

## SHOULD CHILDHOOD VACCINATION BE COMPULSORY IN THE UK?

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### Abstract

Childhood vaccination is not compulsory in the UK, yet levels of immunisation are generally high. However, recent concern over vaccine safety has led to undervaccination and an increase in rates of preventable infectious diseases. Compelling parents to vaccinate their children against their will may be acceptable in significant disease outbreaks, but this is not currently ethically justified, due to overall low disease rates in the UK. It is a reasonable argument that all children should be vaccinated for the protection of society; however, vaccination policies outside the UK demonstrate that compulsion does not guarantee high rates of immunisation, and that education and engagement can be highly successful. Most parents in the UK do vaccinate their children, and those who choose not to often have a disproportionate fear of causing harm. A policy of targeted education and support is likely to enhance public trust, as well as be more successful and economical than coercion.

### Introduction

According to the UK Health Protection Agency (HPA), vaccination is the second-most effective public health intervention worldwide (after clean water) for saving lives and promoting good health (HPA website). The World Health Organisation (WHO) claims that immunisation averted about two million deaths worldwide in 2002 (WHO website a). In the UK, we have scheduled routine childhood immunisations protecting against more than ten potentially fatal infectious diseases (NHS Immunisation website) provided free of charge, with vaccines that are highly safe and effective (Department of Health 'Green Book'). Despite a voluntary vaccination policy in the UK, rates of immunisation are generally high (BMA guidance 2003). However, coverage is not universal and, as in the case of MMR, falling rates of vaccination in recent years have led to a significant increase in the numbers of notifications of children with measles (HPA 2009)<sup>1</sup>.

So if immunisation is beneficial to society, and our vaccines so effective and safe, should childhood vaccination in the UK not therefore be compulsory, like the wearing of seatbelts? Both are usually protective, and can rarely cause children severe harm (Isaacs et al. 2009)

Compulsory vaccination does appear to be the obvious solution to the problem of undervaccination, but such a policy would give rise to another collection of problems, both ethical and practical (Salmon et al. 2006).

First there is the question of rights: when the rights of a child to healthcare conflicts with the rights of a parent to make choices for their child, which one takes precedence? And when the rights of individuals to make autonomous decisions about their health contravene the rights of a community to be protected from disease, whose then should be overriding? (Bradley 1999; Salmon and Omer 2006) Enforcing a policy of compulsory vaccination threatens public trust, raising concerns over the role of the state, and diverts resources from education (Saldique 2006; Moran et al. 2008).

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<sup>1</sup> The mumps outbreak in 2004-2005 was not attributed to falling rates of MMR vaccination. It particularly affected young people born between 1982 and 1986 who were too young to have been exposed to mumps in early childhood and thereby develop natural immunity, but who were too old to have been adequately vaccinated (Gupta, Best and MacMahon 2005).

The UK has a long history of opposition to vaccination (Spier 2002; Salmon and Omer 2006; Isaacs 2009), but this has been exacerbated in recent years by a gradual erosion of trust not only in the government's scientific advice (Horton 2004), but also in doctors and the medical establishment in general (Salmon et al. 2006), fuelled by media reporting on vaccination safety (Goldacre 2008).

In the UK, a policy which involves taking positive steps towards understanding the psychology of risk perception (Spier 2002) and parents' views (Roberts et al. 2002; Wroe et al. 2004; Kennedy et al. 2005; Bedford and Lansley 2007) and providing targeted education, perhaps with additional financial incentives, is likely to be more economical and inspire greater public confidence, leading to higher levels of success than a policy of compulsory immunisation.

### **A conflict of rights**

There are multiple ethical factors to consider in the case of childhood vaccination. The two main areas of potential conflict that I will examine are the rights of a child to protection from ill health versus the rights of a parent to make choices for their child, and the rights of a community or society to be protected from ill health versus the right of an individual to personal autonomy.

#### *The rights of a child versus the rights of a parent*

The United Nations Convention on the Rights of the Child (UNCRC website) is an international human rights treaty ratified by the UK in 1991, and echoed in subsequent UK government legislation (Children's Act website) and policy (Every Child Matters website). Included in the comprehensive list of rights is a child's right to 'the highest attainable standard of health', including access to 'preventative healthcare' (Article 24). It seems obvious, therefore, that vaccination against illness-inducing and potentially fatal infectious diseases should be the right of every child.

However, in the presence of parental opposition, the right of the child to preventative healthcare seems to be in contravention with another right set out in the treaty: the duty of governments to 'respect the responsibilities, rights and duties of parents or guardians [...] to provide [...] appropriate direction and guidance' (Articles 5, 14). The BMA points out that:

Both the European Court of Human Rights and the House of Lords have taken the view that the right contained under Article 8 of the European Convention for the Protection of Rights and Freedoms 1950, and Article 8 of the Human Rights Act 1998, namely the right to respect for private and family life, means that parents have the right to be involved in important decisions concerning their children (BMA Guidance 2003).

Where there seems to be a conflict between the right of the child to be prevented from ill health and the right of the parent to choose what is correct for their child, whose rights should take precedence?

Bradley (1999) argues that 'the parental right to rear is based on a duty of parents to care for their children to an acceptable level. If they fail to care for their children, they relinquish the right to rear.' This begs the question: what is an acceptable level? Does failure to vaccinate one's child constitute acting against the child's best interests? Just as with any action taken to protect a child, the answer depends on the balance of potential risks and benefits.

A child will clearly benefit from immunisation if their average chance of developing the illness or dying before immunisation outweighs the chance of developing the illness or dying after immunisation, given any side effects of the vaccination (Bradley 1999). If there is a risk of significant harm to a child by withholding effective preventative treatment in the form of immunisation, compelling parents to allow the child to be vaccinated is ethically justifiable. For example, a child bitten by a rabid animal risks almost certain death if they do not receive rabies immunisation (Bradley 1999; Isaacs 2009).

This case of rabies is an extreme one. In most other cases, the child faces a lower risk of suffering significant harm or death from the disease against which they are being immunised. Nevertheless, the risk of harm from the disease is considerably higher than the potential side effects of the vaccine. For example, the risk of encephalitis or severe allergic reaction from the MMR vaccine is 1 in one million. In contrast, if a child develops measles, their risk of developing pneumonia is 1 in 20, encephalitis 1 in 2000 and death 1 in 3000 in the UK<sup>2</sup>; if they develop mumps, the risk of encephalitis is as high as 1 in 300; and the unborn child of a woman not immune to rubella has a 1 in 4 chance of developing congenital rubella syndrome if she is infected in early pregnancy (WHO website b).

It is therefore clearly in the interest of a child to be vaccinated against a disease rather than contract it. However, the risk to an individual child from a disease depends not only on the rates of morbidity and mortality from the disease, but also on the chances of catching it in the first place. If this risk is negligible then, despite the chances of morbidity and mortality from that disease, the risk to any particular child is not significant. If an individual child does not stand to benefit much from a vaccine, then immunisation against parental wishes, and therefore the denial of the parents' rights to make choices for their child, may not be ethically justified. The contrary would be arguably true, however, in the case of a significant disease outbreak in the UK, as each child would be at higher risk (Bradley 1999).

This leads to the second major area of moral conflict in the case of immunisation: the rights of an individual versus the rights of a society.

*The rights of an individual versus the rights of a society*

Immunisation does not simply benefit the individual by protecting them from disease; it also provides benefit to the whole population by conferring 'herd immunity'. Once a critical mass of the population has been immunised, circulation of the organism falls, so there is a decreased chance of contact with the disease and a far lower risk of contracting it<sup>3</sup> (Bradley 1999; Isaacs 2009). If vaccine uptake is sufficiently high, some diseases may be completely eradicated, as was the worldwide case for smallpox in 1980 (BMA guidance 2003). If a parent in the UK takes a reasoned decision not to vaccinate their child because their risk of contracting the disease is very low, they are essentially 'free-riding' on the immunity of others (Saldiye 2006). If too many parents make this choice, herd immunity is no longer guaranteed and disease epidemics ensue (Isaacs 2009). For example, in the UK in the 1970s, there was a widespread mistaken concern that pertussis (whooping cough) vaccination could cause a severe encephalopathy. Vaccination coverage fell from 79% to 31%, leading to 5000 more hospital admissions, many cases of pneumonia, and convulsions and at least 28 child deaths (Peltola 2000).

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<sup>2</sup> Up to 1 in 5 in outbreaks in developing countries (Balog 2009)

<sup>3</sup> Herd immunity does not apply in the case of diseases that are not spread from person to person, for example tetanus (BMA guidance 2003).

Herd immunity also protects the vulnerable minority in society who are either unable to be immunised – if they are too young, have a severe allergy to components of the vaccine, or are immunocompromised – or who, despite receiving the vaccine, have not mounted an immune response (Salmon and Omer 2006).

Should the government therefore restrict the freedom of individual parents to choose not to vaccinate their child for the sake of the common good? This follows the reasoning of utilitarianism, the nineteenth century moral philosophy of Jeremy Bentham and John Stuart Mill (Salmon and Omer 2006; Balog 2009). In his essay ‘On Liberty’, Mill sets out the “harm principle”: ‘...the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number, is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilised community, against his will, is to prevent harm to others.’ (Mill 1869)

If this principle is applied to vaccination then society is justified in having laws that restrict individual autonomy, in order to protect everyone in that society from the risk posed by those who are not vaccinated against infectious diseases.

In summary, if the risk to an individual child of significant harm from an infectious disease remains low, the insistence upon vaccination against the parents’ wishes may not be ethically justified; however, in a fair and equitable society, compulsory vaccination shares the risks and benefits of immunisation equally among the population (Moran et al. 2008).

### **Considering compulsory immunisation**

The ethical argument in favour of compulsory immunisation is sound, but it does not follow that this would be the most effective means of achieving higher vaccination levels in the UK. In this section, immunisation policies in other countries are discussed and the reasons for parents not vaccinating their children are examined.

#### *Immunisation policies outside the UK*

Many countries have a policy of compulsory immunisation (BMA guidance 2003; Moran et al. 2008). This applies in general to a range of vaccines in some countries, and to one or more specific vaccines in others. Several countries require immunisation before a child enters nursery or school; this invites moral criticism in its denial of a child’s right to education (Moran et al. 2008). In Belgium in 2008, parents who refused to have their children vaccinated against polio were fined and sentenced to five months in prison (Stafford 2008). However, most other countries with compulsory vaccination policies are far less rigorous in enforcing them, and often allow parents to claim exemptions. In the US, for example, 48 out of 50 states allow non-medical exemptions. All recognise ‘religious’ reasons, and in 20 states parents can refuse to vaccinate their children on ‘philosophical’ grounds (Salmon et al 2006). Some US schools have exemption rates as high as 15-20% (Colgrove 2006); in these populations, there are higher rates of vaccine-preventable disease and disease outbreaks (Calandrillo 2004). For example, the risk of measles in school-aged children in the US with non-medical exemptions has been reported to be 22-35 times higher, and that of pertussis to be 5-9 times higher than in vaccinated children (Salmon et al 2006).

Until recently, immunisation against certain infectious diseases had been compulsory in Italy, but the law was liberalised after general recognition that it was not being enforced. The belief is that people are more likely to comply with vaccination programmes if they are empowered, rather than ordered, by the state (Moran et al. 2008). Italian research found that sanctions disrupted the relationship

between parents and healthcare providers and could actually encourage parents to contact anti-vaccine associations (Moran et al. 2008).

Some countries without a policy of compulsory immunisation encourage families with offers of financial incentives (Moran et al. 2008). In Australia, parents and family doctors are offered financial rewards for vaccination. The introduction of this policy in 1997 resulted in an increase of coverage for vaccinations due by 12 months of age, from 75% to 94% in 2001 (Salmon et al. 2006).

Healthcare professionals are often put under pressure to immunise patients as part of their professional evaluation, reporting in league tables or as government targets (Moran et al. 2008). Here in the UK, financial incentives are given to GPs who achieve government-set targets for immunisation coverage (Moran et al. 2008).

These examples demonstrate that compulsory immunisation does not guarantee universal coverage and can threaten public trust in the state and healthcare. High levels of vaccination can be achieved using non-punitive measures; these include the promotion of education and awareness, as well as the offering of financial incentives, and are more cost-effective than policing immunisation status and imposing legal sanctions (Salmon et al. 2006; Moran et al. 2008).

#### *Why do some parents not vaccinate their children?*

The development of a successful immunisation policy requires an understanding of the lack of universal vaccine uptake (Roberts 2002). Some cases can be accounted for by disadvantaged children, such as those in care, hospitalised or in deprived areas, as well as children and families not engaged with medical services (Isaacs et al. 2009; Moran et al. 2008: NICE Guidance website). However, the majority of parents who do not vaccinate their children are opposed to, or suspicious of, immunisations (Roberts 2002; Spier 2002; Wroe 2004; Kennedy et al. 2005; Bedford and Lansley 2007). It is for this reason that an educational and supportive policy is preferable to one of enforcement.

The UK has long history of opposition to vaccination, which began even before the Vaccination Act of 1853 made smallpox vaccination compulsory (Spier 2002; Salmon et al. 2006). The main objections of the anti-vaccination movement involved the infringement of civil liberties, and concerns about the introduction of foreign, diseased material into a healthy child. In 1896, after much public unrest and vociferous opposition, conscientious exemptions were allowed for people who were “honestly opposed” to vaccination (rather than lazy or indifferent) and, although the parents of around 200,000 children opted for this clause, there was an overall increase in the number of vaccinated children. Vaccination requirements in the UK were repealed altogether in 1946 (Salmon et al. 2006).

Modern opposition to vaccination is associated with negative attitudes and beliefs about the safety and utility of vaccines (Kennedy et al. 2005). Parents who do not vaccinate their children tend to think that they are unlikely to catch the infection, assume that it will not be severe if they do, and have concerns about the vaccines themselves (Bedford and Lansley 2007). Evidence suggests that parents’ views on compulsory immunisation are largely influenced by their health beliefs (Kennedy et al. 2005; Salmon et al. 2005).

There is no doubt that media coverage of the safety concerns associated with vaccination has been of paramount importance in informing the decisions of parents, notably in the UK in the case of pertussis vaccination in the 1970s (Peltola 2000; Isaacs 2009) and, more recently, with MMR (measles, mumps and rubella vaccination) (Roberts 2002; Horton 2004; Wroe 2004; Salmon et al. 2006; Bedford and Lansley 2007; Goldacre 2008). Healthcare workers and many others engaged with

public health often wonder how it is that concerns over the safety of vaccination, which have been so grossly inaccurately and disproportionately represented by the media (Bedford and Lansley 2007) and rebuffed so extensively and comprehensively with the support of countless experts in the field (Goldacre 2008; NHS Immunisations website MMR) have, nevertheless, such a significant effect on parental attitudes and actions.

An explanation for this is that safety concerns over a prophylactic measure – especially one taken by parents on behalf of their children – have deep psychological implications. As Spier (2002) explains:

The psychology of risk perception puts the emotive evaluation of the risks associated with vaccination incorrectly into a high risk category. This causes a wariness of taking vaccines that has its roots in the deep history of people. Humans do not seek to disturb the status quo by which they live. So the introduction of a vaccinal material into a healthy baby requires courage and an educated anticipation that some important benefit will accrue to this act at some future date.

People are generally poor at accurately assessing risk, and tend to perceive many risks as greater than they are in reality (Spier 2002).

This has been shown to be important when parents make decisions about vaccination, when their ability to rationally assess the true risks and benefits is significantly affected by emotional factors (Wroe et al. 2004). This is explained by the concept of “omission bias”, the concern that causing harm through action (commission) is less acceptable than any harm that comes from inaction (omission) (Wroe et al. 2004). People tend to find it less acceptable to cause harm by something they have decided to do – in this case, from any side effects of vaccinating their children – than to have harm caused – in this case, from the disease itself – by something they decide not to do, even when the true risk profile is reversed.

This helps to explain why media “scare-stories” over vaccination have such a significant effect on the psychology, and thereby the actions, of the nation. Unfortunately, media reporting of scientific information is rarely done by those with any significant knowledge and understanding of science or expertise in relaying such information to the public (Wroe et al. 2004), and the media is not held accountable for information they present as fact (Goldacre 2008). In the UK, the presentation of accurate scientific information and advice has grown more difficult since channels of communication between the government and the scientific and medical professions and the general public have been muddied by an erosion of public confidence in recent years, following such events as the vCJD outbreak and the Bristol enquiry (Horton 2004; Salmon et al. 2006).

To summarise the consideration of a compulsory vaccination policy in the UK, results in other countries suggest that such legislation does not guarantee high levels of vaccination coverage, is often unpopular and diverts resources from education. Modern opposition to vaccination is largely based on an inaccurate assessment of the risks and benefits, which is influenced by a disproportionate concern over its potential harms. As Wroe recommends, we should be ‘providing decision makers with the best available evidence, and helping them to use this information in a way that fits with their values, as opposed to basing their decision on emotional information.’ (Wroe et al. 2004). Indeed, research in Italy has shown that the vast majority of parents who initially chose not to vaccinate their children changed their minds when given detailed information about the risks and benefits of immunisation (Moran et al. 2008).

## **Conclusion**

This article has addressed the important ethical and sociological factors in considering a policy of compulsory vaccination in the UK.

If a parent is clearly acting against the best interests of their child in failing to vaccinate the child, state intervention would be justified. However, because the current risk of contracting most of the infectious diseases against which we routinely immunise is very low in the UK, the benefit to the individual child is not necessarily sufficiently high to justify compelling the parent to act against their wishes with respect to the care of their child. This ethical balance could shift, however, if a disease outbreak secondary to undervaccination were to develop.

The risk of contracting these infections is only so low at present because the voluntary uptake of immunisations has been high enough (in most cases) to reduce the chance of contact with those organisms through the process of herd immunity. Therefore, those who choose not to vaccinate their children are not only free-riding, but are also putting others at risk. Those who wish to live in a fair and equitable society should recognise that compulsory vaccination shares the risks and benefits of immunisation equally among the population.

Despite a sound ethical argument in favour of compulsory immunisation, the implementation of such a policy does not guarantee universal vaccination coverage, as it requires an inappropriate allocation of resources and threatens public engagement with, and trust in, the healthcare system and government.

Addressing parental opinions and concerns reveals that parents do make decisions based on their perception of the likelihood of their child catching an infection, and on how severe the consequences might be. However, people are often swayed from rational decision-making by emotive concerns, which could cause their children severe harm.

In conclusion, a compulsory vaccination policy would not be the most effective approach to successfully targeting the minority of parents in the UK who do not vaccinate their children. Since providing detailed information about the risks and benefits of immunisation has been shown to be successful in altering the decision of parents initially opposed to vaccination, all parents who have not arranged for their children's vaccination should meet with a well-informed healthcare professional who can provide this information face-to-face and address any particular concerns in a sensitive manner. The continuation of financial incentives for GPs who reach their targets may be effective, but financial incentive for families has been successful elsewhere and may also be an option in the UK. The BMA contends that 'healthcare professionals have a vital role to play in educating the public about the benefits of immunisation and the balance between benefit and risk, both to the individual child and to society.' (BMA guidance 2003). Collaboration, not coercion, is the key to ensuring that the calm, quiet, voice of reason is heard above the shrill and often deafening tones of hysteria.

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