

Childhood vaccination: should it be mandatory?

Paul Offit believes that mandatory vaccination is needed to protect vulnerable people from infection, but **David Salisbury** argues that there are more workable ways to ensure high uptake

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YES In a better world, vaccine mandates wouldn't be necessary. Parents would educate themselves about the diseases that vaccines prevent and learn that measles causes pneumonia and brain damage, mumps causes deafness and sterility, rubella causes severe birth defects, pertussis causes suffocation, and human papillomavirus (HPV) causes cervical, oropharyngeal, and anal cancers. They would learn about the remarkable safety and effectiveness of vaccines. And they would learn that although vaccines are not free of risk, their benefits clearly outweigh their risks. Mostly, they would learn that vaccines stand on a mountain of scientific evidence. Well informed: the choice to vaccinate their children would be an easy one.

Unfortunately, we don't live in that world. In our world, science based information is often obscured by false and misleading claims readily available in newspaper and

magazine articles, on radio and television shows, and on the internet. Parents hear that the measles, mumps, and rubella (MMR) vaccine causes autism; that pertussis vaccine causes brain damage; and that HPV vaccine causes blood clots, strokes, heart attacks, epilepsy, mental retardation, and chronic fatigue syndrome. As a consequence, some parents make bad decisions based on bad information.

In 1977, Luther Bohanon, a federal judge in Oklahoma, ruled on the right of a man with a malignant intestinal polyp to use a bogus cancer remedy called Laetrile. "Freedom of choice," he wrote, "necessarily includes freedom to make a wrong choice."¹ Children, however, are different; they don't make their own medical choices, sometimes with tragic consequences. For example, children have died needlessly because their parents chose homeopathic asthma remedies instead of bronchodilators, bogus cancer cures instead of chemotherapy, or prayer instead of insulin or antibiotics.²⁻⁴ Parents are virtually never held accountable for these choices. When it comes to resolving the conflict between a parent's right to make



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NO Mandatory vaccination in the UK was attempted first in the 19th century.¹ The legislation was ineffective, discriminated in favour of those able to use the exemptions, and was divisive; it fostered substantial anti-vaccine sentiment and was counterproductive. Attempts to impose compulsion today would undoubtedly be challenged in terms of autonomy, inappropriate intrusion of the state, availability of choice, and parental rights and responsibilities. Bolstered by access to information, its unacceptability to the public would be likely to have the same consequences.

Two questions need to be answered: do we need mandatory vaccination and are there examples of it being beneficial?

Compulsion is unnecessary

I presume that the purpose of mandatory vaccination is to raise coverage. If coverage is sufficiently high, compulsion is not needed. If coverage were not adequately high, other interventions are more likely to be successful than compulsion. We have reasonable ideas of what "sufficiently high" means: polio outbreaks do not occur when coverage is

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consistently above 80% in all localities; pertussis and diphtheria outbreaks do occur when coverage falls below those levels.²⁻³ Coverage against measles needs to be even higher because of its intense transmissibility. Between 1998 and 2010, the peak age for measles cases in England and Wales was less than 5 years,⁴ and if vaccination were made compulsory for school entry the law would be coming into effect after many infections had occurred.

Vaccination coverage can be raised to levels that prevent disease through improvements in the processes of providing vaccination services. Data for England show that coverage of the third dose of the diphtheria, tetanus, pertussis, polio, and *Haemophilus influenzae b* (DTaP/IPV/Hib) vaccine by the first birthday rose progressively from 90.1% in June 2007 to 94.4% in September 2011.⁵ This increase was driven especially by improvements in London (79.6% to 90.5%), where there have been efforts to improve both the immunisation service and the accuracy of

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▶ Paul Offit discusses his book *Deadly Choices: How the Anti-Vaccine Movement Threatens us All*, and why he thinks it is wrong to refuse to accept patients who haven't been vaccinated.

Last week's bmj.com poll asked: "Should childhood immunisation be mandatory?"

2179 votes in total
Yes - 37% (813)
No - 63% (1366)

“When parents choose not to vaccinate, they are also making a choice for those with whom their children come in contact”

medical decisions and a state’s right to protect its children, parents’ rights always win.

Wider implications

Vaccines pose an additional problem. When parents choose not to vaccinate, they are also making a choice for those with whom their children come in contact. This includes people who can’t be vaccinated, such as children who are too young to receive vaccines and people receiving chemotherapy or immunosuppressive drugs. These people depend on those around them to be protected (that is, herd immunity); otherwise, they’re the ones most likely to suffer. Now the question changes. Is it a parent’s right to make decisions that affect the health of others? In 1991, the city of Philadelphia suffered a measles epidemic that centred on two fundamentalist churches that had

chosen not to vaccinate their children. Hundreds, mostly churchgoers, were infected and six died.⁵ Was it the inalienable right of church members to catch and transmit a potentially fatal infection? Which is paramount: the freedom to make bad health decisions or the right of the community to protect itself from those decisions?

In the United States, mandatory vaccination clearly increases uptake; several studies showed that states or districts that allow philosophical exemptions to mandated vaccines have higher rates of vaccine preventable diseases.⁶⁻⁹ Further evidence for the value of mandates can be found in the events immediately after promotion of the false belief that the MMR vaccine caused autism. In 1998, the year the fear about autism was raised, there were 56 measles cases in the United Kingdom and no deaths; in 2008, there were 1348 cases and two confirmed deaths.¹⁰ Although concerns about MMR vaccine spread, the United States didn’t suffer a measles epidemic. False concerns about measles vaccine haven’t disappeared. From January to October 2011, the World Health Organization’s European region—

containing countries that don’t mandate vaccines—suffered a measles epidemic that affected 26 000 citizens, causing more than 7000 hospital admissions and nine deaths; in 2009, the European region reported about 6000 cases.¹¹ In the United States, on the other hand, only about 200 people were infected with measles and none died; most measles cases in the United States in 2011 were linked to European travel.¹²

Someday we may live in a world that doesn’t scare parents into making bad health decisions. Until then, vaccine mandates are the best way to ensure protection from illnesses that have caused so much needless suffering and death.

Competing interests: The author has completed the ICJME unified disclosure form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declares no support from any organisation for the submitted work; no financial relationships with any organisation that might have an interest in the submitted work in the previous three years; PAO is the coinventor and copatent holder of the rotavirus vaccine, RotaTeq, licensed by the FDA in 2006 and recommended for universal use in children by the CDC and WHO, but no longer receives royalties from this vaccine.

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the data, and nationally, by the application of “vital signs”—local operational plans to deliver services against national priorities.⁶ Data from other European countries without mandatory immunisation also point to high coverage being achievable and sustainable (see, for example, the Netherlands, Sweden, Norway, and Denmark).⁷

Evidence is unconvincing

The hostile reporting, polarised views, and credibility given to ill informed opinions after claims of a link between autism and the measles, mumps, and rubella (MMR) vaccine in the late 1990s led to national immunisation coverage falling by just over 10%.⁸ But the option of compulsory MMR vaccination was never considered—it would probably have made matters much worse.

Few reports show clearly that the existence of compulsion has raised and sustained immunisation coverage. The experience of the US is often quoted. All US states have laws that make proof of immunisation a prerequisite for school entry, and this is reported to be linked to high coverage, especially for MMR vaccine.¹ However, exemptions to the state laws are easily obtained on the basis of religious or personal beliefs. Although around 1-3% of US children have been exempted from

vaccine requirements, schools in some communities have exemption rates as high as 15-20%, and the rate of exemptions is increasing.⁹ Exempted children have been found to be 22-35 times more likely to get measles than vaccinated children.¹⁰ Between 1999 and 2007, there was a 74% increase in home schooling in the US, with 1.5 million children estimated to be schooled at home¹¹; most states do not monitor the vaccination of home schooled children.¹² Although national US MMR coverage has not fallen as it did in the UK, and this preservation has been credited to mandates, the US did not experience the high profile repeated reporting of the possibilities of risks from MMR vaccine that was seen in the UK.

The Australian approach is different. In response to reportedly low immunisation coverage, a plan was put in place in 1997 that included financial incentives for parents to have their children vaccinated¹³; payment can still be made to families that are conscientious objectors to immunisation. The payment was initially \$A258 (£168; €200; \$268) but in 2011, stronger incentives were announced such that completed immunisation is worth \$A2100.¹⁴ Although conscientious objection is still permissible without forfeiting payments, significantly raising payments may provoke contrary

attitudes about the acceptability of this approach as it may be seen as financial coercion. If objectors still receive the payments, its function as an incentive may be hard to establish.

In 2003, in a sample of more than 1000 parents of young children in England, around half said that they sought information before immunising their children. The other half said they automatically immunised their children when due.¹⁵ In 2010, three quarters said they automatically immunised their children when due. When coverage is already high and rising, target diseases are under excellent control (although measles could be better), and parental acceptance for immunisation is high, compulsion seems a heavy hammer. Compulsion would be unenforceable, unnecessary, and its use would probably do more harm than good.

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