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## **Mandatory Vaccination: An Unqualified Defence**

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**ROLAND PIERIK**

**ABSTRACT** *The 2015 Disneyland outbreak of measles in the US unequivocally brought to light what had been brewing below the surface for a while: a slow but steady decline in vaccination rates resulting in a rising number of outbreaks. This can be traced back to an increasing public questioning of vaccines by an emerging anti-vaccination movement. This article argues that, in the face of diminishing vaccination rates, childhood vaccinations should not be seen as part of the domain of parental choice but, instead, as a non-negotiable legal obligation. The first part of the article formulates and defends two arguments in favour of unqualified mandatory childhood vaccination laws. First, government should not permit parents to put their children at avoidable risk of death and suffering; second, government should guard the common good of herd immunity to protect vulnerable persons. The second part rejects legal and pragmatic objections against such mandatory vaccination laws.*

### **1 Introduction: The (Contested) Contribution of Vaccines**

The introduction of vaccines against infectious diseases has been one of the most important contributions to public health of the last century. A century ago, infectious diseases like measles, polio and whooping cough were the major cause of death in the Western world. Large-scale vaccination programs have dramatically reduced (or even eliminated) outbreaks of these diseases in affluent societies. The major goal of vaccination programs is the maintenance of *herd immunity*, the phenomenon that when a critical portion of a community is immunised against a contagious disease, the virus can no longer circulate in the population, so that the disease cannot gain a foothold in that society. Indeed, it is through herd immunity that mass vaccination is so much more effective than individual vaccination.

A large majority of parents voluntarily enrol their children in such programs because they are convinced of the beneficial effect of vaccination on the health of their children. However, since the introduction of the first large scale programs in the beginning of the 19th century, certain groups of parents have refused to vaccinate their children. Traditionally, the most well-known refusers are members of religious groups, predominantly Protestant Christian congregations, who argue that vaccination interferes with divine providence. In recent years, however, we can encounter an increasing public questioning of vaccines by an emerging modern anti-vaccination movement, which argues that the dangers of vaccinations far outweigh their benefits. Unlike the more traditional groups that were primarily inwardly oriented, this movement actively and successfully reaches out to new parents through anti-vaccination websites and television celebrities.

After a long period in which the idea that vaccinations were beneficial and safe gained an ever-stronger foothold in Western societies, this new movement heralded a turning point in the public trust in vaccines. The Disneyland measles outbreak in January of 2015 definitely and unequivocally brought to light what had been brewing below the surface for a while: a slow but steady decline in vaccination rates, resulting in an increasing number of pockets of under-vaccination in Western societies, and the rise of measles outbreaks in the Western world.<sup>1</sup>

These developments present Western governments with difficult challenges.<sup>2</sup> How should the protection of public health and the fight against infectious diseases be balanced with parents' rights to raise their children as they see fit? This article defends mandatory vaccination for infectious childhood diseases, that is, diseases for which the first vaccination must be administered in the first two years of an infant's life. To limit the discussion, the argument in this article focuses on the measles, but similar arguments can be made for other diseases like polio and whooping cough.

The measles is an extremely infectious disease: an unvaccinated person exposed has a 90% chance of becoming infected with the disease. Moreover, it is especially dangerous: during a measles outbreak in France in 2008–2011, 10 patients died and almost 5,000 patients were hospitalised, including 1,023 for severe pneumonia and 27 for encephalitis/myelitis.<sup>3</sup> Statistics show that out of every 1000 children who become infected, one or two will die from the disease; approximately one will develop encephalitis, a swelling of the brain that can lead to convulsions and leave the child deaf or with an intellectual disability, and as many as 50 get pneumonia. Even an 'uncomplicated' course of the measles results in a week with a high fever, cough, sore throat, and a rash covering the entire body.<sup>4</sup> These risks can be prevented easily and safely by vaccination, without limiting meaningful options for the children involved. This article argues therefore that, in the face of diminishing vaccination rates, inoculation against the measles should not be seen as part of the domain of parental choice, but as a non-negotiable legal obligation, on a par with car seats, seat belts, and compulsory education. The aim of the article is to present an unqualified defence of mandatory childhood vaccination laws against the measles, only allowing for medical exemptions, not for nonmedical (religious or philosophical) exemptions.<sup>5</sup>

The article is organised as follows. Section 2 describes and explains the origin of the current emergence of vaccine denialism. Section 3 presents the main argument of the article why childhood vaccination should be mandatory. Firstly, the government should not permit parents to put their children at avoidable risk of death and suffering, and has an overriding duty to protect children from these outcomes, when doing so is easy and safe. Secondly, the government should guard the common good of herd immunity in society, in order to protect vulnerable persons who, for medical reasons, cannot protect themselves. Section 4 discusses and refutes two possible *legal* objections. First, mandatory vaccination supersedes the parental freedom of religion and conscience; second, an *unqualified* obligation is compatible with the legal principle of proportionality. Section 5 discusses and refutes the pragmatic objection that mandatory vaccination might backfire in the protection of herd immunity. After having discussed these possible legal and pragmatic objections, the article concludes with a final endorsement of unqualified mandatory childhood vaccination laws against the measles.

## 2 Vaccination Objectors and their Motivations

The slow but steady decline in vaccination rates we encounter in the Western world nowadays should mainly be attributed to a new wave of vaccine denialism by parents who claim that the risks of vaccination outweigh the purported benefits. Epidemiologists explain this emergence in terms of an interesting paradox.<sup>6</sup> As a result of the magnitude of vaccine success in the recent decades, attention to the necessity of immunisation has decreased, since many persons living in the Western world today have never witnessed the ravages of the diseases that took their ancestors' lives. At the same, the (alleged) risks of vaccinations like MMR, which combines vaccines against measles, mumps and rubella, are much more prominently discussed.<sup>7</sup> An important factor was the *MMR vaccine causes autism* controversy a decade ago, in the wake of the publication of Andrew Wakefield's article in *The Lancet*.<sup>8</sup> By now, Wakefield's claim has been fully debunked, the article has been retracted by *The Lancet*, and the author has been stripped of his medical licence and academic reputation. Still, the suggested vaccine-autism link remains 'the most damaging medical hoax of the last 100 years'.<sup>9</sup> The claim was widely reported in the media and went viral on anti-vaccination websites.

Vaccine denialists dispute the medical consensus that vaccines are safe and effective; moreover, they question the self-evidence with which governments provide and promote large-scale vaccination programs. Some believe that diseases such as measles could, in the case of otherwise healthy children, contribute to growth, development, and immunity building, which provide individuals with greater resilience against diseases like cancer and allergies later in life. Others seek to carve out 'all-natural' lives for their children, maintain their 'purity', or avoid contamination, assuming that vaccines contain toxic preservatives. Still others argue that current programs overwhelm a child's immune system because it is forced to handle too many vaccines too early in life.

Mark Navin explains the emergence of the current anti-vaccination movement in terms of parents who are disappointed with mainstream medicine, when they experience that their alternative views on vaccinations are not taken seriously.<sup>10</sup> They turn their back on mainstream medicine, seek health care providers who will not challenge their beliefs, and form or join *alternative communities of knowers*.<sup>11</sup> These are explicitly anti-paternalistic and anti-authoritarian communities that provide ample space for sidelined voices, including self-identified *parent-researchers* who primarily employ web-based research. Moreover, these communities emphatically endorse democratic norms for allocating epistemic authority:

Democratization movements and the advent of the Internet have changed the environment around vaccines from top-down expert-to-consumer (vertical) communication towards non-hierarchical, dialogue-based (horizontal) communication, through which the public increasingly questions recommendations of experts and public institutions on the basis of their own, often web-based, research.<sup>12</sup>

However, in their anti-authoritarian approach, these alternative groups might have gone one step too far in their redefinition of concepts like 'knowledge' or 'epistemic authority'. We should question whether their 'metaphysical', 'holistic', or 'spiritual' sources of knowledge provide parents with the best knowledge available on the risks of (not) vaccinating. Academic research provides more *bona fide* knowledge because it

employs a rigid empirical and evidence-based methodology. The accountability for one's chosen method and conclusions is subject to adversarial conditions through anonymous peer review, which makes self-reflection and self-correction institutionalised elements of academic research. This method of falsification guards scientists from the disposition of *confirmation bias*: a tendency to favour information that confirms excising beliefs that vaccine denialists are prone to.<sup>13</sup> This is exemplified by recent research on the reaction of vaccine denialists that were being confronted by information that the *vaccines cause autism claim* was incorrect:

Corrective information ... successfully corrected misperceptions about MMR causing autism. However, the correction also reduced vaccination intent among parents with the least favorable vaccine attitudes. This finding suggests respondents brought to mind other concerns about vaccines to defend their anti-vaccine attitudes<sup>14</sup>

If they come to realise that one of their arguments against vaccination does not serve them anymore, they just come up with another. Vaccine denialists disregard the differences in medical expertise and competence, and seem unwilling to recognise that the evidence-based epidemiological and medical research provides a better insight into the risks of vaccines than television celebrities like Jenny McCarthy.

More disturbingly, many anti-vaccination groups still rally around Andrew Wakefield because he dared to stand up to the medical establishment – even though *The Lancet* retracted his article and the *British Medical Journal* dismissed his research as an 'elaborate fraud'. This continuing endorsement demonstrates an outright non-acceptance of scientific evidence and the practice of self-correction in academic research, and is yet another example of confirmation bias.

It is generally accepted that government policy should be based on evidence-based scientific research. The outright non-acceptance of science by vaccine denialists makes the characterisation of their views as 'controversial' an understatement; the similarity with global warming denialists seems evident. There is a point in time to conclude that there is no genuine controversy anymore: the Wakefield-discussion generated a huge industry of peer-reviewed research, none of which could corroborate the alleged vaccination-autism link.<sup>15</sup> Moreover, the worry that vaccines contain toxic preservatives resulted in an official inquiry, mandated by the US Congress, on the use of thimerosal, a mercury-based preservative. Although there was no evidence that it was harmful, thimerosal has been removed from all childhood vaccines since 2000, to forestall parental anxiety. Finally, a recent meta-analysis of relevant vaccine-research concluded that 'there is evidence that some vaccines are associated with serious adverse events; however, these events are extremely rare and must be weighed against the protective benefits that vaccines provide.'<sup>16</sup> Therefore, governments should follow mainstream medical research and nudge parents to ensure their children have routine vaccinations. The question is how this can be done in the current era in which vaccinations are increasingly questioned.

### 3 A Defence of Mandatory Vaccination

How should the government deal with parents who reject routine childhood vaccinations against the measles? In answering this question, we should distinguish two

distinct normative issues. First: who is allowed to make paternalistic decisions on vaccinations for under-aged children who cannot yet make such a decision for themselves? Second: what is the implication of the fact that measles is a contagious disease, implying that a patient is not only a victim of the disease, but also a vector in its further spread? Although these issues are usually discussed simultaneously, they concern different normative issues that warrant separate discussions; this section disentangles that debate and defends two separate arguments in favour of mandatory vaccination. Section 3.1 argues that government should not permit parents to put their children at avoidable risk of death and suffering. Section 3.2 argues that government should guard the common good of herd immunity in society, in order to protect vulnerable persons who cannot protect themselves for medical reasons.

### 3.1. Parental Autonomy or *Parens Patriae*?

The first normative issue concerns the question of who should decide on childhood vaccinations. Given the young age of the infants involved – most vaccinations have to be administered before the age of four – they lack the capacities to make well-informed decisions. Therefore, paternalism is justified and necessary. The question, then, is whether it is up to the parents to decide about childhood vaccinations, or whether they should be a non-negotiable legal obligation, enforced by the government. The point of departure in liberal-democratic societies is limited governmental paternalism, endowing the parents with the initial responsibility for the upbringing of their children. Parents have the freedom to raise their children in accordance with their idea of the good life. Moreover, the parent-child relationship usually involves a better motivation to provide good care for children than any other moral or legal obligation. In short, there are many good reasons to defer the raising of children to parents. The government should only intervene in cases of clear neglect, abuse, or parenting styles that prevent an ‘open future’ for their children.<sup>17</sup>

At the same time, parenthood comes with obligations, primarily to protect the ongoing interests of children as vulnerable and maturing moral human beings in the process of developing into self-reliant persons. If parents fail to take on their responsibility, society has a responsibility to intervene. For example, blood transfusions are in violation of religious precepts of, for example, Jehovah’s Witnesses. Still, in most Western countries, Courts allow doctors to go against the will of parents and administer a blood transfusion when they believe that a newborn ‘rhesus baby’ is at risk of death or serious life-long disability. These are relatively straightforward cases because a blood transfusion is only applied in a situation of clear and present danger. Although the risk-assessment in the case of vaccinations is less straightforward, similar considerations apply. Yes, parents are in the best situation to assess their children’s direct needs: they have the best knowledge of their medical history and will know best how to interpret certain symptoms. However, they usually are not well versed in immunological and epidemiological knowledge on the contagiousness and risks of measles. The fact that some parents believe that vaccine refusal is in the best interest of their children does not imply that this is objectively the case – especially in the face of decreasing vaccination rates and increased risk of outbreaks – or that this conviction implies that the state cannot interfere in that decision. And although many interests of children are context-dependent, when they are concerned with serious health risks, these interests are objective and beyond parental discretion.



This brings me to my first argument in favour of mandatory vaccination of children against the measles. The freedom of parents as to how to raise their children should not result in the avoidable risk of death or lifelong disability for their children, who themselves are as yet unable to make a well-considered choice to refuse vaccination. Children are neither an extension of their parents, nor valid objects of their parents' self-expression, but are instead, 'self-originating sources of valid claims'.<sup>18</sup> In such cases, the state has an obligation to intervene to protect the infant from the consequences of that decision, when doing so is easy and safe.<sup>19</sup> Parents do have the right to be free from state infringement of their religious and philosophical beliefs. Adults are free to follow their convictions while making choices for themselves, even when they refuse a (possibly lifesaving) medical intervention. However, the state should interfere when these beliefs manifest themselves in actual practices that might harm others, including their children.

The government has a duty to protect the health of all children, and this implies that it is justified in limiting parents' discretion when they make choices that are likely to result in the substantial risk of significant harm to their offspring. This does not take away the right of parents to raise their children in accordance with their idea of the good life, but it definitely puts limits on that right. The relevance of government action on the basis of this responsibility, even against the will of the parents, is highlighted by the fact that several of the polio patients, who as unvaccinated children became (severely) disabled in the 1993 polio outbreak in the Netherlands, have, as adults, explicitly distanced themselves from their parents' stance on vaccination, and reproached their parents for not vaccinating them.<sup>20</sup>

Vaccine denialists usually counter this argument by claiming that risks from measles are overstated; let me shortly discuss three versions thereof. First, they present the measles as an innocuous 'nothing disease'. However, as described in the introduction, the risks of the measles are real and should not be trivialised, especially when they can be prevented so easily and safely, and are merely the result of the parents' choice to forego vaccination. Secondly, denialists argue that one does not need to vaccinate because the number of outbreaks in the last decades is rather limited. The statement is true, but in a rather cynical way: outbreaks have been avoided because the large majority of parents still do vaccinate their children. The argument is cynical because, as I will argue in the next section on herd immunity, it is based on a free-riders logic. Children of non-vaccinating parents are protected against outbreaks because herd immunity is maintained by other (vaccinating) parents, while their parents refuse to contribute their fair share. The argument is self-defeating because the more parents follow suit, the more herd immunity will be endangered. A third way in which denialists downplay the risks of diseases like the measles is by arguing that children run many kinds of risks every day: climbing trees, learning to bike on public roads, being transported by car to family visits, etc. But avoiding such risks would eliminate options for children to develop relevant capacities, necessary to live a fulfilling life in modern society. Vaccination, on the other hand, eliminates serious risks without eliminating valuable options for children; it merely limits the rights of parents to raise their children in accordance with certain risky ideas of the good life.

Parents may consider obligatory vaccinations to be intrusive or even offensive, as if their sound judgment and sincerity are questioned. However, parental choices that are generally considered to be imprudent cannot be excluded from scrutiny, simply

because they arise from a religious or philosophical conviction. In their responsibility towards children and in the face of an emerging public questioning of vaccination, government cannot rely on voluntary vaccination when parents' convictions may present such serious risks to the health of their children. This is, in sum, the first argument why childhood vaccination for measles should be a non-negotiable legal obligation and not be part of the domain of parental choice.

### 3.2. *Protecting the Vulnerable Through Herd Immunity*

The second normative argument in favour of mandatory vaccination programs is that the government should guard the common good of herd immunity in society, in order to protect vulnerable persons who cannot protect themselves for medical reasons. Infectious diseases are special in that the patient is not only the victim of a disease, but also (consciously or unconsciously) a vector in its further spreading. Unvaccinated persons can infect others and contribute to outbreaks. This implies that infectious diseases should not only be discussed in terms of parent-child responsibilities, but also in terms of public health. Herd immunity against measles requires an overall vaccination coverage of between 92 and 94%.<sup>21</sup> However, in the 2013–14 school year, the US Centers for Disease Control and Prevention found that most states failed to reach the target of having 95% of children entering kindergarten complete the 2-dose MMR vaccine sequence – in the state of Colorado even less than 85% had received both doses of MMR.<sup>22</sup>

Herd immunity protects several categories of persons who cannot protect themselves for various medical reasons. The *first* category concerns infants and young children who have not yet completed the recommended childhood immunisation schedule. Newborn babies have maternally derived antibodies that protect them against these diseases. Over time, however, the effect of these antibodies fades out and these children remain unprotected until their first vaccination. During this period, they can only be protected through the vaccination of those around them. In March of 2014, a deliberately unvaccinated older child infected three babies in a Dutch day care centre with the measles. Although the babies were enrolled in the national immunisation program, they were too young to receive the MMR-vaccine. One six-month-old baby fell seriously ill, spent a few days in intensive care, and nearly died.<sup>23</sup>

The *second* category concerns persons for whom their vaccination turns out to be insufficiently effective because, in very rare cases, vaccinations do not mount an adequate immune response. There will always be a small percentage of vaccinated persons who remain unprotected; however, it is unclear who these persons are until they fall ill. The *third* category of persons concerns those who cannot undergo vaccination because they have certain forms of cancer, have a compromised immune system, or are likely to suffer from a serious allergic reaction. Consider the example of Carl Kra-witt, a 6-year-old leukaemia patient living in Marin County, California. Four years of chemotherapy left him very vulnerable to infections and unable to receive vaccinations. He is especially vulnerable after the Disneyland measles outbreak in California, given the fact that 7% of the pupils in his school are unvaccinated due to 'personal belief exemptions'.<sup>24</sup>

The second argument in favour of mandatory vaccination is that, in the face of diminishing vaccination rates, it is a necessary condition to incentivise sufficiently high



vaccination rates to create and maintain herd immunity, without which vulnerable persons would run serious risks. A vaccination is simultaneously a private good, in that it protects the individual child; and a collective good, in that it contributes to herd immunity that protects vulnerable persons. This collective-action character of herd immunity has long been unnoticed by the fact that so many parents voluntarily vaccinated for private reasons, primarily concerned with the health of their offspring. As a result, herd immunity could long be maintained indirectly as a positive externality and was not in need of obligatory governmental action. However, there is no inherent reason why these voluntary choices will guarantee robust herd immunity over time. It is merely a contingent positive externality that can evaporate, as the current trend of diminishing vaccination rates shows.

Before vaccines were available, infectious diseases were the major cause of death in the Western world; outbreaks were considered cases of brute bad luck: *acts of God*. The introduction of vaccines brought along a new responsibility for parents: it provided them collectively with a tool to counter the threat of infectious diseases. This generates a special obligation for parents, which is more than an abstract duty to promote the public good. Vaccinating healthy children promotes herd immunity, prevents these children from falling ill, thus becoming vectors in the further spread of disease. This is indispensable for the safety of vulnerable co-members of society who have a 90% chance of falling ill when exposed to the measles.

Mandatory vaccination law is justified because it assures general compliance and as such provides a solution to the classic collective action problem of assurance. Parents concerned with herd immunity might only be willing to accept the slim chance of vaccination complications when they have assurance that others will also pay their fair share to maintain herd immunity. Moreover, mandatory vaccination fairly distributes the burdens and benefits of vaccination over the members of the community. The risks of vaccination complications are equally distributed over all healthy persons, and since they are rather limited, they do not impose unreasonable costs on individual members of society. At the same time, robust herd immunity protects all members of society alike, including those who cannot (yet) be immunised for medical reasons. Since the health of the community at large is at stake, the decision not to vaccinate does not fall within the domain of unrestricted individual freedom; it is not a coincidence that combatting infectious diseases is generally considered to be a classic governmental task.

### 3.3. *In Defence of Mandatory Vaccination Policies: A Conclusion*

This section provided two arguments in favour of mandatory vaccination policies. The *paternalism argument* argues that government should protect children before the age of reason against the avoidable risk of significant harm. This argument is relevant, regardless of whether the disease is contagious or not. It only loses its strength in the case of a disease that would only exhibit itself later in life so that the choice to vaccinate could be postponed until after the age of reason, in which case the need for paternalism disappears altogether. The *herd immunity argument* defends mandatory vaccination in cases of contagious diseases, regardless of the age of the receiver. After all, in such cases a patient is not only the victim, but also a vector in the further spreading of the disease. Healthy persons who can undergo vaccination safely should contribute

their fair share to herd immunity, in order to protect vulnerable members of society. Vaccination against measles fits both categories: it has to be administered before the age of reason, and the disease is highly contagious and dangerous.

Therefore, both arguments provide independent justifications for mandatory childhood vaccination against the measles; imposing a legal duty upon parents a refusal by parents to vaccinate would imply breaking criminal law and running the risk of punitive action by the government. Given the aim that government seeks to achieve here, fines are more appropriate here than, for example, imprisonment or losing custody, because the latter forms of punishments disables parents to take care of their children. Finally, not vaccinating should result in other adverse effects: consciously unvaccinated children should be prevented from attending venues where they can contaminate other children, including licensed daycare centres. A final option is to cut off parents who do not fully immunise their children (up to a certain age) from various forms of family assistance payments, including the child allowance.<sup>25</sup>

A legal duty to vaccinate does not have to imply *compulsory* vaccination: a forced vaccination of children against the will of the parents, for example, through the temporary suspension of the exercise of parental authority during which the child can be vaccinated – cf. the discussion of blood transfusions for rhesus babies as discussed above. Proposing such forced vaccinations would invoke many discussions on the physical integrity of children and the extent to which a government is allowed to interfere in the parent-child relationship, which goes beyond the scope of this article. Moreover, it might be a disproportional intrusive policy, given the aims government seeks to achieve. As long as mandatory vaccination generates robust and undiminished herd immunity, there is no good reason to replace it with much more intrusive compulsory vaccination schemes. The argument in this article thus assumes that, first, mandatory vaccination through fines provides enough an incentive to generate sufficient vaccination rates to maintain robust herd immunity and, second, that only when this is not the case a more intrusive policies can be considered.

## 4 A Legal Justification of Mandatory Vaccination

### 4.1. *The Freedom of Religion and Conscience*

How can such a plea for mandatory vaccination be aligned with parents' freedom of religion and conscience? This right provides parents with the opportunity to live according to the rules of their chosen religion or philosophy of life, without the interference of government or law, at least up to some point. The convictions of more traditional religious groups, that vaccination interferes with divine providence, and the ensuing objections against vaccination would definitely be protected by the freedom of thought, conscience, religion, or belief, as formulated in various international conventions, including the International Covenant on Civil and Political Rights (ICCPR, art. 18) and the European Convention of Human Rights (ECHR, art. 9). Although the convictions and objections of modern anti-vaccination groups deviate from more classical theistic convictions, these will also be protected by the freedom of religion and conscience. The European Court, for example, does not employ substantial criteria for a person's conviction to qualify as a 'belief' in the understanding of the freedom of

religion or belief. It merely employs formal criteria: the conviction must display ‘a certain level of cogency, seriousness, cohesion, and importance.’<sup>26</sup> Given the fact that there is a well-defined anti-vaccination movement, with established core ideas, there is no reason to assume that it will not suffice as a belief in the sense of the ECtHR jurisprudence on art. 9.

However, the freedom of religion and conscience is never unlimited, and can be restricted under the following conditions (ICCPR, art. 18 par. 3; ECHR, art. 9, par. 2): first, the limitations must be prescribed by law; second, the limitations must be deemed necessary to protect the rights of others, and must be clearly needed to pursue a legitimate aim such as the protection of public safety, order, health, or morals, or the fundamental rights and freedoms of others. The first condition is satisfied when the obligation to vaccinate children against measles is captured in formal law. The arguments in Section 3 above translate very easily into reasons that guarantee compliance with the second condition.

The government has an overriding responsibility to protect public health by actively guarding against outbreaks of dangerous infectious diseases that can easily and safely be prevented by vaccination. This responsibility should have more weight than the parent’s freedom of religion and conscience. Mandatory vaccination may interfere with the parents’ freedom of religion and conscience, but this interference does not amount to a violation of that right. This idea can also be recognised in the US Supreme Court jurisprudence, especially in *Jacobson v. Massachusetts*, defending mandatory vaccination, limiting individual liberties to protect the common good:

The liberty secured by the constitution of the United States to every person within its jurisdiction does not import an absolute right in each person to be, at all times and in all circumstances, wholly freed from restraint. There are manifold restraints to which every person is necessarily subject for the common good.<sup>27</sup>

#### 4.2. *The Principle of Proportionality*

The next question is whether a mandatory vaccination law should be an unconditional legal obligation or a system with exemptions for parents with sincere objections. Since a mandatory vaccination law interferes with parents’ freedom of religion and conscience, it should satisfy the requirement of *proportionality*. Although this is a generally endorsed principle for laws that interfere with individual liberties, there is no one single authoritative formulation available.<sup>28</sup> I will employ the four stages to a proportionality test as formulated in European Union law, which is one of its most stringent formulations. The principle thus formulated covers four basic requirements: (1) there must be a legitimate aim for a measure; (2) the measure must be suitable to achieve the aim, potentially with a requirement of evidence to show it will have that effect; (3) the measure must be necessary to achieve the aim, and there cannot be any less onerous way of doing it; and (4) the measure must be reasonable, considering the competing interests of the different groups at hand.<sup>29</sup>

Both forms of mandatory vaccination law – with and without exemptions – comply with the first two requirements. The avoidance of measles outbreaks is a legitimate goal, and there is ample evidence-based support that vaccination is an appropriate

measure to achieve that aim. Requirements (3) and (4) are relevant in our choice between conditional and unconditional vaccination law. The aim of vaccination policies is to protect all persons against infectious diseases, but this does not require that *all* persons have to be vaccinated; as mentioned above, herd immunity against measles merely requires an overall vaccination coverage of between 92 and 94% of the population, which implies that a limited practice of non-vaccination of 6–8% can be accommodated without sacrificing the rights of others, that is, the right of citizens to be protected against vaccine-preventable diseases through herd immunity. Since the risk of non-vaccination is *cumulative* in nature, herd immunity can be sustained, even if a certain percentage of parents refrain from vaccination.

The proportionality requirement implies that a mandatory law with a system of exemptions, if effective, is preferable over a law without exemptions because it is less intrusive, which satisfies requirement (3). Many liberal political orders have actually endorsed such *rule and exemption* approaches as a way of dealing with morally sensitive issues, the most well-known example being the exemption from compulsory military service for conscientious objectors. We face a situation in which a large majority voluntarily and wholeheartedly complies with the law, while only a minority has strong objections. Such an arrangement would satisfy requirement (4) because it would maintain herd immunity and allows those who object to vaccination to live in accordance with their idea of the good – even though they do not have justice-based claims to this accommodation.

Such a *rule and exemption* approach towards vaccination programs can only be maintained if (at least) two conditions are met. First, it must be capable of limiting the number of exemptions to such an extent that (robust) herd immunity can be maintained. Second, given the limited number of exemptions available, the distribution of this scarce good of exemptions should not be unjust. That is, the process of distinguishing sincere objections from mere preferences should not violate central liberal values, for example, by undermining state neutrality or the secular character of law, or by privileging or discriminating against certain religious or other comprehensive doctrines.

Concerning the first condition, a large proportion of the 6–8% will consist of persons who are not (yet) protected for medical reasons: infants too young to be vaccinated, persons for whom the vaccination turns out to be insufficiently effective, and those who cannot undergo vaccination. Moreover, nonmedical exemptions are usually clustered in specific schools and communities. The question, then, is how much room the maintenance of robust herd immunity leaves for nonmedical exemptions.

Concerning the second condition, the question is whether the distinction between sincere objections and mere preferences can in fact be made *and* can be made in a neutral way. Within the US, we find a system of mandatory vaccination laws with exemptions, which can serve as an example here. Although there is no federal regulation, all US states legally require the vaccination of children prior to school or daycare entry. Historically, the number of exemptions (waivers) granted was limited because only a limited category was eligible: members of nationally recognised and established religious denominations.<sup>30</sup> In 1971, this domain of exemptions was widened to ‘everyone and anyone who claims a sincerely held religious belief opposed to vaccination’, and not only those emanating from officially recognised religions. Only in 1979 was this limitation to religion disputed in court, because religious exemptions ‘discriminate against the great majority of children whose parents have no such religious convictions.’

It makes sense to lift the distinction between religious and non-religious claims for exemptions, because it does not fit with current, more secular ideals that governments should be neutral towards various (religious and non-religious) ideas of the good life.<sup>31</sup> Moreover, the original distinction led to many odd exceptions. For example, although many secular claims were not even taken into consideration, an exemption claimed by a Jewish parent was allowed by a US court, even though nothing in Judaism objects to vaccinations.<sup>32</sup> Another point is related to the thousands of parents who have joined mail-order sham religions, such as the *Congregation of Universal Wisdom*, so they could qualify for religious exemptions and forego the trouble of vaccinating their children.

However, embracing a more neutral treatment of various claims might solve one problem, and generate another. The more categories of exemption-claimers are acknowledged, the larger the number of (potential) claims, and the harder it is to maintain herd immunity. Moreover, the more secular the assessment of claims to exemptions becomes, the harder it is to distinguish genuine conscientious objections from 'mere preferences.' Legal exemptions to otherwise generally applicable laws should only be granted to claims that are based on what Charles Taylor dubbed 'strong beliefs' about the central importance and value of certain beliefs, practices, and purposes. Within the liberal tradition, one that is so much determined by inter-Christian strife in Europe after the Reformation, such strong beliefs and the mere concepts of 'conscience' and 'conscientious objections' were very much understood in Christian terminology and symbolism.<sup>33</sup> In current, more secular times we need a more inclusive conception of the 'strong beliefs' and 'deep commitments' that provides normative status to convictions that individuals closely identify with, and recognise as theirs, on the grounds of their 'deep', 'serious', 'spiritual' nature. After all, it is because these religious and non-religious commitments meet the criterion of deep commitments that they justify exemptions from universal law.

However, it is difficult for government to distinguish deep commitments from mere preferences because the former are typically insulated from ordinary standards of evidence and rational justification as employed in common sense and science.<sup>34</sup> It is the religion, or the non-theistic equivalent in question that determines which commitments are legitimate causes for an exemption, not government or a secular state judge.<sup>35</sup> It is therefore quite an endeavour, if not impossible, for a liberal government to come up with a clear set of coherent conditions to separate legitimate deep commitments from superficial preferences, *and* remain neutral to the various religious and non-religious philosophies of life. This difficulty can be recognised in the half-hearted way that most US states deal with exemptions. In the large majority of states, parents can opt out of vaccinations by simply checking a box, no questions asked. In addition, the vast majority of states do not enforce any limitations on exemptions, as 32 of 48 states that allow exemptions have never denied a single claim.<sup>36</sup> This lenient way of enforcing the law has led to a slow but steady rise in the number of exemptions, a development that has long remained under the radar, but became evident and a subject of public discussion after the Disneyland outbreak of the measles.

In summary, nearly every well-meaning academic paper and policy document that aims to encourage vaccinations contains a phrase like the following: 'Governments should seek to ensure that their exemption processes are designed to encourage well-informed choices and deliberate thought, and they should select on sincerity of beliefs.' However, it is impossible for secular governments to perform this task in

current plural societies. For example, should modern refuters who, in one spiritual way or another, still adhere to Wakefield's debunked claim that vaccination causes autism be treated differently from Christians who argue that vaccination is an inappropriate meddling in the work of God, or metaphysical thinkers who argue that vaccines undermine 'purity' or hamper 'spiritual growth of the person'? Yes, the former is based on a factual claim that contradicts evidence-based medicine, while the latter two cannot be refuted scientifically, but this is *ipso facto* not sufficient as a criterion that can be employed by a neutral state for distinguishing the two claims, or to conclude that one justifies an exemption while the other does not. If a liberal government aims to maintain herd immunity, and if there is no neutral way of distinguishing insurmountable objections to vaccination from more superficial preferences, a system of exemptions for non-medical reasons cannot be maintained.

This brings me back to the proportionality test, especially the third condition, arguing that a mandatory law is justified if the measure is necessary to achieve the aim, and if there are no less onerous ways of achieving that aim. The argument above concludes that the less onerous measure – a qualified mandatory vaccination law – cannot be sustained, which implies that an unqualified mandatory vaccination law meets the proportionality requirement.

## 5 Implementing Mandatory Vaccination: Pragmatic Considerations

Section 3 presented a normative defence of mandatory vaccination against the measles, while Section 4 argued that unconditional mandatory vaccination laws fit within the legal framework of liberal democracies. Some, however, present a pragmatic counter-argument: unconditional mandatory laws will undermine herd immunity because it would create a public backlash against voluntary vaccination and will galvanise anti-vaccination groups. This section unpacks this claim by analysing the effect mandatory vaccination laws on three relevant categories of parents: those who wholeheartedly endorse vaccination, steadfast vaccine denials, and indecisive parents.

It is unlikely that voluntary vaccination would be affected by introducing mandatory laws. After all, why would those convinced by the beneficial effect of vaccination suddenly become civilly disobedient once refusers are also legally obligated to vaccinate – something they already consider prudent behaviour? Vaccine denials, on the other hand, are already dead-set against vaccination and, as discussed in Section 2, will neither be convinced by the consensus in the mainstream scientific community, nor be open to persuasion by the government. Thus, making vaccination mandatory might not affect the number of denials; it will only strengthen their opposition.

Governments seeking to protect robust herd immunity should primarily focus on the third category: hesitant parents, and separate these parents, who might still be open to persuasion, from the relatively small – albeit very vocal – group of vaccine denials who will cling to their convictions, no matter what. Those on the fence are a heterogeneous group of parents who seek information about vaccine safety at the precarious moment when having to decide upon the inoculation of their first infant. If it were clear that a legal obligation would *discourage* them to vaccinate, this fact would provide a *pragmatic* argument against such a proposal – despite having argued in Section 3 above that it is the most justified policy. Although one can never be sure in



advance how citizens will react to a future policy change, empirical research in adjacent discussions suggests that mandatory laws will convince hesitant parents to vaccinate, rather than discouraging them to do so.

The more vaccinations are presented as a given by the paediatrician, and the less as a choice, the more hesitant parents are inclined to vaccinate. The choice to vaccinate 'is not only complicated by an overwhelming amount of information, it is also fraught with emotion. It is often easier in these situations to simply accept what is recommended, especially when that recommendation is made by someone as influential and trusted as their child's pediatrician or family practitioner.'<sup>37</sup> By leaving vaccination within the domain of voluntary choice, the government communicates the message that parents have a lot of leeway in this issue. Parents might be less hesitant to vaccinate when the government communicates an explicit message that measles are dangerous for their child and a threat to public health. Horne *et al.* show that 'rather than attempting to overcome vaccination myths by convincing parents of the safety of vaccines, provaccine messages might be more effective if they work to convince parents of the dangers of failing to vaccinate their children.'<sup>38</sup> Government should communicate that refusing to vaccinate is unacceptable risky behaviour, on a par with not buckling up one's kid in its car seat. One effective way to communicate that message is by making vaccination a non-negotiable legal duty, outside of the ambit of parental freedom of religion and conscience.

Finally, it turns out that opposition to vaccination is less immune to governmental policies than message of denialists would suggest. States in the US with stricter regulation and stricter enforcement of exemption laws have higher vaccination rates than states with less strict regulation.<sup>39</sup> When vaccination becomes a legal obligation, steadfast denialists might stick to their opposition – and might even accept criminal prosecution. Hesitant parents, on the other hand, might either be convinced by the message that not vaccinating is too dangerous, or might not be willing to risk criminal prosecution and accept the option of vaccination reluctantly. Mandatory vaccination laws might strengthen the social norm that responsible parents vaccinate their children, and generate social pressure amongst parents in day care centres and schoolyards to conform to this norm. It is very unlikely that it will lead to vaccination coverage of a 100%; but it will definitely increase vaccination rates, and contribute to a more robust herd immunity.

In sum, there is no reason to assume that mandatory vaccination laws will dissuade hesitant parents to vaccinate; to the contrary, the arguments above suggest that they might even encourage them. This effect might be strengthened when mandatory laws are accompanied by encouraging policies, for example, by ensuring that parents are not hindered in their attempts get their children vaccinated. The government should offer the relevant vaccinations free of charge, and guarantee the availability of a sufficient supply of safe vaccines. Moreover, the government should set up an effective system of vaccination reminders, and should guarantee that immunisation services are staffed by well-trained health professionals who are able and willing to discuss the concerns and questions of parents.

The legal obligation to vaccinate might drive a necessary wedge between vaccine denialists and hesitant parents. Anti-vaccination websites disperse the wildest speculations with anecdotal evidence as 'alternative medical truths', while medical specialists can only provide peer reviewed information and are handcuffed by professional

standards in their attempts to counter this fear mongering. Denialists have the freedom of speech to disperse their views; but there is something unsettling about the fact that the freedom of speech allows their unscientific and ungrounded claims to have such weight in public debates, diluting the voice of evidence-based science.<sup>40</sup> This makes that well-meaning hesitant parents systematically over-perceive the magnitude of the risks involved, causing them to doubt whether the benefits of vaccinations do outweigh their dangers.<sup>41</sup> The unequivocal message of a legal obligation to vaccinate might make hesitant less susceptible to information from denialists – their message gets tainted since it incites parents to illegal behaviour.

Ironically enough, it might require an actual first-hand experience with an epidemic outbreak to end societal complacency towards non-vaccination and for a political community to question the dominance of the ‘freedom of parental choice’ argument. Indeed, the Disney outbreak of January 2015 led to an outpour of public indignation over the irresponsible behaviour of non-vaccinating parents, and the risks they present to public health. A CNN/ORC poll in the wake of the Disney outbreak found that 78 per cent of respondents believed that vaccinations should be mandatory for healthy children.<sup>42</sup> Moreover, in reaction to the Disney outbreak, the state of California discussed Senate Bill 277 to eliminate all nonmedical exemptions. The proposal led, predictably, to heated opposition by denialists but was in the end accepted by a significant margin in the State Legislature.<sup>43</sup> An initiative to a referendum to overturn the bill fell (far) short of the number of signatures needed to put the issue on the ballot.<sup>44</sup> In addition, legislators and public health professionals have been calling for similar reforms in nearly 30 other states.<sup>45</sup>

In sum: the pragmatic counterargument is less convincing than it might have looked at first sight. There is no reason to assume that mandatory vaccination laws undermine voluntary vaccination. They might indeed galvanise straightforward vaccine denialists, but they are immune to scientific consensus and persuasion by the government anyway. But, most importantly, there are good reasons to assume that mandatory vaccination laws encourage, rather than discourage hesitant parents to vaccinate their children and to contribute to robust herd immunity.

## 6 Conclusion

In this article, I have defended mandatory vaccination laws against the measles. I have presented two arguments in favour of this claim: Government has the duty to protect children against avoidable risk of death and suffering, when this protection can be given easily and safely. Second, government has a duty to protect the collective good of herd immunity that also protects vulnerable persons indirectly. Those who argue that vaccination should be a parental choice claim that parents should be allowed to determine what is best for their children. However, given the abundant information from evidence-based research supporting vaccination, and the problematic sources relied upon by those who choose not to vaccinate, political communities rightfully question the wisdom of not vaccinating. Moreover, since non-vaccination can directly lead to outbreaks of dangerous diseases like measles, which can seriously harm vulnerable persons, childhood vaccination is not only an issue of parental freedom but, first and foremost, one of public health.

Until recently, outbreaks of diseases like the measles seemed abstract and remote in the Western world. In that context it could seem to be an excessive use of governmental power to enforce vaccinations upon parents. However, recent outbreaks have provided parents and the public with first-hand experience with the harmful impact of such diseases. We have arrived in an era of emerging vaccine denialism, in which herd immunity as a positive externality of voluntary vaccination might evaporate. This implies that the measles could become endemic again in the Western states. When underimmunisation endangers herd immunity in more and more pockets of Western societies, it does not suffice for governments to encourage parents to voluntarily choose vaccination. Instead, governments should take positive action to protect young children and vulnerable persons against foreseeable and avoidable serious risks by making vaccinations mandatory.<sup>46</sup>

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## NOTES

- 1 The measles outbreak in Disneyland in California, was the first major outbreak in a decade, which spread throughout the USA and Mexico and caused the death of a woman in Washington State in the spring of 2015: Elahe Izadi, 'The U.S. just recorded its first confirmed measles death in 12 Years', *The Washington Post* (2015): 2 July. Majumder *et al.* conclude that substandard vaccination compliance is most likely to blame for the 2015 outbreak: M.S. Majumder, E.L. Cohn, S.R. Mekaru, J.E. Huston & J.S. Brownstein, 'Substandard vaccination compliance and the 2015 measles outbreak', *JAMA Pediatrics* E1 (2015): doi: 10.1001/jamapediatrics.2015.0384. In February of 2015, there was also a large outbreak of measles in Berlin, Germany, killing an 18-month-old unvaccinated child.
- 2 This article presupposes a liberal-democratic government, referring to a political doctrine that favours liberal rights, democratic decision-making, and the rule of law.
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- 4 <http://www.cdc.gov/measles/about/complications.html> (accessed 24 February 24 2015).
- 5 Similar defences could be made in the case of diseases like polio and whooping cough, but these are not the subjects of this article.
- 6 Steve P. Calandrillo, 'Vanishing vaccinations: Why are so many Americans opting out of vaccinating their children?', *University of Michigan Journal of Law Reform* 37 (2004): 353–440, at p. 362.
- 7 The MMR vaccine has minor side effects, including fever and a mild rash. Severe problems, including deafness, long-term seizures, coma, and permanent brain damage, are so rare that it is hard to determine whether they are caused by the vaccine. For an overview, see: <http://www.cdc.gov/vaccines/vac-gen/side-effects.htm#mmr> (accessed 24 March 2015).
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- 9 Dennis Flaherty, 'The vaccine-autism connection: A public health crisis caused by unethical medical practices and fraudulent science', *Annals of Pharmacotherapy* 45 (2011): 1302–4.
- 10 Mark Navin, *Values and Vaccine Refusal: Hard Questions in Epistemology, Ethics and Health Care* (New York, Routledge, 2016), Chapter 1.
- 11 Brendan Nyhan, Jason Reifler, Sean Richey & Gary L. Freed, 'Effective messages in vaccine promotion: A randomized trial', *Pediatrics* 133,4 (2014): e835–E842.
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- 13 R.S. Nickerson 'Confirmation bias: A ubiquitous phenomenon in many guises', *Review of General Psychology* 2 (1998): 175–220.

- 14 Nyhan *et al.* op. cit., p. 6.
- 15 Luke E. Taylor, Amy L. Swerdfeger & Guy D. Eslick, 'Vaccines are not associated with autism: an evidence-based meta-analysis of case-control and cohort studies', *Vaccine* 32 (2014): 3623–29; Anjali Jain *et al.*, 'Autism occurrence by MMR vaccine status among US children with older siblings with and without autism', *The Journal of the American Medical Association* 313 (2015): 1534–40.
- 16 Margaret A. Maglione *et al.*, 'Safety of vaccines used for routine immunization of US children: A systematic review', *Pediatrics* 134,2 (2014): 325–337.
- 17 Joel Feinberg, *Harm to Self* (New York, Oxford University Press, 1986).
- 18 John Rawls, 'Kantian constructivism in moral theory', *Journal of Philosophy* 77 (1980): 515–72, at p. 543.
- 19 cf. Angus Dawson, 'Vaccination ethics' in A. Dawson (ed.) *Public Health Ethics* (Cambridge: Cambridge University Press, 2011), pp. 143–153, at p. 146.
- 20 J.P. Zwemmer, *De Bevindelijk Gereformeerden* (Kampen: Uitgeverij Kok, 2001), p. 86.
- 21 Walter A. Orenstein, Peter M. Strebel & Alan R. Hinman 'Building an immunity fence against measles', *The Journal of Infectious Diseases* 196 (2007): 1433–35, at p. 1434.
- 22 US Centers for Disease Control and Prevention, 'Vaccination coverage among children in kindergarten – United States, 2013–14 school year', *Morbidity and Mortality Weekly Report (MMWR)* (2014): 63.
- 23 Moud Effting, 'Zij gokten met het leven van mijn kind', *De Volkskrant* (2014): 15 March. For an analysis of the case see Roland Pierik (2014) 'The return of the measles to the Low Countries: A legal-philosophical exploration', *Netherlands Journal of Legal Philosophy* 43 (2014): 103–7.
- 24 Tamar Lewin, 'Sick child's father seeks vaccination requirement', *The New York Times* (2015): 28 January.
- 25 An example of such a policy is the Australian *no jab, no pay plan*, as recently proposed by the Australian Government: Lamiat Sabin, 'Benefits to be cut for Australian parents who reject childrens' vaccines in "no jab, no pay" plan', *The Independent* (2015): 12 April.
- 26 *Campbell and Cosans v. The United Kingdom*, App. Nos. 7511/76, 7743/76, Eur. Ct. H.R., at pp. 12–13 (1982).
- 27 *Jacobson v. Commonwealth of Massachusetts*, 197 US 11 (1905).
- 28 For an analysis of the principle of proportionality see Eva Brems & Laurens Lavrysen, "Don't use a sledgehammer to crack a nut": Less restrictive means in the case law of the European Court of Human Rights', *Human Rights Law Review* 1 (2015): doi: 10.1093/hrlr/ngu040.
- 29 The US Religious Freedom Restoration Act of 1993 (RFRA) can also be read in terms of this principle: 'Government may substantially burden a person's exercise of religion only if it demonstrates that application of the burden to the person (1) is in furtherance of a compelling governmental interest; and (2) is the least restrictive means of furthering that compelling governmental interest.'
- 30 Calandrillo op. cit., p. 386. For an overview of the various religious and philosophical exemptions from school immunization requirements in US states, see <http://www.ncsl.org/research/health/school-immunization-exemption-state-laws.aspx> (accessed 12 August 2015).
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44 Patrick McGreevy, 'Not enough signatures: Vaccine opponents fall short in ballot effort', *Los Angeles Times* (2015): 30 September.

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