

## **Towards Eliminating Nonmedical Vaccination Exemptions Among School-Age Children**

Neal D. Goldstein, PhD<sup>1</sup>, Joanna S. Suder, JD<sup>2</sup>

1. Department of Epidemiology and Biostatistics, Drexel University Dornsife School of Public Health

2. Civil Division, Delaware Department of Justice

### **Abstract**

The increase in childhood vaccine hesitancy and corresponding use of nonmedical exemptions to abstain from vaccination has deleteriously impacted the public's health. This has many in the field calling for widespread elimination of nonmedical school-entry exemptions, as has been done in six states to date: West Virginia, Mississippi, California, New York, Maine, and Connecticut. By eliminating nonmedical exemptions, vaccination rates can be improved, with the corresponding decline in vaccine-preventable disease incidence. Yet the path towards widespread adoption of these policies presents legislative and judicial implications which evolve with the changing political landscape. In this this article, we discuss legislative actions concerning the expansion of exemptions, whether the widespread elimination of nonmedical exemptions would be effective from a practical and legal end, and how the COVID-19 pandemic has influenced such legislation, with specific focus on Delaware.

### **Introduction**

The COVID-19 pandemic combined with the re-emergence of childhood vaccine-preventable infectious diseases in the past few decades has exemplified the impact that vaccine hesitancy has on the public's health (we use the term "hesitancy" in this article broadly to include individuals who are unsure about vaccinating themselves or others, as well as individuals who refuse to vaccinate themselves or others.).<sup>1-3</sup> While hesitancy is not the only reason for vaccine-preventable disease outbreaks (e.g., waning host immunity following immunization), from a public health perspective this is perhaps the most important criterion, because outbreaks are often started and sustained by persons choosing not to vaccinate.<sup>1</sup> Indeed, following the scale up of COVID-19 vaccination during the pandemic, the highest hospitalization and mortality rates have been among those unvaccinated.<sup>4</sup> Further, hesitancy surrounding COVID-19 vaccination has been widespread across the U.S.,<sup>5</sup> especially among parents vaccinating their children.<sup>6</sup> A January 2022 survey found that only 1 in 3 children aged 5-11 had received at least their first COVID-19 shot<sup>7</sup>; the proportion was higher, though far from perfect, among adolescents aged 12-17 at 3 in 5. For the 2022 school year, both California and Louisiana instituted COVID-19 vaccination school entry requirements for students.<sup>8,9</sup> Modifying state childhood vaccination exemption laws through legislation including removing nonmedical exemptions or making them more difficult to obtain is one frequently proposed strategy for increasing vaccination rates.<sup>2,3</sup> Major national medical organizations have endorsed this strategy for several years now.<sup>10-12</sup>

Although the public health agenda of eliminating nonmedical exemptions has an intuitive appeal, changing state law across the U.S. raises substantial challenges on legislative and judicial fronts. In addition to gathering adequate support from voters and lawmakers, both state and federal legislatures must ensure that any law that restricts citizens' choice concerning vaccinations is

consistent with state and federal constitutions, state and federal laws and, in turn, legal precedent established by state and federal courts. It is our intention with this article to explore these areas in more detail. Our audience is not only policymakers considering this approach, but also public health practitioners to supplement their knowledge in this controversial area.

## Exempting from Vaccination

As many childhood diseases require a high proportion of the population to be immunized to achieve community-wide protection (typically >80%, depending on the pathogen),<sup>13</sup> exempting from vaccination may jeopardize community health, particularly if non-immune individuals cluster together.<sup>14</sup> All states require vaccination of children enrolling in public schools, state-funded day care, and often private schools, and allow parents to exempt their children from vaccination for medical reasons. All but six states (West Virginia, Mississippi, California, New York, Maine, and Connecticut) allow exemptions for religious and, in some, ideological or philosophical reasons.<sup>15</sup> Procedures to exempt one's children vary by state, and the ease with which exemptions are obtained is positively correlated with lower vaccination coverage.<sup>16</sup>

Specific to Delaware, the process to obtain a religious or medical exemption for children in public schools is found in 14 *Del. C.* § 131 and 14 *Del. Admin. C.* § 804, 7.0. Families seeking a *medical* exemption for a child in *public* school must supply “a written statement from a physician, i.e., medical doctor or doctor of osteopathy, stating that the enrollee should not receive the prescribed immunization or immunizations required in the basic series because of the reasonable certainty of a reaction detrimental to that person.”<sup>17</sup> Further, “[t]he asserted cause of medical exemption may be subject to review and approval by the Division of Public Health.”<sup>17</sup> Families seeking a *religious* exemption for a child in *public* school must submit an affidavit of religious belief as codified in 14 *Del. C.* § 131. Further, “the school shall offer information regarding the benefits of immunization and the risks of not being fully immunized.”<sup>18</sup> The process for obtaining a religious or medical exemption for children in private schools and child care facilities is found in 16 *Del. Admin. C.* §4202, 7.0. Families may be granted a *medical* exemption for a child enrolled in *private* school or a *child care* program if their “physicians have submitted, in writing, that a specific immunizing agent would be detrimental to that child.”<sup>19</sup> Families may be granted a *religious* exemption for a child enrolled in *private* school or a *child care* program if “the parents or guardians present a notarized document that immunization is against their religious beliefs.”<sup>19</sup> Regardless of the educational environment, unvaccinated children may be excluded from school or child care “in the event the Division of Public Health declares an outbreak of a vaccine preventable disease or determines the student has had or is at risk of having an exposure to a vaccine preventable disease. The Division of Public Health shall determine when the student may return to school.”<sup>19</sup>

Among the states that allow only medical exemptions, vaccination rates are markedly higher. For example, with national median receipt for all recommended doses by kindergarten of measles, mumps, and rubella; diphtheria tetanus and acellular pertussis; and varicella vaccines at 95%, 94%, and 95% respectively for the 2019-2020 school year, both West Virginia and Mississippi exceed this indicator with 98%, 99%, and 98% respectively in West Virginia and >99% for all three vaccines in Mississippi.<sup>20</sup> Correspondingly, disease rates have decreased. Pertussis and varicella, both of which occur in relatively large numbers nationally, had among the lowest reported incidences in 2019 in West Virginia and Mississippi.<sup>21</sup>

Given the preponderance of evidence, from a public health perspective it is only natural to seek widespread elimination of nonmedical vaccination exemptions through state, and possibly federal, action. However, attempts towards widespread elimination of nonmedical exemptions have faced substantial challenges for a variety of reasons with some states even attempting to add exemptions into law.

## **A Legislative Backlash by Adding Exemptions**

There are numerous examples of state legislatures proposing bills to expand exemption law. In 2017, three bills were proposed in West Virginia—HB2945, SB359, and SB537—to add nonmedical exemptions into the state. In New York, Senate Bill S1536 was proposed in the 2016 legislative session to add philosophical exemptions. Across the river in New Jersey in the same year, a legislator sought to add philosophical exemptions in Senate Bill S1864. In fact, New Jersey has been particularly active in this area with 24 proposed bills to broaden exemptions or remove existing requirements between 2011-2017.<sup>22</sup> Across all states in the U.S., there were 78 bills proposed during this time to broaden exemptions or remove existing requirements suggesting this is an active legislative area.<sup>22</sup> What all these proposed bills have in common is the failure to become law, although that is not always the case. In 2003, Arkansas successfully added philosophical exemptions to school entry requirements. While there was the expected uptick in exemptions there was not the associated rise in vaccine-preventable diseases.<sup>23</sup> Driven by the pandemic, there has been increasing activity in this area of late, for example, Ohio HB435 was introduced to allow student exemption from COVID-19 vaccination mandates. In Delaware, HB209 was introduced on June 3, 2021, which seeks to prohibit any political subdivision of the State of Delaware (including schools) from requiring immunization against COVID-19. As of this writing, the bill is currently in committee with no movement.

## **The False-Premise of Federal Action**

Intuitively, the easiest way towards widespread elimination of nonmedical exemptions would be federal congressional action, such as a non-vaccination tax deterring use of exemptions. Such action must be within the Constitutional jurisdiction of the Federal government. Under the Tenth Amendment to the Constitution, the power to legislate for the health and welfare of citizens falls under state jurisdiction, and because vaccine laws have traditionally been within a state's jurisdiction, the U.S. Supreme Court could deem this action to be an unconstitutional exercise of power. However, it is worth exploring whether certain education funds could be tied to state vaccine rates, incentivizing states to increase their vaccination rates without coercing them into changing well-established laws.

## **Legal Precedent and Possible Challenges**

Even if state statutes were passed eliminating nonmedical exceptions, those statutes may be challenged in the courts under the grounds that these laws violated Constitutional rights. In the well-known court case of *Jacobson v. Massachusetts*, the U.S. Supreme Court upheld a mandatory smallpox vaccination, stating that the Constitution “does not import an absolute right in each person to be, at all times and in all circumstances, wholly freed from restraint.”<sup>24</sup> In other words, liberty is not absolute: one cannot falsely yell “fire” in a crowded theater as it jeopardizes the safety of others. In 1922, *Zucht v. King* challenged the constitutionality of a Houston, Texas ordinance requiring vaccination for schoolchildren, which the Court upheld reinforcing

*Jacobson*.<sup>25</sup> *Prince v. Massachusetts*, decided in 1944, challenged child labor laws, and the Court held “[t]he right to practice religion freely does not include the liberty to expose the community or the child to communicable disease or the latter to ill health or death.”<sup>26</sup> These three cases make up the historical federal vaccination precedent; but precedent evolves over time.

During the COVID-19 pandemic, the Supreme Court of the United States has weighed in on the Federal government’s authority to mandate vaccination. In *National Federation of Independent Business v. Department of Labor*, the Supreme Court blocked the Occupation Safety and Health Administration’s proposed soft vaccine mandate for all large employers.<sup>27</sup> Conversely, in *Biden v. Missouri*, the Supreme Court upheld the Centers for Medicare and Medicaid Services’ vaccine requirement for facilities that agree to the Centers’ conditions of participation.<sup>28</sup> Unsurprising to many public health law practitioners, the Supreme Court upheld *state* vaccine mandates in New York and Maine.<sup>29,30</sup>

In the scenario of a state eliminating *all* nonmedical exemptions, a parent may hypothetically challenge this action as an infringement upon their, and their child’s, civil liberties. Courts below the U.S. Supreme Court have taken up similar issues and have held against a right to decline vaccinations, namely *Phillips v. City of New York*, *Workman v. Mingo County Board of Education*, *Boone v. Boozeman*, and *Brown v. Stone*.<sup>31–34</sup> In *Brown v. Stone*, the Mississippi Supreme Court examined, and overturned, a statute expansion to include religious exemptions.<sup>34</sup> Although the Supreme Court has not weighed in specifically on this matter, the Court has issued many decisions supporting a citizen’s ability to make private decisions related to procreation, child-bearing and family. While the precedent set in *Jacobson* makes it unlikely the Court would find that parents have a right to not vaccinate their children, this case is now over 110 years old and the 21<sup>st</sup> century Supreme Court has expanded fundamental individual rights in a way the 20<sup>th</sup> century Court could never have imagined, particularly through the same-sex marriage cases of *U.S. v. Windsor* and *Obergefell v. Hodges*.<sup>35,36</sup> The Court has also repeatedly upheld the interests of religious freedom over public health during the COVID-19 pandemic, specifically in *Tandon v. Newsom* and *Roman Catholic Diocese of Brooklyn v. Cuomo*.<sup>37,38</sup>

As an alternate and perhaps more plausible scenario, the elimination of only *religious* exemptions may have implications under the First Amendment. Laws requiring mandatory vaccination are often seen as neutral and generally applicable because they do not demonstrate a denominational preference. However, an Arkansas court ruled in *Boone v. Boozman* that the State’s religious exemption showed preference to established religion, and struck down the law, thereby limiting the ability to opt out of vaccination.<sup>33</sup> If states have adopted their own Religious Freedom Restoration Acts – Delaware has not – then these states must show that there are no less restrictive means to improving vaccinate rates and preventing communicable illness than eliminating religious exemptions.

## Overcoming Political Ideologies

Perhaps the greatest challenge to removing nonmedical exemptions is not judicial, but legislative. That is, legislation must be written, voted, and executed into law. There is emerging evidence about the alignment of legislative bills being proposed in the states and their impact on vaccination. Goldstein, Suder, and Purtle observed a concerning increase of bills being proposed in state legislatures between 2011 and 2017 that would undermine vaccination efforts through broadening exemptions.<sup>22</sup> Bills that would broaden exemptions were more likely to be proposed by Republican lawmakers or come from states in the South or Northeast. Fortunately, these bills

were less likely to become enacted into law. In a follow-up study, these authors correlated bills that would impact vaccine exemption law with vaccine-preventable diseases and found that an increase in reported diseases brought about an increase in bills that would restrict the ability to exempt, perhaps suggesting that lawmakers will respond to disease outbreaks among their constituency.<sup>39</sup>

The partisan nature of public health legislation has also been studied. Congressional party affiliation predicts voting patterns on public health legislation.<sup>40</sup> States that voted Democratic in the 2012 Presidential election were correlated with higher vaccination coverage.<sup>41</sup> A comprehensive examination of vaccine-related legislation between 1995 and 2020 has found an increase in the polarization of proposed bills during recent years; whereas vaccination law used to be more bipartisan, today it is not.<sup>42</sup> In short, any law that proposed to eliminate nonmedical exemptions will be subject to the political climate of that state, with some states, particularly those in the South or under Republican leadership, less amenable to change.

## **Enter Alternatives to Legislation**

The premise underlying the elimination of nonmedical exemptions, or at least making them more difficult to obtain, is that most parents will have no option but to immunize their children prior to school entry. However, these efforts can still be undermined by fringe practitioners granting medical exemptions or an increase in home schooling, a potentially self-damaging scenario to the public's health.<sup>43</sup> In fact, the increase in medical exemptions was observed in California following their elimination of personal belief exemptions in 2015.<sup>44</sup> Proposed alternatives to eliminating exemptions include stricter exemption policies, financial disincentives, increasing voluntary compliance, and more effective vaccines. Internationally, Australia limited childcare benefits for parents who philosophically object to vaccinating their children.<sup>45</sup> For states here in the U.S., an annual nonmedical exemption fee has been proposed for parents who seek such exemptions.<sup>46</sup> In a recent article tailored towards the legal community, Reiss and Weithorn present a table of various tools states can use to increase vaccination rates, some of which have yet to be tried, such as tort liability for failure to vaccinate.<sup>47</sup>

## **Conclusions**

In this article, we have presented a legal and judicial analysis of eliminating nonmedical vaccination exemptions, and further argued that federal action is unlikely. The road to widespread elimination of nonmedical exemptions is filled with long, drawn-out legislation with many political hurdles. Non-mandated alternatives may be the path of least resistance. Regardless, the current and changing state of exemptions will serve as a useful case study in the future as we continue to strive for control and eradication of vaccine-preventable infectious diseases in Delaware and beyond.

## **Disclaimer**

The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of the Delaware Department of Justice.

Dr. Goldstein can be contacted at [ng338@drexel.edu](mailto:ng338@drexel.edu)

## Acknowledgements

The authors would like to thank Stephen C. Eppes, MD, ChristianaCare, for a helpful critique of a draft version of this manuscript.

## References

1. Phadke, V. K., Bednarczyk, R. A., Salmon, D. A., & Omer, S. B. (2016, March 15). Association between vaccine refusal and vaccine-preventable diseases in the United States: A review of measles and pertussis. *Journal of the American Medical Association*, 315(11), 1149–1158. [PubMedhttps://doi.org/10.1001/jama.2016.1353](https://doi.org/10.1001/jama.2016.1353)
2. Gostin, L. O. (2015, March 17). Law, ethics, and public health in the vaccination debates: Politics of the measles outbreak. *Journal of the American Medical Association*, 313(11), 1099–1100. [PubMedhttps://doi.org/10.1001/jama.2015.1518](https://doi.org/10.1001/jama.2015.1518)
3. Yang, Y. T., & Silverman, R. D. (2015, January 20). Legislative prescriptions for controlling nonmedical vaccine exemptions. *Journal of the American Medical Association*, 313(3), 247–248. [PubMedhttps://doi.org/10.1001/jama.2014.16286](https://doi.org/10.1001/jama.2014.16286)
4. Moghadas, S. M., Vilches, T. N., Zhang, K., Wells, C. R., Shoukat, A., Singer, B. H., . . . Galvani, A. P. (2021, December 16). The impact of vaccination on coronavirus disease 2019 (covid-19) outbreaks in the United States. *Clinical Infectious Diseases*, 73(12), 2257–2264. [PubMedhttps://doi.org/10.1093/cid/ciab079](https://doi.org/10.1093/cid/ciab079)
5. Centers for Disease Control and Prevention. (2022, Feb). Estimates of vaccine hesitancy for COVID-19. Retrieved from <https://data.cdc.gov/stories/s/Vaccine-Hesitancy-for-COVID-19/cnd2-a6zw>
6. Beleche, T., Kolbe, A., Bush, L., & Sommers, B. D. (2022, Feb). Parents' intentions to vaccinate children ages 12-17 for COVID-19: Demographic factors, geographic patterns, and reasons for hesitancy. Retrieved from <https://aspe.hhs.gov/reports/hesitancy-vaccinate-children>
7. Hamel, L., Sparks, G., Lopes, L., Stokes, M., & Brodie, M. (2022). KFF COVID-19 Vaccine Monitor: January 2022 parents and kids update. Retrieved from <https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-january-2022-parents-and-kids-update/>
8. State of California Office of the Governor. (2021, Oct). California becomes first state in nation to announce covid-19 vaccine requirements for schools. Retrieved from <https://www.gov.ca.gov/2021/10/01/california-becomes-first-state-in-nation-to-announce-covid-19-vaccine-requirements-for-schools/>
9. State of Louisiana Office of the Governor. (2021, Dec). House health letter. Retrieved from <https://gov.louisiana.gov/assets/docs/househealthletter.pdf>
10. American Medical Association. (2015). AMA supports tighter limitations on immunization opt outs. Retrieved from <https://www.ama-assn.org/press-center/press-releases/ama-supports-tighter-limitations-immunization-opt-outs>

11. American College of Physicians. (2015, Jul). Elimination of non-medical exemptions from state immunization laws. Retrieved from [https://www.acponline.org/acp\\_policy/policies/non\\_medical\\_exemptions\\_policy\\_2015.pdf](https://www.acponline.org/acp_policy/policies/non_medical_exemptions_policy_2015.pdf)
12. American Academy of Pediatrics. (2016). Eliminate nonmedical immunization exemptions for school entry, says AAP. Retrieved from <http://www.aappublications.org/news/aapnewsmag/2016/08/29/VaccineExemptions082916.full.pdf>
13. Anderson, R. M., & May, R. M. (1990, March 17). Immunisation and herd immunity. *Lancet*, 335(8690), 641–645. [PubMedhttps://doi.org/10.1016/0140-6736\(90\)90420-A](https://doi.org/10.1016/0140-6736(90)90420-A)
14. Omer, S. B., Enger, K. S., Moulton, L. H., Halsey, N. A., Stokley, S., & Salmon, D. A. (2008, December 15). Geographic clustering of nonmedical exemptions to school immunization requirements and associations with geographic clustering of pertussis. *American Journal of Epidemiology*, 168(12), 1389–1396. [PubMedhttps://doi.org/10.1093/aje/kwn263](https://doi.org/10.1093/aje/kwn263)
15. National Conference of State Legislators. (2022, Jan 20). States with religious and philosophical exemptions from school immunization requirements. <https://www.ncsl.org/research/health/school-immunization-exemption-state-laws.aspx>
16. Wang, E., Clymer, J., Davis-Hayes, C., & Bутtenheim, A. (2014, November). Nonmedical exemptions from school immunization requirements: A systematic review. *American Journal of Public Health*, 104(11), e62–e84. [PubMedhttps://doi.org/10.2105/AJPH.2014.302190](https://doi.org/10.2105/AJPH.2014.302190)
17. 14 *Del. C.* § 131
18. 14 *Del. Admin. C.* § 804, 7.1.2.
19. 16 *Del. Admin. C.* §4202, 7.1.4.1
20. Seither, R., McGill, M. T., Kriss, J. L., Mellerson, J. L., Loretan, C., Driver, K., . . . Black, C. L. (2021, January 22). Vaccination coverage with selected vaccines and exemption rates among children in kindergarten - United States, 2019-20 school year. *MMWR. Morbidity and Mortality Weekly Report*, 70(3), 75–82. [PubMedhttps://doi.org/10.15585/mmwr.mm7003a2](https://doi.org/10.15585/mmwr.mm7003a2)
21. Centers for Disease Control and Prevention. (2021). National Notifiable Diseases Surveillance System, 2019 Annual Tables of Infectious Disease Data. <https://www.cdc.gov/nndss/data-statistics/infectious-tables/index.html>
22. Goldstein, N. D., Suder, J. S., & Purtle, J. (2019, January). Trends and characteristics of proposed and enacted state legislation on childhood vaccination exemption, 2011-2017. *American Journal of Public Health*, 109(1), 102–107. [PubMedhttps://doi.org/10.2105/AJPH.2018.304765](https://doi.org/10.2105/AJPH.2018.304765)
23. Safi, H., Wheeler, J. G., Reeve, G. R., Ochoa, E., Romero, J. R., Hopkins, R., . . . Jacobs, R. F. (2012, June). Vaccine policy and Arkansas childhood immunization exemptions: A multi-year review. *American Journal of Preventive Medicine*, 42(6), 602–605. [PubMedhttps://doi.org/10.1016/j.amepre.2012.02.022](https://doi.org/10.1016/j.amepre.2012.02.022)
24. *Jacobson v. Mass.*, 197 U.S. 11 (1905).

25. 260 U.S. 174 (1922).
26. 321 U.S. 158 (1944).
27. 142 S.Ct. 661 (2022).
28. Biden v. Missouri, 142 S. Ct. 647 (2022)
29. Howe, A. (2021). Court rejects religious challenge to New York’s vaccine mandate for health care workers. <https://www.scotusblog.com/2021/12/court-rejects-religious-challenge-to-new-yorks-vaccine-mandate-for-health-care-workers/>
30. John Does 1-3 v. Mills, 142 S. Ct. 581 (2021)
31. Phillips v. New York, 775 F.3d at 544.
32. Workman v. Mingo County, 419 Fed.Appx. at 354
33. 217 F.Supp.2d 938, 956 (Ar. E.D., 2002).
34. 378 So.2d 218 (Ms. 1979).
35. 570 U.S. 744 (2013).
36. 576 U.S. 644 (2015).
37. Tandon v. Newsom, 141 S. Ct. 1294, 209 L. Ed. 2d 355 (2021)
38. Roman Cath. Diocese of Brooklyn v. Cuomo, 141 S. Ct. 63, 208 L. Ed. 2d 206 (2020)
39. Goldstein, N. D., Purtle, J., & Suder, J. S. (2020, January 1). Association of vaccine-preventable disease incidence with proposed state vaccine exemption legislation. *JAMA Pediatrics*, 174(1), 88–89. [PubMedhttps://doi.org/10.1001/jamapediatrics.2019.4365](https://doi.org/10.1001/jamapediatrics.2019.4365)
40. Purtle, J., Goldstein, N. D., Edson, E., & Hand, A. (2016, December 23). Who votes for public health? U.S. senator characteristics associated with voting in concordance with public health policy recommendations (1998-2013). *SSM - Population Health*, 3, 136–140. [PubMedhttps://doi.org/10.1016/j.ssmph.2016.12.011](https://doi.org/10.1016/j.ssmph.2016.12.011)
41. Bernstein, S., North, A., Schwartz, J., & Niccolai, L. M. (2016, October). State-level voting patterns and adolescent vaccination coverage in the United States, 2014. *American Journal of Public Health*, 106(10), 1879–1881. [PubMedhttps://doi.org/10.2105/AJPH.2016.303381](https://doi.org/10.2105/AJPH.2016.303381)
42. Estep, K., Muse, A., Sweeney, S., Goldstein, N.D. (n.d.). Partisan polarization of childhood vaccination policies, 1995-2020. Manuscript under review.
43. Mohanty, S., Buttenheim, A. M., Joyce, C. M., Howa, A. C., Salmon, D., & Omer, S. B. (2018, November). Experiences with medical exemptions after a change in vaccine exemption policy in California. *Pediatrics*, 142(5), e20181051. [PubMedhttps://doi.org/10.1542/peds.2018-1051](https://doi.org/10.1542/peds.2018-1051)
44. Delamater, P. L., Leslie, T. F., & Yang, Y. T. (2017, September 5). Change in medical exemptions from immunization in California after elimination of personal belief exemptions. *Journal of the American Medical Association*, 318(9), 863–864. [PubMedhttps://doi.org/10.1001/jama.2017.9242](https://doi.org/10.1001/jama.2017.9242)
45. BBC News. Australia to stop welfare cash of anti-vaccine parents. April 12, 2015. <http://www.bbc.com/news/world-australia-32274107>. Accessed February 4, 2022.

46. Billington, J. K., & Omer, S. B. (2016). Use of fees to discourage nonmedical exemptions to school immunization laws in US States. *American Journal of Public Health, 106*(2).  
[PubMedhttps://doi.org/10.2105/AJPH.2015.302967](https://doi.org/10.2105/AJPH.2015.302967)
47. Reiss, D.R., Weithorn, L.A. (2015). Responding to the childhood vaccination crisis: legal frameworks and tools in the context of parental vaccine refusal. *63 Buff. L. Rev.* 881.

---

Copyright (c) 2022 Delaware Academy of Medicine / Delaware Public Health Association.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.