

# A Defense of Compulsory Vaccination

(short excerpted version; for a long excerpted version, go [here](#))

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## An Analogy

It's Independence Day. You are sitting outside your house and watching fireworks. Several patriotic neighbors begin shooting guns in the air to celebrate. It is unlikely that a stray bullet will hit you, but you realize that if one does it could be deadly. Frightened by the gunfire, you make your way inside. As you run to your door a bullet lodges in your shoulder.

In this case, the shooter has done something wrong. Of course, the shooter may not know that he did something wrong. He may hear the sirens down the block and assume that your injury is unrelated to his behavior. For example, he may assume that some other shooter's bullet struck your shoulder, or that you were injured in some other way. Even if the shooter knew that it was his bullet, he may still deny any wrongdoing. He may argue that he did not intend to shoot you, that he could not have foreseen this consequence, that the odds of you getting shot by him were extremely low, and that he was merely exercising his right to own and fire a weapon.

Yet, the shooter's defense of his conduct would fail. The fact would remain that his bullet is in your shoulder because of something he did and, at a minimum, he would be subject to charges of reckless endangerment. In some jurisdictions, indiscriminate shooters can even be charged with murder if their gunfire kills someone.<sup>1</sup> Even if the shooter's bullet never hit your shoulder, he could still be liable to criminal penalties simply for randomly shooting into the air.<sup>2</sup> In Arizona, for example, random gunfire is a felony offense, and in several other states celebratory gunfire is a misdemeanor that is punishable by jail time and fines, even if the gunfire never harms anyone.<sup>3</sup>

Now consider an analogous case. You attend a party on Memorial Day with your children. Several other neighborhood families bring their children to celebrate as well. You know that there is some chance that the neighbors' children are not vaccinated. Someone is coughing and gasping, and you recognize the sound as whooping cough. Though you realize that it is unlikely that you or your children will get pertussis, just to be sure you gather your children and leave the party. Ten

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<sup>1</sup> LAPD: Fourth of July Gunfire Reduction Program [http://www.lapdonline.org/search\\_results/content\\_basic\\_view/7751](http://www.lapdonline.org/search_results/content_basic_view/7751)

<sup>2</sup> In the US, laws against aerial firing vary by state. In some places it is classified as disorderly conduct and in other states it is considered reckless endangerment.

<sup>3</sup> Several states have sought to increase penalties for aerial firing that causes harm and to improve enforcement of existing laws. For example, in Maryland where 10-year-old Aalyiah Boyer was killed by celebratory gunfire on New Year's Day in 2013, Boyer's family is currently lobbying for harsher penalties for celebratory gunfire. The Arizona classification of celebratory gunfire as a felony offense was enacted as part of "Shannon's law," a statute named after a 14-year-old girl who was killed by a stray bullet in 1999.

days later your son, who has been vaccinated, starts coughing and gasping. He is diagnosed with pertussis and the cough lasts for two months even with antibiotic treatment. During that time he cannot sleep well, cannot attend school, and is generally miserable. The pediatrician explains that the pertussis vaccine is only 70–85% effective, and that transmission rates are high because many adults do not receive pertussis boosters and some parents do not give their children pertussis vaccines for religious or other conscience-based reasons.

As in the case of celebratory gunfire, the non-vaccinators harm and impose risks on their neighbors. In both cases, the shooters and the non-vaccinators may never see the harm they cause to others. Both shooters and non-vaccinators may feel justified in exposing people to small risks of getting shot or infected with a contagious illness for the sake of their own freedom to fire guns or to refuse vaccination. Yet, neither shooters' nor non-vaccinators' rights entitle them to harm others, despite the fact that the risk of harm is of low-probability, their victims are unlikely to identify them, and they do not intend to injure their victims.

At this point, it is worth describing in more detail the ways that non-vaccinators harm and impose risks on others. First, non-vaccinators are more likely to acquire and transmit contagious illnesses. Second, vaccine refusal diminishes herd immunity, which harms people in the community by making everyone more vulnerable to contagious transmission. Third, non-vaccinators are especially harmful to immunosuppressed people and infants who cannot receive effective vaccination. The harms of non-vaccination are especially objectionable because non-vaccinators do not exclusively bear the costs of the harms they cause. Rather, they externalize the costs of non-vaccination to bystanders who are not liable to be harmed by contagious transmission. ...

### **Testing the Analogy**

If the analogy succeeds, it suggests that mandatory vaccination policies are permissible—which is to say coercion can be used to promote vaccination—because non-vaccinators are not entitled to harm or risk harming non-liable bystanders, just as shooters are not entitled to harm or risk harming their neighbors.

... [My opponents might reject] the gunfire analogy on the grounds that the risk of being harmed by an unvaccinated person, especially in light of herd immunity, is very small, unlike the risk of being hit by a stray bullet. We can imagine, however, that the risk of being hit by a stray bullet is also very small but that random gunfire is wrong and rightly prohibited nevertheless. One reason that public policy can limit random gunfire or non-vaccination is that even small risks become morally significant when they are taken many times and the overall potential for harm outweighs the low probability of harm actually happening in any single case. Small

risks are also morally significant when the potential harm affects a lot of people.<sup>4</sup> Non-vaccination can take this form. Even if a single non-vaccinator's choice does not impose significant risks on many people, as an increasing minority makes a risky choice the pool of people who are exposed to the risks of transmission becomes greater, so the risk of non-vaccination becomes more significant. Furthermore, even a single non-vaccinator imposes small risks on people who have high stakes. If an unvaccinated person transmits a contagious illness to someone who is immunosuppressed, such as a cancer patient or an infant, the consequences can be deadly. ...

A related asymmetry between celebratory gunfire and non-vaccination is that a single unvaccinated person's contribution to reducing the harm or risk of harm posed by the entire unvaccinated population is especially small, given high rates of vaccine refusal. We can modify the celebratory gunfire case to better reflect this seeming asymmetry simply by increasing the number of neighbors who fire weapons. Adding more people to the group that poses a threat to innocents may make any one individual's contribution to the threat less substantial, but that shooter nonetheless poses a threat in that his bullet could be the one that lodges in your shoulder.

If anything, the harm of non-vaccination is even worse than the harm of celebratory gunfire, because ... [u]nlike celebratory gunfire, non-vaccinators not only are more likely to transmit an illness, they make it more likely that others will transmit harmful diseases as well. Non-vaccinators may reply that their specific contribution to herd immunity is insignificant, that it is so negligible that one individual's failure to vaccinate does not actually make anyone worse off. Yet, just because the effect on herd immunity is small or imperceptible does not mean that it is not harmful. Actions that have very small effects, like overfishing or imposing small traffic delays on others, can be extremely harmful in aggregate (Parfit 1984). And, just as every fisherman in fact has an effect on overfishing by taking fish out of the water, each non-vaccinator has an effect on undermining herd immunity by taking himself out of the pool of inoculated citizens.

The idea that people have rights to not be subjected to serious risks without their consent requires that we define a baseline level of acceptable risk. Not all small risks merit moral consideration. We impose small risks on people every day. Every driver risks killing an innocent person but I am not suggesting that driving should be prohibited. Part of what should determine whether an activity imposes undue risks on others is the costs of avoiding those risks and one's reasons for imposing

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<sup>4</sup> Ignoring small chances is what Parfit calls the third mistake in moral mathematics (Parfit 1984). Parfit argues that we cannot ignore small chances when the stakes are very high or when the chance will be taken many times because the large potential harm/benefit cancels out the smallness of the chance. His example is nuclear science. He writes that a scientist may not consider a one in a million chance of killing one person with a nuclear device, but that when people design reactors they must consider the one-in-a-million chance of killing one million people. In that case a one-in-a-million chance is not so small after all because the stakes are very high.

the risks. For some vaccines, the risk of non-vaccination may be so small (e.g., if the disease has been eradicated) that compulsory immunization is not warranted. But the earlier examples of recent outbreaks show that, at least in some cases (pertussis, measles), the risks of refusal are significant and that innocent people die because of non-vaccination. ...

The risks posed by vaccine refusal are also more morally significant than other small risks that we collectively impose on others, like the risks associated with pollution because a single refusal is theoretically sufficient for transmitting an illness and harming or killing an innocent.<sup>5</sup>

### **Vaccination Requirements**

Begin with the assumption that a prohibition on celebratory gunfire is permissible. Since non-vaccination is morally similar to celebratory gunfire in that it harms people and exposes bystanders to undue risks of harm, non-vaccinators are liable and some coercive intervention to prevent or limit the effects of their wrongful behavior is justified. And so, prohibitions of non-vaccination are permissible, just like other coercive public safety measures. In practice, this means that mandatory vaccination policies are permissible.

The idea that coercion is justified to prevent the spread of preventable contagious illnesses is not new. Quarantine is a limitation on a potentially contagious person's behavior for the sake of public safety. In the case of quarantine, the cost to the individual of preventing transmission is typically higher than in the case of non-vaccination because it involves isolation rather than an unwanted injection or medication. On the other hand, the risks posed by contagious people who are subject to quarantine are also higher. Though the individual costs and public safety benefits of compulsory vaccination and quarantine are different in degree, they are not different in kind.

To illustrate the parallel between justified quarantine and mandatory vaccination, consider the case of "Typhoid Mary" Mallon, an asymptomatic carrier of typhoid who infected dozens of people and killed 3 during her career as a cook in the first half of the twentieth century. Mallon refused to have her gallbladder removed (to prevent the spread of typhoid) and denied that she had the disease despite the fact that she tested positive for typhoid salmonella. Eventually Mallon was quarantined and then re-quarantined after she repeatedly failed to comply with authorities' recommendations that she practice good hygiene, wash her hands, and discontinue work as a cook.

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<sup>5</sup> Walter Sinnott-Armstrong, for example, claims that individuals are not responsible for the risks they impose on others by contributing to climate change. This case is not analogous to the risks associated with being unvaccinated because being unvaccinated is sufficient to cause harm whereas a single individual's contribution to climate change is not sufficient for harm (Sinnott-Armstrong 2005).

Typhoid Mary's behavior provides an illustrative parallel to the behavior of those who refuse vaccines. Although any particular unvaccinated person is unlikely to infect or kill as many people as Mallon did, the threat that he or she poses is the same, especially considering that there are many more non-vaccinators than Typhoid Marys. Through their own willful ignorance, negligence, and resistance to public health authorities, both Typhoid Mary and non-vaccinators deliberately endanger and potentially harm people by transmitting contagious illnesses, essentially turning themselves into biological weapons that are recklessly unleashed on a public that cannot consent to the risks. And in this way, both Mallon and non-vaccinators make themselves liable to coercive intervention because of the potentially harmful consequences of their behavior.

Those who refuse vaccines do not have the right to do so in cases where their conduct exposes others to undue risks and harms. This principle places some limits on the permissible scope of mandatory vaccination; not all failures to vaccinate are risky or harmful to people who are not liable to be exposed to those risks or harms. Mandatory vaccination can only be justified for these reasons when the following four conditions are met:

- (1) Vaccination prevents a contagious illness.
- (2) Those who are exposed to the illness do not make themselves liable to the risks.
- (3) Vaccination is potentially effective at limiting contagion.
- (4) Vaccination does not limit rights of self-defense or defense of others.

These four conditions limit the scope of permissible compulsory vaccination policies. Take condition 1—the tetanus vaccine, for example, prevents an illness that cannot be spread between people. In this case, vaccine refusal is not harmful to others because it does not increase the odds that an unvaccinated person will transmit tetanus nor does it reduce herd immunity for tetanus.<sup>6</sup>

Mandatory vaccination policies for some contagious illnesses may also be more difficult to justify than the vaccines for diseases like measles, mumps, or pertussis. For example, vaccines that protect people against sexually transmitted infections like hepatitis B (HBV) or human papillomavirus (HPV) cannot be as easily justified on the grounds that the victims of transmission are not liable to transmission, because by consenting to sex people plausibly consent to some of the risks.<sup>7</sup> Unlike airborne illnesses, sexually transmitted diseases can be avoided through abstinence

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<sup>6</sup> This consideration may tell in favor of unbundling tetanus vaccines from vaccines for contagious illnesses, if vaccination opponents seek to minimize the number of vaccines they receive.

<sup>7</sup> The argument in this essay therefore cannot justify the current practice of requiring the HBV vaccine as a condition of public schooling, nor can it support an HPV vaccine mandate. The above argument for exemptions from HBV and HPV vaccine mandates is somewhat complicated by the fact that teenagers and children are required to receive them but may not be able to consent to the risks associated with sex. Here I am assuming that if a person can consent to sex she can consent to the risks associated with having unprotected sex without vaccinations for HBV or HPV. Since arguments for the HBV or HPV vaccines cannot be justified for public safety reasons, and argument for these vaccine mandates must therefore rely on some theory of why parental rights do not entitle parents to refuse vaccinations for their children or appeal to paternalistic considerations (Colgrove 2006; Haber et al. 2007).

or by requesting that partners be tested. The right to not be infected is even weaker if a person has sex with a woman who has HPV and she disclosed her status. In any conditions where a person knowingly consents to the risk of transmission condition 2 may not be satisfied. By consenting people can waive their entitlement against contagious transmission.<sup>8</sup> For this reason, further argument is necessary to show that either abstinence or testing is too burdensome for people who seek to avoid transmission, or that even with the option of abstinence and testing people who have sex are not liable to be infected with sexually transmitted diseases.

Condition 3 states that vaccination requirements must effectively limit the risks of contagion. If vaccines are not effective at protecting people from being harmed by contagious transmission then compulsory vaccination requirements cannot be justified. This principle holds in cases where particular vaccines have been shown to be ineffective or outdated, and it also holds when vaccines are unlikely to be effective for particular patients. For example, since vaccines are not effective at protecting immunosuppressed patients from infection and transmission, a policy that required leukemia patients to become vaccinated cannot be justified for the sake of public safety.

Condition 4 is a conditional claim. If it is permissible to impose some risks on innocent bystanders in self-defense, then refusing an effective vaccine because the patient is severely allergic to the vaccine or a vaccine component is also permissible. In these cases, rights of self-defense can outweigh others' rights against the risks of contagious transmission. Just as other public safety policies make exceptions for cases of self-defense, mandatory vaccination policies should not require people to expose themselves to serious medical risks for the sake of public safety. In rare cases, it may be permissible for an individual to expose others to risks of harm in order to defend herself.

Return to the gunfire analogy. Imagine a bear is chasing your neighbor and the only way that he can scare the bear away is to randomly fire a weapon in the bear's general direction. By firing, he risks harming you or the other neighbors, but his decision to fire no longer reflects an ideological commitment or a philosophical judgment, but an attempt to preserve his own life in the face of a natural threat. Some have argued that the neighbor could permissibly endanger innocent bystanders for the sake of self-defense in this case.<sup>9</sup> If they are right, then in cases where people are "under attack" by diseases that make vaccination itself a direct

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<sup>8</sup> Similarly, when health workers voluntarily treat people who have contagious illnesses they too consent to an increased risk of contagious transmission. This consideration will not tell against mandatory vaccination for health workers, however, because even if health workers do consent to the risks of infection, those who they may subsequently infect if they do become sick cannot consent to those risks, nor can other patients who interact with an unvaccinated person. In this way, my argument actually tells in favor of potentially higher vaccination requirements for health workers because the potential for harm is greater, as I argue in "Practical Considerations" section.

<sup>9</sup> It is controversial whether it is ever permissible to kill innocents for any reason (Otsuka 1994). Those who argue that it is permissible to kill innocents in self-defense generally limit this to innocent aggressors or innocent threats (Thomson 1991). However, when self-defense (or other-defense) only imposes risks on others, rather than certain harm, it can be permissible (and may even be required in the case of other-defense) to expose innocents to small risks (McMahan 2010).

threat to the individual's health she may permissibly refuse to comply with vaccination requirements and thereby expose others to potential harm.

On the other hand, self-defense rights are not absolute and it is also plausible that your neighbor should have complied with a prohibition on random gunfire when he was under attack. The permissibility of risking others' safety will depend on the severity of the risk to others and the severity of the threat from the bear. Similarly, my claim here is only that self-defense could potentially permit people to expose others to some risks of harm for the sake of self-preservation, when the risk to others is small relative to the harm of the vaccine. I am skeptical that all self-defense justifications for exemptions from vaccination requirements can succeed, but severe allergies can count as serious enough harms to justify exemptions. Still, these kinds of medical exemptions would not justify non-medical vaccination-refusals, which account for most of the growth of the unvaccinated population (Omer et al. 2012).

Condition 4 also allows for potential exemptions in cases where vaccination can harm others.<sup>10</sup> The only case where this condition is relevant is vaccination requirements for pregnant women. Women who are pregnant should not be required to receive live virus vaccines like the MMR vaccine, which poses a theoretical risk to the health of the fetus. On the other hand, the principle that pregnant women should not harm their unborn and newborn children supports vaccination requirements during pregnancy for diseases like pertussis, which is potentially transmitted to newborns by unvaccinated parents (NCIRD 2013).

Importantly, this argument for compulsory vaccination relies on a relatively uncontroversial moral premise that it is wrong to harm people and that ... coercion is justified to prevent people from harming others and imposing serious risks on others. ...

## **Conclusion**

I have argued that mandatory vaccination policies can be justified on the grounds that refusing a vaccination is harmful to people in the community. Citizens do not have the right to turn themselves into biological weapons that expose innocent bystanders to undue risks of harm. There are, however, some cases where exemptions may be warranted. If vaccination is likely to be ineffective or if citizens can claim that vaccine refusal is a legitimate act of self- or other-defense, then medical exemptions to vaccine requirements are permissible. ...

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<sup>10</sup> Just as self-defense can justify imposing some risks on innocents, so can defense of others (McMahan 2010). In the case of other-defense, one may even be required to impose risks on innocents if the benefit to another is significant enough.

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