of vaccine refusal, and recent evidence that communication efforts surrounding measles-mumps-rubella vaccination may not be as effective as hoped,^{6,7} mandates are necessary to maximize the chances of attaining necessary coverage levels to deter measles outbreaks.

Ethics

A mandate impinges upon individual autonomy, privacy, and liberty rights and challenges parental rights. However, by protecting individuals from infectious disease, reducing morbidity and mortality, conferring protection for those of poor health and/or immunocompromised status, and facilitating herd immunity, the vaccination process is both medical intervention and public health measure, an individual and a societal good. Therefore, the germane ethical considerations cannot be limited to those impacting individuals; it is necessary to consider the policy in a public health ethics context.⁸

Vaccination mandates facilitate realization of critical public health goals—the US policy, coupled with education and outreach to vulnerable and remote populations, led to elimination of endemic measles in

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2000. Safety repeatedly has been demonstrated, and side effects are rare,⁹ minimizing the primary burden imposed by mandating this vaccine. Those unable to participate because of illness could be accommodated through well-structured medical exemption protocols. Secondary burdens of a mandate include individual liberty infringement and consequences imposed for nonparticipation, such as school or daycare exclusion. However, measles infectiousness, coupled with the heterogeneous and mobile nature of some populations,¹⁰ means that population-level protection can only be obtained through high vaccination rates. Compared with programs centered on education, accessibility, and incentives (eg, the United Kingdom), a mandate offers a stronger bulwark against declining vaccination rates. Focusing the mandate on children (who are most likely to be exposed to and adversely affected by measles and who would be offered lifelong protection against measles through vaccination), offering medical exemptions for those unable to be vaccinated (and, at most, a narrow nonmedical exemption for those with philosophical objections), and asking that those able to be vaccinated do so ensures a policy with maximal fairness/justice across the population and minimizes free-riding.¹¹

Justice also demands that a government couple mandates with adequate infrastructure to facilitate comparable access by those from geographically, socioeconomically, or otherwise disadvantaged populations. In addition, robust public education, record keeping, and enforcement systems should also accompany mandates to maintain high levels of trust in vaccination and ensure mandate enactment. To enforce a mandate under suboptimal access conditions would further isolate vulnerable groups from critical social goods (such as access to childhood education). Those governments unable to provide near-universal vaccination access should focus efforts on increasing coverage through investment in public health systems, education, and incentives.

US Law

All US states require children demonstrate proof of vaccination as a prerequisite of entry into schools; however, law structures, populations covered, and enforcement vary.¹² States with narrower available grounds for exemption have lower rates of exemptors and lower likelihood of a vaccine-preventable illness outbreaks.¹³

The US Supreme Court has determined that the state, through police power and *parens patriae* authority, can override core rights, such as a family's religious beliefs

and a parent's right to direct a child's upbringing, to advance the goal of protecting both an individual child and the community from public health threats like measles. As the Court stated in the 1944 *Prince v Massachusetts* decision, "The right to practice religion freely does not include the right to expose the community or the child to communicable disease or the latter to ill health or death."¹⁴ Even staunch individual and human rights advocates acknowledge¹⁵ the court today likely would support protecting the public's health against a highly infectious and dangerous disease by mandating that individuals without medical contraindications receive a safe and effective⁹ vaccine or else be denied access to certain public benefits.

Economic Benefit

Measles is costly. A 2003 study estimated that between 11 industrialized countries, combined expenditures to treat and control measles were US \$151 million.¹⁶ US studies have estimated the economic burden to the public health system to contain and trace exposure for a single case of measles to be \$124,517 (2008 dollars).¹⁷ Indirect costs, such as social distancing and missing work to take care of an ill loved one, were estimated in 2001 US dollars to be \$276 (The Netherlands), \$307 (United Kingdom), and \$254 (Canada) per each measles case.¹⁸

Vaccine expansion efforts could save 6.4 million children's lives globally. Vaccines in low-, middle-, and high-income countries have been shown to be cost effective¹⁹ or cost saving.²⁰ In addition to the economic benefits, a society with an effective measles mandate would have increased protection against outbreaks, respond to and recover more quickly from an exposure/case, and allow public health resources (eg, finite funds) to be invested in prevention efforts elsewhere, rather than expensive and unpredictable containment efforts.

Trust

Because public health initiatives are commonly undertaken through government action, trust in public health is tied to trust in government itself. Therefore, steps to implement mandatory health policies may be seen as negatively paternalistic. We recognize that there is cultural and regional variability in levels of trust in government and health-care systems/providers, potentially leading to (or resulting from) suspicion of ulterior motives underlying immunization programs.

The evidence supporting the safety and effectiveness of measles vaccination as a protector of both individuals and populations is overwhelming. Therefore, although,

in the abstract establishment of a vaccine mandate may be seen as trust damaging, that measles vaccination mandates are evidence-based and transparent insofar as the objectives and outcomes sought from the program is trust enhancing. Furthermore, the action is not a broad, sweeping, all-vaccines policy, but rather a targeted, health-enhancing measure, which also should foster goodwill.

Conclusions

Implementing and enforcing a measles vaccination mandate ensures that, over time, an entire population will be maximally protected from this infectious, dangerous, and disruptive illness through the use of an effective, safe, and readily available public health intervention. Although it would be preferable to not need mandates because everyone trusts in vaccination for protecting not only themselves and their children but also society at large, unfortunately this is not the case in all settings, thereby necessitating the implementation of such mandates.

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COUNTERPOINT:

Should Childhood Vaccination Against Measles Be a Mandatory Requirement for Attending School? No

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We have no doubt that childhood measles immunization programs aimed at achieving or maintaining herd immunity are justified from both a public health and an ethical perspective. The minor risks that may be associated with the vaccination far outweigh the burden of disease that measles outbreaks produce.¹

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