

The Vaccination Debate in the UK: Compulsory Mandate Versus Voluntary Action in the War Against Infection

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Abstract

The role of vaccination programmes within public health provision is becoming increasingly important. Mistrust of vaccines resulting from scandals has hampered efforts to protect and respond to preventable disease, thus raising the risk of a pandemic. This has coincided with outbreaks of disease worldwide. The UK's voluntary vaccination system relies upon education and nudging. Other countries have compulsory vaccination. The debate over voluntary or compulsory vaccination raises questions about individual rights and public health. Voluntary vaccination can be adversely affected by external influences, while the effectiveness of compulsory programmes is dependent upon its enforcement. This paper argues that the benefits of compulsory vaccination have been overlooked and downplayed, while the costs have been unduly exaggerated. It is argued that voluntary vaccination programmes do not fully protect public health and while compulsory vaccination raises various challenges, intensifying the level of state intervention through compulsion could offer the potential to improve public health protection. This paper concludes that while several models of compulsion are used around the world, from strong, aggressive systems to moderate, incentive-based ones, a more nuanced approach to coercion may offer an effective middle way.

Introduction

“[N]obody’s life is his or her own. We live our lives in the moral company of others. At the crudest of levels, we may be separate beings, with a separate subjective experience of the world, but the actual pattern of our lives intersects at every point with the lives of others.”¹

Vaccination has been heralded as a global public health success story. It acts as the cornerstone to the preventive health agenda and has been embraced across the globe. Different models of vaccination programmes have been im-

* DOI 10.7590/221354019X15538518338607 2213-5405 2019 Journal of Medical Law and Ethics

¹ A. McCall Smith, “Beyond Autonomy”, *Journal of Contemporary Health Law & Policy* 14(1) (1997), 23-39, at 37.

plemented around the world to combat and prevent infectious diseases.² All of these models have a common objective to prevent the emergence and spread of diseases that once killed and maimed, often indiscriminately.

The preventive health agenda has a long history with the World Health Organisation ('WHO') defining 'health' in 1946 as "complete physical, mental and social wellbeing and not merely the absence of disease or infirmity".³ This broad definition presented an opportunity to consider the scope of 'health', and to employ a more expansive interpretation. Over time, a holistic conception of well-being has gradually emerged, breaking down often artificial boundaries between categories of health. This has allowed for both responsive and preventive action to become integral to the provision of healthcare. Preventive healthcare places an emphasis upon the promotion and maintenance of good health, with the overall goal of attaining a better standard of health thereby reducing the need for healthcare intervention.⁴ The preventive healthcare agenda re-balances responsibilities; achieving good health no longer sits firmly with healthcare providers and clinicians alone. The pendulum has swung firmly away from the traditional model of paternalism. Healthcare is no longer steeped in the biomedical model,⁵ where clinicians maintain control over factors deemed relevant to diagnose and treat ill health. Healthcare decision-making has become increasingly participatory⁶ with the responsibility for achieving and maintaining good health moving ever more towards individuals themselves. Rights and responsibilities go hand in hand, and while the demand for access to healthcare and involvement with the process has been acknowledged, the preventive healthcare agenda also demands that individuals cooperate and make 'good' health choices, be it to eat a healthy diet, exercise regularly or engage with preventive health

² B.D. Gessner & R.A. Adegbola. "The impact of vaccines on pneumonia: key lessons from Haemophilus influenzae type b conjugate vaccines", *Vaccine* 26 (Suppl. 2) (2008), 3-8. Also see P. De Wals, G. Deceuninck, N. Boulianne & G. De Serres, "Effectiveness of a mass immunization campaign using serogroup C meningococcal conjugate vaccine", *JAMA* 292 (2004), 2491-4.

³ Constitution of the World Health Organization, 22 July 1946.

⁴ This agenda covers a broad range of interventions and policy practice, for example, from mental health (Department of Health, *Prevention Concordat for Better Mental Health* (London: DoH, 2017)) to cancer screening (Department of Health, *Health Matters: Improving the Prevention and Diagnosis of Bowel Cancer* (London: DoH, 2016)) and better oral health (Department of Health, *Delivering Better Oral Health: An Evidence-Based Toolkit for Prevention* (London: DoH, 2017)).

⁵ The biomedical model of illness and healing focuses on biological factors, and excludes psychological, environmental, and social influences.

⁶ In *Montgomery (Appellant) v Lanarkshire Health Board (Respondent)* (Scotland) [2015] UKSC 11, the Supreme Court gave a central role to patient autonomy and placed considerable weight on patients being 'consumers exercising choices' through a process of 'dialogue' and participation.

programmes. As Brazier observes, “it is empowerment of patients which brings responsibilities”.⁷

Vaccination is one facet of this agenda, though unlike other mechanisms of preventive healthcare policy, such as those focussing on smoking cessation, good nutrition and exercise where the focus is upon the individual’s action to protect their own health, vaccination is driven by communitarian objectives. As Cave observes, “[vaccination]...carries burdens and risks and there is no guarantee of benefit [to the individual]”.⁸ Rather, the end goal is about benefitting the public by shoring up immunity across large sections of the population. This has been achieved in some areas. Smallpox has been entirely eradicated by vaccines, with an estimated 5 million lives being saved annually.⁹ It is hoped that polio may be the next disease to be eliminated with over 80% of the world’s children now being vaccinated against the virus.¹⁰ UNICEF identifies measles as being another disease that could disappear if higher levels of routine vaccination are achieved worldwide.¹¹ Yet, while the benefits of vaccination are identifiable, as Fidler and Gostin acknowledge, further work remains necessary to protect the public’s health.¹²

Strong countervailing forces threaten the gains made in this area of health provision; global pathogenic risk is increasing, yet the international community has failed to accurately assess the world’s susceptibility to this risk.¹³ Vaccine scandals routinely emerge, often fuelled by the anti-vaccination lobby; the public’s trust is undermined and health decision-making behaviour is influenced.¹⁴ Only in recent years has the impact of the 1990s MMR scandal¹⁵ begun

⁷ M. Brazier, “Do No Harm – Do Patients Have Responsibilities Too?”, *The Cambridge Law Journal* 65(2) (2006), 397-422, at 401.

⁸ E. Cave, “Voluntary Vaccination: The Pandemic Effect”, *Legal Studies* 37(2) (2017), 279-305, at 279.

⁹ UNICEF, *Vaccines: Handles With Care* (New York: United Nations Children’s Fund (UNICEF), April 2004), 12.

¹⁰ Approximately 350,000 cases in more than 125 endemic countries were active in 1988, and now only 37 polio cases were reported in 2016. See WHO, *Polio Eradication and Endgame Strategic Plan 2013-2019* (Geneva: WHO, April 2013).

¹¹ UNICEF, *Vaccines Bring 7 Diseases Under Control*, www.unicef.org/p0n96/hevaccin.htm, 28 February 2019.

¹² D. Fidler & L.O. Gostin, *Biosecurity in the Global Age: Biological Weapons, Public Health, and the Rule of Law* (Stanford: Stanford University Press, 2007), 145.

¹³ L.O. Gostin, “Our Shared Vulnerability to Dangerous Pathogens”, *Medical Law Review* 25(2) (2017), 185-199.

¹⁴ E.J. Gangarosa, A.M. Galazka, C.R. Wolfe et al., “Impact of anti-vaccine movements on pertussis control: the untold story”, *Lancet* 351(9099) (1998), 356-61.

¹⁵ A.J. Wakefield, “Retracted: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children”, *The Lancet* 375(9713) (2010), 445.

to emerge fully with outbreaks of the disease becoming increasingly prevalent.¹⁶ The 2013 measles outbreak in Swansea is just such an example where 413 new cases of measles emerged and was classed as one of epidemic proportions.¹⁷ More recently, this distrust has evinced further difficulties in responding to the latest global threats presented by the H1N1, H2N2 and other seasonal influenza viruses.¹⁸ When the H1N1 flu vaccine was used in response to the 2009-2010 pandemic, it was quickly linked to heightened levels of narcolepsy among vaccine recipients.¹⁹ These scandals do little to bolster trust in vaccination and reinforce continuing pockets of scepticism.

As societal benefit is the key driver of vaccination schemes, when individual harm is caused directly as a result of a vaccine, a no-fault system is often provided to meet this need.²⁰ In the UK, the Vaccine Damage Payments Act 1979 enables a one-off tax-free vaccine damage payment of £ 120,000 to the victim. However, the eligibility requirements are strictly applied: an individual (normally under the age of 18) must be severely disabled as a result of vaccination against specific diseases.²¹ A payment may also be made under the legislation if damage occurs as a result of a mother being vaccinated while pregnant or had close physical contact with someone who received oral poliomyelitis leading to damage. The damage must be severe and must leave an individual with a disability assessed as being of 60% or more. The extent of compensation available and the strictly enforced criteria mean that many of those left injured through receiving a vaccine are either ineligible to apply or not adequately covered financially.²²

¹⁶ See, M.B. Pepys, "Science and serendipity", *Clinical Medicine* Vol. 7(6) (2007), 562-78; and J. Gerber & P. Ofit, "Vaccines and Autism: A Tale of Shifting Hypotheses", *Clinical Infectious Diseases* 48(4) (2009), 456-461.

¹⁷ Public Health Wales, *Outbreak of Measles in Wales Nov 2012 - July 2013 Report of the agencies which responded to the outbreak*, www.wales.nhs.uk/sitesplus/888/news/29688, October 2013 (accessed: 28 February 2019).

¹⁸ J. Jones, T. Baranovich, B.M. Marathe, A.F. Danner, J.P. Seiler, J. Franks, E.A. Govorkova, S. Krauss & R.G. Webster, "Risk Assessment of H2N2 Influenza Viruses from the Avian Reservoir", *Journal of Virology* 88(2) (2014), 1175-1188.

¹⁹ See H. Nohynek, J. Jokinen, M. Partinen, O. Vaarala, T. Kirjavinen, J. Sundman et al., "ASo3 adjuvanted AH1N1 vaccine associated with an abrupt increase in the incidence of childhood narcolepsy in Finland", *PLoS ONE* 7(3) (2012), e33536.

²⁰ Nineteen countries have vaccine compensation schemes, C. Looker & H. Kelly, "No-fault compensation following adverse events attributed to vaccination: a review of international programmes", *Bulletin of the World Health Organization* 89 (2011), 371-378.

²¹ These diseases are: diphtheria, tetanus, pertussis, poliomyelitis, measles, mumps, rubella, tuberculosis, haemophilus influenzae type B (HIB), meningococcal group C, pneumococcal infection, human papillomavirus, pandemic influenza A (H1N1) 2009 (swine flu) – up to 31 August 2010 and smallpox – up to 1 August 1971.

²² R. Tindley, "A Critical Analysis of the Vaccine Damage Payments Scheme", *European Business Law Review* 19(2) (2008), 321-363.

It is in the context of continuing pathogenic risk and the existence of continued scepticism among some that I argue that the current UK vaccination programme, which relies wholly upon voluntary action, may no longer be enough to protect against the risk of infection. This paper focuses upon the question of what value alternate models of vaccination programmes deployed around the world might have. For reasons of space, attention will only be given to vaccines that are routinely administered to children and whose parents or those with parental responsibility must decide whether to accept vaccination for a healthy child. Two central questions are considered. First, are vaccination programmes that are underpinned by recommendation and voluntary action adequate to protect the health needs of the collective? Second, if not, would it be legitimate to intensify the level of state coercion by introducing a whole or partial compulsory vaccination mandate? This paper will explore the alternative vaccination models adopted around the world, assessing what is understood by 'compulsion' and the context by which this construct is understood. This paper will evaluate data to assess whether compulsion is effective in raising vaccination compliance and whether the objective of global protection from infectious disease justifies the means. This paper will assess the overall costs and benefits of a mandatory compulsion scheme and its impact.

Vaccination as a Public Health Strategy

Vaccines are used as prophylaxis. They prevent infection by training the immune system to ensure it can fight the disease when it is exposed to it. Healthy individuals produce millions of antibodies daily, and vaccines work by exploiting this natural protective mechanism.

In the UK, vaccination is voluntary, relying upon strong recommendations, assertive educational programmes and nudging people towards accepting vaccination as a valuable individual and collective healthcare intervention. Routine vaccinations begin in the early months of life, with the first vaccination being given at 8 weeks of age. The majority of vaccinations are completed before a child begins school and continue intermittently throughout childhood. Boosters and additional vaccinations, such as the Human Papillomavirus vaccine which is received by girls between the ages of 11 and 14 years, are also provided.²³ The vaccine schedule has evolved over the years with the addition of new vaccines to extend coverage, for example, the meningococcal group B vaccines, added

²³ Public Health England, *Human papillomavirus (HPV) vaccine schedule 2014/15* (London: Public Health England, 2015), www.gov.uk/government/uploads/system/uploads/attachment_data/file/414069/PHE_HPV_AdviceforHP_NewFormat_V2_FINAL_APPROVED.pdf (accessed: 28 February 2019).

in 2015.²⁴ Other vaccines have been removed, for example, the tuberculosis vaccine (Bacillus Calmette-Guérin (BCG)) was dropped from the childhood vaccination schedule in 2005 when public health experts decided the vaccine had little impact upon overall disease control.²⁵

Stockpiles of vaccines are stored in readiness for expected contagions and deployed accordingly.²⁶ The more difficult question for governments around the world is how to respond to unexpected contagions. The World Health Organisation coordinates the global response to major diseases, maintaining regular surveillance for a number of diseases, with teams in many countries where these diseases occur. The WHO's Epidemic and Pandemic Alert and Response (EPR) detects disease outbreak, verifies the nature of the disease and responds to epidemic-prone and emerging disease threats. Particular urgency arises when new infectious disease emerges, escalates quickly and no vaccine is currently available.²⁷ During the Ebola outbreak in West Africa, which was first reported in March 2014 and soon proved to be the deadliest occurrence of the disease since its discovery in 1976,²⁸ an immediate global effort was mobilised to develop a vaccine.²⁹

The WHO estimates that vaccination averts 2-3 million deaths every year, with an estimated rise to 4.5 million if better global vaccine coverage was achieved.³⁰ However, coverage has stalled at 86% globally with continuing pockets of low vaccine take up around the world.³¹ There remains some uncer-

²⁴ Department of Health, *Meningococcal B vaccination programme to be introduced* (London: DoH, 2014), www.gov.uk/government/news/meningococcal-b-vaccination-programme-to-be-introduced (accessed: 10 October 2018).

²⁵ Vaccines are also regularly encouraged for adults, including annual flu vaccines for at-risk groups and the over 65s who are also offered regular shingles vaccination, www.gov.uk/government/uploads/system/uploads/attachment_data/file/613471/Protecting_your_child_against_flu_leaflet.pdf (accessed: 10 October 2018).

²⁶ Though challenges around preparedness are acknowledged: see M. Eccleston-Turner, "The Pandemic Influenza Preparedness Framework: A viable procurement option for developing states? Although there are recognised", *Medical Law International*, 17(4) (2017), 227-248.

²⁷ See, for example, L.O. Gostin & J.G. Hodge, "Zika Virus and Global Health Security", *Lancet Infectious Diseases* 16(10) (2016), 1099-1100; D.R. Lucey & L.O. Gostin, "The Emerging Zika Pandemic Enhancing Preparedness", *JAMA*, 315(9) (2016), 865-866.

²⁸ See www.who.int/csr/don/2014_07_31 Ebola/en/ (accessed: 12 December 2018).

²⁹ In December 2016, the WHO announced a two-year trial of the rVSV-ZEBOV vaccine for Ebola. Despite remaining unlicensed, 300,000 doses have already been stockpiled. See, Selidji T. Agnandji, M.D. et al., "Phase 1 Trials of rVSV Ebola Vaccine in Africa and Europe", *New England Journal of Medicine* 374 (2016), 1647-1660.

³⁰ WHO, Immunization coverage Fact sheet (Geneva, WHO, 2017), www.who.int/media-centre/factsheets/fs378/en/ (accessed: 10 October 2018).

³¹ J. Luyten, A. Vandeveld, P. Van Damme & P. Beutels, "Vaccination policy and ethical challenges posed by herd immunity, suboptimal uptake and subgroup targeting", *Public Health Ethics* 4(3) (2011), 280-91.

tainty about why this is. One suggestion is that effective vaccination programmes have also suffered from its own success. The devastation caused by many of these diseases has been forgotten and prevention is no longer deemed a driving imperative or the perceived susceptibility and severity of a disease are underestimated.³² “[A]s the incidence of previously frequent, potentially devastating diseases decreases as a consequence of successful immunisation programmes, attention of the public shifts...towards true and alleged ‘side effects’ of vaccines.”³³ Meanwhile, 19.5 million infants are still not being reached by routine immunisation services; the WHO launched the Global Vaccine Action Plan in 2017³⁴ to provide strategies to overcome this. Vaccine programmes have proven an efficient means of protecting many lives. It is cost-effective³⁵ and, despite low vaccine take up in places, it remains a largely accessible means by which protection can be maintained.

One of the most compelling benefits to vaccination is that it establishes ‘herd immunity’, enabling a more efficient and effective impact upon public health. Herd immunity occurs when a sufficiently large portion of the population is vaccinated, thereby creating a wider coverage of immunity for the rest of the population. This is particularly important for those who have not developed immunity, whether because they cannot or will not be vaccinated. The cost of vaccination is marginal when compared to the social and economic cost of a disease outbreak. There are low risks associated with vaccines, though the existence of compensation schemes reminds us that receipt of a vaccine is not risk free. Vaccine safety remains one of the key reasons why routine vaccinations are rejected. As with all drugs, there is the risk of serious complications, such as severe allergic reactions.³⁶ Nonetheless, the risk of adverse reactions to vaccines is still regarded as very low.

³² K. Glanz, B.K. Rimer & F.M. Lewis, *Health Behavior and Health Education: Theory, Research and Practice*, (San Francisco: Wiley & Sons, 2002); S. Teigler-Regev, S. Shahrabani & U. Benzion, “Factors Affecting Intention Among Students to be Vaccinated Against A/H1N1 Influenza: A Health Belief Model Approach”, *Advances in Preventive Medicine* (2011), Article ID 353207.

³³ U. Heininger, “A risk-benefit analysis of vaccination”, *Vaccine* 27(6) (2009), 9-12, at 9.

³⁴ See www.who.int/immunization/global_vaccine_action_plan/en/ (accessed: 5 January 2019).

³⁵ S. Ozawa, S. Clark, A. Portnoy, S. Grewal, L. Brenzel & D.G. Walker, “Return on investment from childhood immunization in low- and middle-income countries 2011-20”, *Health Affairs* 35(2) (2016), 199-207.

³⁶ Also see the WHO Global Advisory Committee on Vaccine Safety (GACVS), www.who.int/vaccine_safety/committee/en/ (accessed: 12 January 2019).

Exercising Choice and Assessing Risk

Despite the scientific evidence suggesting there is a low risk of harm, the decision to expose a healthy child to that risk is a burden parents face. It is in this emotive context that the arguments against vaccination are often presented. Assessing risk is notoriously difficult, particularly when trying to weigh it against potential benefit.³⁷ Spier³⁸ observes that the emotional space in which parents must make these decisions can make the perception of risk more acute. For parents who are uncertain about vaccination, influenced by the anti-vaccine lobby and media fuelled stories regarding risks and vaccine failures, ‘omission bias’ may have a marked impression on decision-making.³⁹ Such bias will increase the tendency to judge more harshly harmful actions than equally harmful omissions. In 2013, the European Centre for Disease Control (ECDC) observed that the ‘[r]isk benefit analyses are complex and as such, it may be easy for people to over-estimate the risks and under-estimate the benefits’.⁴⁰ Action over inaction provides a more palpable connection between the decision maker and the harm caused. Where there is uncertainty around vaccine safety,⁴¹ decision-making behaviour is influenced.⁴² Following the MMR scandal in the 1990s, many parents opted to ‘err on the side of caution’ and not get their children vaccinated. The ensuing outbreaks of measles in the 2000s, which reached its peak in the Swansea outbreak in 2013, suggest that omission bias may have had a central role in the decision not to vaccinate at the time. Following the outbreak, however, emergency campaigns to provide vaccination to children who had not been immunized thus far was quickly accepted by the public.⁴³ From 1982-2015, measles has seen a gradual decrease in prevalence, with 94200 cases in 1982, down to 1851 in 2014. However, there were significant increases in 2008 with 5088 cases and in 2009 with 5191 cases.

³⁷ N. Glover-Thomas, “The Age if Risk: Risk Perception and Determination Following the Mental Health Act 2007”, *Medical Law Review* 19(4) (2011), 581-605.

³⁸ R.E. Spier, “Perception of risk of vaccine adverse events: a historical perspective”, *Vaccine* 20 (2002), 78-84.

³⁹ J. Baron & I. Ritov, “Omission Bias, Individual Differences, and Normality”, *Organizational Behavior and Human Decision Processes* 94(2) (2004), 74-85.

⁴⁰ ECDC, *Individual Decision-Making and Childhood Vaccination* (Stockholm: ECDC, 2013), 2.

⁴¹ P. Bellaby, “Communication and miscommunication of risk: understanding UK parents’ attitudes to combined MMR vaccination”, *BMJ* 327(7417) (2003), 725-728. Also see M. Fine-Goulden, “Should Childhood Vaccination be Compulsory in the UK?”, *Opticon* 1826(8) (2010), <http://ojs.lib.ucl.ac.uk/index.php/up/article/view/1383> (accessed: 25 November 2018).

⁴² I. Ritov & J. Baron, “Reluctance to Vaccinate: Omission Bias and Ambiguity”, *Journal of Behavioral Decision Making* 3 (1990), 263-277.

⁴³ “Measles Outbreak Data”, NHS Public Health Wales, www.wales.nhs.uk/sitesplus/888/page/66389 (accessed: 28 February 2019). Also see “MMR catch-up campaign targets a million children”, NHS Website (25th April 2013), www.nhs.uk/news/2013/04April/Pages/New-MMR-catch-up-campaign-one-million-children-targeted.aspx (accessed: 3 February 2019).

Again, in 2012 a growth in cases emerged with 4211 cases and in 2013 with 6193 cases. These data coincide with the increase in MMR refusals⁴⁴ at the end of the 1990s (see fig. 1 below).⁴⁵

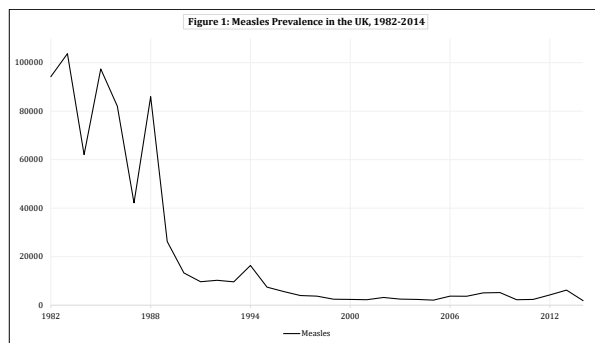


Figure 1. This chart shows the gradual decrease of measles prevalence between 1982-2015 and the spike in cases in 2008, 2009, 2012 and 2013. Source: Public Health England, 2016

Despite continuing spikes in disease emergence, data from the Health and Social Care Information Centre (HSCIC) in September 2015 revealed a further decrease in MMR take up with 92.3% of children receiving the first MMR dose by their second birthday – a decrease from 92.7% the year before and falling short of the World Health Organisation target of 95% needed for ‘herd immunity’. By September 2017, although there was an overall UK coverage of 95.6% for MMR1, there was a decrease of 0.1% for MMR2 to 88.1% coverage.⁴⁶ Despite the impact of a disease outbreak, vaccination decision-making behaviours have not vastly changed, and the data suggests that nudging and education may no longer be sufficient to ensure adequate protection.

⁴⁴ See V.K. Phadke, R.A. Bednarczyk, D.A. Salmon et al., “Association between vaccine refusal and vaccine-preventable diseases in the United States: a review of measles and pertussis”, *JAMA* 315(11) (2016), 1149-58.

⁴⁵ “Notifiable diseases: historic annual totals”, Public Health England (January 2016), www.gov.uk/government/publications/notifiable-diseases-historic-annual-totals.

⁴⁶ “Quarterly vaccination coverage statistics for children aged up to five years in the UK” (COVER programme): July to September 2017 Health Protection Report, Vol. 11, No. 45, Public Health England, www.gov.uk/government/uploads/system/uploads/attachment_data/file/666735/hpr4517_cover.pdf (accessed: 15 January 2019).

The decision to accept vaccination as a worthwhile medical intervention sits with the individual, either as the direct recipient or as the parent or person with parental responsibility responsible for a child. The voluntary vaccination scheme in the UK adheres to the notion of full choice. Data from Public Health England suggests that the vaccination take up in the UK is steady, though it is not sufficient to reach necessary levels for adequate protection. This is particularly noticeable for vaccines that rely upon several doses to be administered over time in order to achieve complete cover.⁴⁷

These data and continuing scepticism surrounding vaccination suggest that reflection is needed. Choice may indeed prove to be a threat to health.⁴⁸ This paper argues that the challenge of reaching vaccination targets to meet the threshold for sustainable herd immunity may not be met in the future if the UK remains committed to a fully voluntary vaccination scheme. Immunity is always susceptible to failure and remains in a precarious position. When immunity is reliant on individual decision-making, which in turn can be influenced by biases, misinformation and fear, there remains cause for concern. Yet, how a shift away from a voluntary scheme is possible when individual autonomy is ubiquitous within the fabric of medico-legal theory and central to the biomedical framework⁴⁹ presents a difficult dilemma.

Central to legitimate public health programmes is the question of how far state intervention can be justified in order to protect the lives of all. Noting the right to health as articulated in the WHO's 1946 Constitution where "the health of all people is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and states"⁵⁰ reminds us that rights and responsibilities both to ourselves and others are crucial to the preventive healthcare agenda.⁵¹ For children, this right is also explicitly articulated in the United Nations Convention on the Rights of the Child (UNCRC) where Article 24 provides that "every child has the right to the best possible health".⁵² In the UK Government's Fifth Periodic Report to the UN Committee

⁴⁷ *Ibid.*, January to March 2017 Health Protection Report, 11(23) (30 June 2017).

⁴⁸ F.E. Andre, R. Booy, H.L. Bock, J. Clemens, S.K. Datta, T.J. John, B.W. Lee, S. Lolekha, H. Peltola, T.A. Ruff, M. Santosham & H.J. Schmitt, "Vaccination greatly reduces disease, disability, death and inequity worldwide", *Bulletin of the World Health Organization* 86(2) (2008), 81-160.

⁴⁹ T.L. Beauchamp & J.F. Childress, *Principles of Biomedical Ethics* 7th edn. (Oxford: OUP, 2013).

⁵⁰ Constitution of the World Health Organisation (22 July 1946), 14 UNTS 185, preamble.

⁵¹ Also see "The Right to Health", Office of the UN High Commissioner for Human Rights and World Health Organisation, www.who.int/hhr/activities/Right_to_Health_factsheet31.pdf?ua=1 (accessed: 15 February 2019), Fact Sheet 31, 3.

⁵² "A summary of the UN Convention on the Rights of the Child" www.childrensrights.ie/sites/default/files/information_sheets/files/SummaryUNCRC.pdf (accessed: 16 February 2019).

on the Rights of the Child, published in May 2014⁵³ it has, amongst other things, pledged to prioritise children's health and protect NHS budgets in order to improve children's health outcomes.⁵⁴ Within this pledge lies the recognition that, in order to achieve this, preventive action is required including the improvement and expansion of the child immunisation programme.⁵⁵

Currently, in the UK successful population immunity depends upon willing compliance. A child might have a right to healthcare and good health, but parents also have a right to exercise their own choices when deciding what is best for their children.⁵⁶ Likewise, depending on the age of the child concerned, the child's voice will also be a relevant consideration.⁵⁷ Respect for private and family life as contained under Article 8 of the European Convention for the Protection of Rights and Freedoms emphasises the importance of parents having a central role in major decisions concerning their children. Yet, this right is not absolute. Interference with this right may be legitimate when it is in 'accordance with the law and is necessary...in the interests of ..., public safety ...for the protection of health or morals or for the protection of the rights and freedoms of others.'⁵⁸ Bradley argues that when parents refuse to or neglect to ensure their children are vaccinated, this is a failure to care and their rights to decide are surrendered.⁵⁹

⁵³ HM Government, *Fifth Periodic Report to the UN Committee on the Rights of the Child* (London: TSO, 2014).

⁵⁴ Department of Health, Care Quality Commission, Department for Education, Health Education England, Healthwatch England, Medicines and Healthcare products Regulatory Authority, Monitor, NHS Commissioning Board, NHS Information Centre, NHS Trust Development Authority, National Institute for Health and Clinical Excellence, Public Health England, Royal College of General Practitioners, Royal College of Nursing, Royal College of Paediatrics and Child Health and the Royal College of Psychiatrists, *Improving Children and Young People's Health Outcomes: A System Wide Response* (February 2013), www.gov.uk/government/uploads/system/uploads/attachment_data/file/214928/9328-TSO-2900598-DH-SystemWideResponse.pdf (accessed: 14 February 2019).

⁵⁵ HM Government, *Fifth Periodic Report to the UN Committee on the Rights of the Child* (London: TSO, 2014), para. 3, 32.

⁵⁶ The UN Convention on the Rights of the Child also states in Article 5 that governments have a duty to "respect the responsibilities, rights and duties of parents or guardians. Responsibility over children remains firmly with parents and guardians and places a responsibility on governments to protect and assist families in fulfilling their essential role as nurturers".

⁵⁷ *F v F* [2013] EWHC 2783, J. Theis concluded that it was in the interests of both girls (despite their opposition) to receive the MMR vaccination. This was in line with previous cases concerning immunisation (*Re C (Welfare of Children: Immunisation)* [2003] 2 FLR 1095 and *LCC v A, B, C and D* [2011] EWHC 4033).

⁵⁸ Article 8(2) ECHR.

⁵⁹ P. Bradley, "Should childhood immunization be compulsory?", *Journal Med Ethics* 25 (1999), 330-334.

Autonomy will always maintain its appeal. Yet, as McCall Smith suggests, there may be difficulties if and when individuals make ‘bad’ choices while exercising it.⁶⁰ What a bad choice amounts to, is of course subjective and value-laden and dependent upon contextual drivers.⁶¹ The decision about whether vaccination should be accepted reminds us that individuals and the collective have interactional responsibilities to health. Glover-Thomas and Holm argue that as some choose to comply with vaccination to meet community-based responsibilities, it creates a reciprocal duty upon everyone else to comply in the name of the collective good.⁶² This notion of public responsibility to health is reflected within the *NHS Constitution* and remains a central tenet of the health agenda.⁶³

The compulsory mandate can and does take several forms. The forthcoming section will first consider how compulsion is defined and the debate around this. Compulsory vaccination schemes elsewhere will then be explored, with a brief evaluation of the effectiveness of these schemes. The next section considers how this public responsibility could be further harnessed and what other approaches adopted elsewhere might offer an alternative means of securing better vaccination compliance.

Compulsory Vaccination Programmes

Understanding the Nature of Compulsion

When trying to understand the term ‘compulsion,’ it becomes clear very quickly that it can be understood and interpreted in a variety of ways. A mandate is a command or an order. It is not a recommendation, and it invokes an expected standard of practice. It requires individuals to be subject to or to do something, even if that means a positive action is required on the part of individuals to exempt themselves or opt-out. Simple rejection of a mandate is insufficient and commonly involves a penalty when compliance is not forthcoming. Coggan observes that “if the threat or force does not produce the desired result, it is not compulsion. It is merely attempted compulsion”. However, appropriately enforced penalties should have a deterrent effect. In the UK, the

⁶⁰ A. McCall Smith, “Beyond Autonomy”, *Journal of Contemporary Health Law & Policy* 14(1) (1997), 23-39.

⁶¹ R. George, *Making Men Moral: Civil Liberties and Public Morality* (Oxford: OUP, 1993).

⁶² N. Glover-Thomas & S. Holm, “Compulsory vaccination: going beyond a civic duty?” in C. Stanton et al., *Pioneering Healthcare Law: Essays in Honour of Margaret Brazier* (London: Routledge, 2016), 35.

⁶³ Department of Health, *The NHS Constitution for England* (London: DoH, 2015).

notion of compulsion is not entirely new in the vaccination context. The early period of vaccination development and the legal frameworks to support this embraced coercion in a variety of ways. The Vaccination Act 1853 made vaccination compulsory for all infants in the first three months of life and made defaulting parents liable to a fine or imprisonment. This was later expanded in the Vaccination Act 1867 when vaccination was mandated for children up to the age of 14, with cumulative penalties for non-compliance. Fierce objection to this level of interference⁶⁴ resulted and it was not until the Vaccination Act 1898 that a conditional exemption for conscientious objectors was introduced. Since then, vaccination has become synonymous with choice.⁶⁵

A penalty can take many forms, including significant financial or custodial penalties, such as in Belgium where parents have been fined and imprisoned following the refusal to have their children vaccinated against polio.⁶⁶ There are also indirect penalties such as exclusion from state school entry when a child is without a complete immunisation profile. Neither penalty system is ideal. There are concerns that fines and prison terms are disproportionate responses, while denial of school entry prompts concerns and moral criticism that children should not be denied the basic right to an education and be punished for parental action.

The deployment of coercion and the acceptance of its use requires evidence that resorting to compulsion, even broadly interpreted, makes a difference to the outcome. Several countries use compulsion as a tool to maintain the public's health. A number of different vaccination policies exist, some exerting considerable control through aggressive and comprehensive mandatory vaccination programmes, while other policies focus instead upon the need to prove that completed immunization is in place, or an exemption has been obtained, prior to children attending child care and school. Financial incentives are also used to encourage compliance. Whether a system is in fact mandatory, depends largely on how easy it is to avoid or reject the mandate. Where opt-outs are available within the system, but in practice are difficult to apply for and obtain, a system becomes mandatory by default. In the vaccination context, enforcement

⁶⁴ See, Lord Herschell, *Report of the Royal Commission Appointed to Inquire into the Subject of Vaccination* (London: HMSO, 1889-1897); J.D. Swales, "The Leicester anti-vaccination movement", *The Lancet* 340(8826) (1992), 1019-1021.

⁶⁵ Following disease outbreaks around the world, calls for tougher measures to increase compliance have been made. In California SB 277, Pan. Public health laws were passed in 2015 following a significant measles outbreak in Disneyland in 2015 (SB 277, Pan. Public healthz, approved June 2015, http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB277 (accessed: 12 December 2018)).

⁶⁶ N. Stafford, "Belgian parents are sentenced to prison for not vaccinating children", *BMJ* 336(7640) (2008), 348.

of mandates has rarely involved the positive use of penalties; instead, mechanisms used to encourage compliance have proved more successful. For example, for many states in the US, access to the public education system depends upon full immunisation being proven. However, parents can formally opt-out of the system if they can provide evidence that a religious or philosophical belief is held preventing their agreement to vaccine use. Likewise, if a child cannot be vaccinated owing to immune deficiency (or other medical reasons), this will be sufficient to enable a formal opt-out. For many countries, vaccination programmes rely upon both educational elements and moral persuasion to ensure adequate compliance is achieved. For example, in Sweden and Finland in the wake of the H1N1 pandemic in 2009-2010, mass compliance with the vaccination programme was bolstered by moral persuasion.

Where overly flexible interpretations of compulsion and mandate terminology exist, the value of such systems and policy decisions are eroded.⁶⁷ The deployment of coercion and the acceptance of its use in the vaccination sphere requires evidence that resorting to it, even broadly interpreted, makes a difference to outcome. Comparing immunisation coverage data in countries with compulsory mandates to those without is insightful. Using WHO's and UNICEF's estimates of national immunization coverage,⁶⁸ and allowing for recognised inadequacies of some of the survey data, an average was drawn from the listed national coverage for a variety of vaccines in six countries: the UK, the US, Latvia, Slovenia, Australia and Austria (see *table1*).⁶⁹ These countries were chosen for comparison purposes, owing to the varying levels of coercion used to promote vaccine take up. What the data suggests, is that the presence of a form of compulsion may achieve a wider immunity coverage overall, even when taking account of the small percentage differences. This may result not directly from the threats associated with the compulsion *per se*, but rather that compulsion prevents the indirect influence of volatile external factors, such as vaccination scandals, which voluntary schemes have been vulnerable to. *Figures 2-4* below compare the UK's immunity coverage with a number of countries around the world that deploy varying degrees of compulsion to encourage compliance. The US has a weak compulsion-based system, using access to education to encourage compliance, but easily accessible exemptions. Australia uses financial incentives, as does Austria, where maternity payments are linked

⁶⁷ J. Smartt Gullion, L. Henry & G. Gullion, "Deciding to Opt Out of Childhood Vaccination Mandates", *Public Health Nursing* 25(5) (2008), 401-408.

⁶⁸ WHO and UNICEF, *Immunization Summary: A Statistical Reference Containing Data Through 2013* (accessed: 17 October 2018).

⁶⁹ D.W. Brown, A. Burton, M. Gacic-Dobo & R. Karimov, "An Introduction to the Grade of Confidence Used to Characterize Uncertainty Around the WHO and UNICEF Estimates of National Immunization Coverage", *The Open Public Health Journal* 6 (2013), 73-76.

to compliance. Latvia requires all healthcare workers to comply with full vaccination expectations, while Slovenia has one of the World’s most aggressive and comprehensive vaccination programmes (although Slovenia also has a generous no-fault compensation program for those injured from vaccines).

Table 1

Country	Level of Compulsion	Nature of Compulsion
Slovenia	Strong compulsion	Mandatory for nine designated diseases. Medical exemption possible, but not for religious or conscientious objection. Non-compliance results in fines.
Latvia	Strong compulsion	Non-mandatory vaccinations are not publicly funded. Parental signature required for refusals.
Australia	Weak compulsion	Financial incentives. Welfare payments linked to compliance. Limited entry into school without vaccination or with completed statutory refusal declaration.
US	Weak compulsion	Exemptions available on request for medical, religious reasons and conscientious objection.
Austria	Weak compulsion	Financial incentives.
UK	Voluntary	

Table 1: This table illustrates the variety of compulsion levels used to compel vaccination in identified countries.

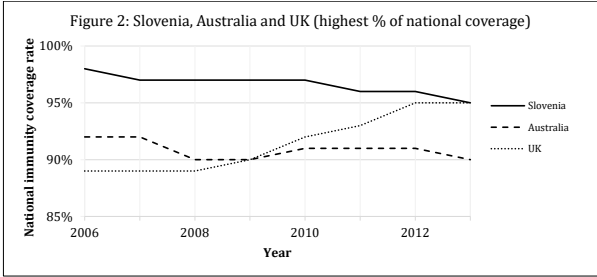


Figure 2: This chart shows comparative rates of national immunity coverage across Slovenia, Australia and the UK. This data suggests that a form of negative compulsion (whether weak or strong) has a greater impact on immunity coverage overall compared to a voluntary scheme. Data sourced from the WHO and UNICEF, 2013

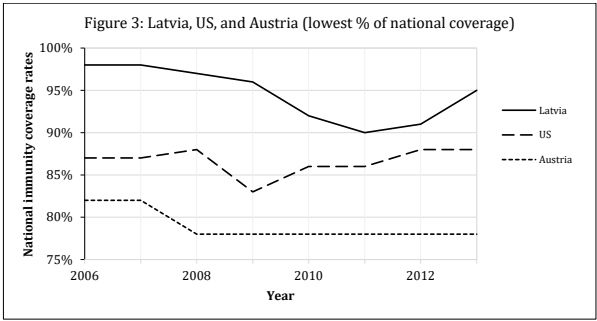


Figure 3: This chart shows comparative rates of national immunity coverage across Latvia, the US and Austria. This data suggests that a form of negative compulsion (whether weak or strong) has a greater impact on immunity coverage overall compared to a system of weak compulsion that relies on positive incentivism. Data sourced from the WHO and UNICEF, 2013

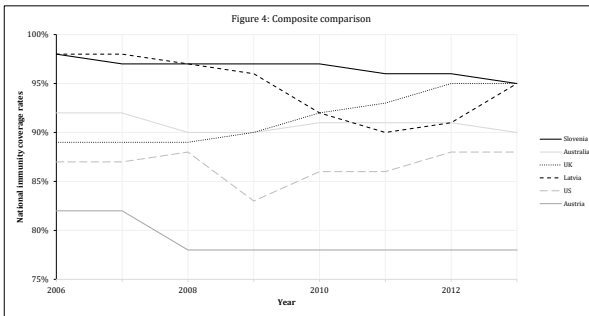


Figure 4: This chart provides a composite comparison of rates of national immunity coverage across Latvia, the US, Austria, Slovenia, Australia and the UK. Data sourced from the WHO and UNICEF, 2013

The Compulsion Debate

As John Stuart Mill observed, “[a]s soon as any part of a person’s conduct affects prejudicially the interests of others, society has jurisdiction over it, and the question whether the general welfare will or will not be promoted by interfering with it becomes open to discussion”.⁷⁰ One of the most compelling and frequently cited arguments for embracing a compulsory vaccination programme is that such a step will enhance herd immunity, protecting the health interests of the collective.⁷¹ Herd immunity occurs when the vaccination of a sufficiently large portion of the population (the herd) creates a wider coverage of immunity for the rest of the general public, particularly for those who have not developed immunity.⁷²

Herd immunity can halt the spread of disease and is valuable chiefly to those who cannot be vaccinated.⁷³ However, such immunity is always susceptible to failure.⁷⁴ In 2008 the highest number of confirmed cases of measles (1370) was recorded in England and Wales and was thought to correlate with the severe

⁷⁰ John S. Mill, “On Liberty” in John M. Robson (ed.), *Essay on Politics and Society, Collected Works of John Stuart Mill* vol 18 (Toronto: University of Toronto Press, 1977), 244-5.

⁷¹ T.J. John & R. Samuel, “Herd immunity and herd effect: new insights and definitions”, *European Journal of Epidemiology* 16(1) (2000), 601-606.

⁷² See R.M. Anderson, “The concept of herd immunity and the design of community-based immunization programmes”, *Vaccine* 10 (1992), 928-35.

⁷³ Angus Dawson, “Herd Protection as a Public Good: Vaccination and Our Obligations to Others” in Angus Dawson & Marcel Verweij (eds.), *Ethics, Prevention and Public Health* (Oxford: OUP, 2009).

⁷⁴ A. Berger, “How does herd immunity work?”, *BMJ* 319 (1999), 1466-7.

drop in MMR take up immediately following the discredited Wakefield study⁷⁵ in 1998.⁷⁶ Data surrounding the pertussis vaccine controversy in the 1970s indicates that loss of public confidence in a given vaccine may lead to a significant drop in public engagement. The number of pertussis cases has increased steadily in the United States and Great Britain. With falling rates of compliance, a global vaccination campaign was instituted⁷⁷ fuelled by the fear that for some vaccine preventable diseases, herd immunity was beginning to collapse.⁷⁸

Arguably, herd immunity may more readily emerge in the context of mandatory vaccination. Justifications for the use of compulsion must be set firmly within a utilitarian model, rather than from any value derived by the individual.⁷⁹ It is universally accepted that to harm others intentionally is morally repugnant⁸⁰ and reflects Rawls' moral obligation to obey the law where there is a mutual benefit.⁸¹ This is reinforced with deeply entrenched legal rules and norms. Violence and violent acts are controlled by the imposition of criminal responsibility for those who have conducted a deliberate act. Likewise, reckless acts leading to damage to others may render the actor responsible. The criminal law seeks to harness forward looking utilitarianism to justify punishment on the basis of the good consequences it is expected to produce in the future and retribution-based laws as a backward-looking mechanism to justify punishment on the basis of the offender's behaviour.⁸² With an existing moral duty (which is firmly supported by the law) not to harm others, how does this apply to infectious disease? The threat of violence from one individual against another is significant and is acknowledged as such at both a legal and ethical level. When we consider the impact and devastation wrought by a virulent pathogen and the threat of a global pandemic, it is important to consider just how far this duty not to harm others should go.

⁷⁵ Above, fn. 15.

⁷⁶ Health Protection Agency, Vaccine coverage and COVER (Cover of Vaccination Evaluated Rapidly), 2011, www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/VaccineCoverageAnd-COVER/ (accessed: 12 February 2019).

⁷⁷ See, P. Davies, S. Chapman & J. Leask, "Antivaccination activists on the World Wide Web", *Arch Dis Child*. 87 (2002), 22-25.

⁷⁸ P. Cockman, L. Dawson, R. Mathur, & S. Hall, "Improving MMR vaccination rates: herd immunity is a realistic goal", *BMJ* 343 (2011), 729-730.

⁷⁹ R.I. Field & A.L. Caplan, "A proposed ethical framework for vaccine mandates: Competing values and the case of HPV", *Kennedy Institute of Ethics Journal* 18(2) (2008), 111-124.

⁸⁰ Herbert L.A. Hart, *Law, Liberty and Morality* (Oxford: OUP, 1963).

⁸¹ John Rawls, "Legal Obligation and the Duty of Fair Play" in Sidney Hook (ed.), *Law and Philosophy* (New York: New York University Press, 1964), 3-18.

⁸² See Andrew Ashworth & Jeremy Holder, *Principles of Criminal Law* 7th edn. (Oxford: OUP, 2013).

The argument that there can be little legitimacy in eliciting the use of penalties against those who inadvertently spread disease is one grounded in moral values.⁸³ But is this argument as effective when applied to preventive mechanisms to control disease? If an individual refuses to vaccinate her children, the decision to reject vaccination might be seen as indistinguishable from harming others.⁸⁴ When looking at criminality in the context of intentional and/or reckless transmission of disease, similarities emerge. Once there is evidence that a suspect knew (or ought reasonably to have known) that he or she had a disease and how it could be transmitted, by not preventing transmission, reckless grievous bodily harm under Section 20 of the Offences Against the Person Act 1861 may be applicable.⁸⁵ Failure to take easily available preventive measures arguably falls within this. As van Delden et al. suggest: “[t]his does not imply an obligation not to become ill, but does lead to a *prima facie* duty not to infect someone when one knows this can be prevented”.⁸⁶

Unsurprisingly, the case against compulsion is centred on individual rights and the violation of personal autonomy: mandatory vaccination programmes involve constraints to personal autonomy and freedom of choice”.⁸⁷ Yet there are compelling arguments for accepting that the principle of respect for personal autonomy has limitations. Autonomy and personal liberty infringements occupy the philosophical debate against compulsory vaccination. However, a key argument against the use of compulsion in practice is the question of vaccination safety and the risk of harm that may stem from the vaccine itself.⁸⁸ No intervention is entirely free from risk.⁸⁹ Side effects from vaccinations tend to be mild and transitory. Rarely, an allergic reaction may occur resulting in a rash. Very rarely, an anaphylactic reaction⁹⁰ may ensue quickly after the vaccine has been

⁸³ R. Bennett, “Is there a Case for Criminalising Vertical Transmission of the Human Immunodeficiency Virus (HIV) from Mother to Child?”, *Journal of Medical Law and Ethics* 1(2) (2013), 121-137.

⁸⁴ J. Harris & S. Holm, “Is there a moral obligation not to infect others?”, *BMJ* 311 (1995), 1215-7.

⁸⁵ *R v Dica* [2004] EWCA Crim 1103, *R v Konzani* [2005] EWCA Crim 706, *R v Golding* [2014] EWCA Crim. 889. Also see C. Stanton & H. Quirk (eds.), *Criminalising Contagion: Legal and Ethical Challenges of Disease Transmission and the Criminal Law* (Cambridge: CUP, 2016).

⁸⁶ J.J.M. van Delden, R. Ashcroft, A. Dawson, G. Marckmann, R. Upshur & M.F. Verweij, “The ethics of mandatory vaccination against influenza for health care workers”, *Vaccine* 26 (2008), 5562-5566.

⁸⁷ *Ibid.*, 5562-5566, at 5564.

⁸⁸ “Tackling negative perceptions towards vaccination”, *Lancet Infectious Diseases* 7(4) (2007), 235.

⁸⁹ Kevin Malone & Alan Hinman, “Vaccination mandates: The public health imperative and individual rights” in Richard A. Goodman, Mark A. Rothstein, Richard E. Hoffman et al. (eds.), *Law in Public Health Practice* (New York: OUP, 2003).

⁹⁰ K.R. Stratton, C.J. Howe & J.R.B. Johnston, “Adverse events associated with childhood vaccines other than pertussis and rubella. Summary of a report from the Institute of Medicine”, *Journal of the American Medical Association* 271 (1994), 1602-5. Also see H. Peltola, “What would happen if we stopped vaccination?”, *Lancet* 356 (2000), 22.

administered and this may be life threatening. Sometimes significant risks⁹¹ associated with vaccination can and do materialise.⁹² Nonetheless, the risk of adverse reactions to vaccines is still regarded as low. It is thought that false impressions about vaccines occur when a programme is successful and disease prevalence decreases.⁹³ As the threat of infection diminishes, the public gaze is transferred to the possible risks of vaccination instead. For example, tangible concerns around vaccine use⁹⁴ and autism have abounded since the late 1990s, despite there being no evidence to support these concerns.⁹⁵ Other safety fears have been raised about vaccination and presented as an argument against adopting a compulsory system of vaccination, including vaccine overload whereby use of too many vaccines may overwhelm or weaken a child's immature immune system and lead to adverse consequences.⁹⁶

Legitimate Constraint and the Public Health Imperative

How governments should act to promote or protect the public good is driven by an enduring tension between private individual rights and the common good. How one set of rights is effectively balanced with those of another is a recurring question in the vaccination debate. To date, this dilemma has routinely been evaluated through the lens of the harm-principle, which provides that competent adults should have freedom of action unless they pose

⁹¹ In Finland, 121 cases of narcolepsy were registered, while in Sweden 168 new cases were registered. See H. Nohynek, J. Jokinen, M. Partinen, O. Vaarala, T. Kirjavinen, J. Sundman et al., "AS03 adjuvanted AH1N1 vaccine associated with an abrupt increase in the incidence of childhood narcolepsy in Finland", *PLoS ONE* 7(3) (2012), e33536.

⁹² Even though risks associated with vaccination administration are considered low, were a system of compulsion to be introduced, fairness requires a compensation scheme to be available to those damaged by vaccination. However, concerns with the UK compensation system governed by the Vaccine Damage Payments Act 1979 continues, with the number of successful claims being statistically low. From April 2000 to April 2006, out of 1,164 claims, only 21 were successful (under 2%). Anne McGuire (Parliamentary Under-Secretary (Disabled People), Department for Work and Pensions, *Hansard* (16 June 2006), Column 1482W. Revisiting the scope of this statutory compensation scheme to reflect the use of a vaccine mandate would be an essential step to protect the public.

⁹³ C.R MacIntyre & J. Leask, "Immunisation Myths and Realities: Responding to Arguments Against Immunisation", *Journal of Paediatric Child Health* 39 (2003), 487-91.

⁹⁴ See J.S. Gerber & P.A. Offit, "Vaccines and Autism: A Tale of Shifting Hypotheses", *Clinical Infectious Diseases* 48(4) (2009), 456-61.

⁹⁵ L.E. Taylor, A.L. Swerdfeger & G.D. Eslick, "Vaccines are not associated with autism: an evidence-based meta-analysis of case-control and cohort studies", *Vaccine* 32(29) (2014), 3623-9.

⁹⁶ S. Hilton, M. Petticrew & K. Hunt, "Combined vaccines are like a sudden onslaught to the body's immune system: parental concerns about vaccine 'overload' and 'immune-vulnerability'", *Vaccine* 24(20) (2006), 4321-7.

a risk to others.⁹⁷ If there is a risk of serious harm to others, then does this provide sufficient justification for measures to be undertaken in order to minimize that harm, irrespective of the concerns raised about vaccine safety and the risk of undermining individual autonomy?

There is currently no vaccination mandate requiring compulsory immunisation in the UK, but compulsion within the public health sphere does exist. Statutory powers to control infectious disease have existed within England, Wales and Northern Ireland since the Public Health Act 1848 and is governed now by the Public Health (Control of Disease) Act 1984,⁹⁸ which provides for compulsory removal and detention of individuals with a suspected infectious disease. Under the Health and Social Care Act 2008, the remit of compulsory powers to contain contamination risks and health threats has been expanded.⁹⁹ The scope of these powers has widened and allows for the legitimate isolation and restraint of individuals and the seizure of property. At the heart of the health protection mandate within the Health and Social Care Act 2008 lies the 'all hazards' approach.¹⁰⁰ The decision to act is now determined by the *potential* for a case of human infection or contamination to present a significant public health hazard.

This expansion of legitimate coercion in relation to infectious disease raises questions about how far this approach could be applied along the healthcare continuum. The justification for aggressive intervention of this kind sits squarely within the public health agenda of collective protection and social justice. After all, many of the notifiable diseases within the Public Health (Control of Disease) Act 1984 are highly contagious and have high mortality rates if left untreated.

⁹⁷ Joseph Raz, "Autonomy, Toleration and the Harm Principle" in Susan Mendus (ed.), *Justifying Toleration: Conceptual and Historical Perspectives* (Cambridge: CUP, 2009).

⁹⁸ This legislation is supported by the Public Health (Infectious Disease) Regulations 1988 and has since been amended by the Health and Social Care Act 2008.

⁹⁹ The Health Protection (Notification) Regulations (2010 SI 2010/659) came into force on 6 April 2010 and extended the previous arrangements for statutory notification of infectious diseases in England. The Health Protection (Local Authority Powers) Regulations 2010 (SI 2010/657) and the Health Protection (Part 2A Orders) Regulations 2010 (SI 2010/658), set out the powers and duties of local authorities to take action to protect the public's health from risk of infection or contamination, where an individual does not voluntarily cooperate with necessary precautions.

¹⁰⁰ Health protection and updating the Public Health (Control of Disease) Act 1984 can be found in Part 3 of the Health and Social Care Act 2008. This change is consistent with the International Health Regulations (2005) which help countries collaborate together to assist with the international effort to respond to infectious diseases and other health risks. See, WHA58.3 Revision of the International Health Regulations at www.who.int/ihr/about/FAQ2009.pdf (accessed: 10 February 2019).

Despite the draconian nature of these powers,¹⁰¹ the overarching objective of protecting the majority has been and continues to be the central rationale. Likewise, the move towards a risk assessment approach following the Health and Social Care Act 2008 to ascertain perceived public health hazards instead of identifiable quantitative evidence of disease also indicates that the political emphasis has shifted in favour of the health needs of the collective; a trend which reflects a global shift towards a communitarian agenda.¹⁰² The legitimacy of infectious disease control powers was tested in the European Court of Human Rights in *Enhorn v. Sweden* in 2005, where an HIV+ man who had unknowingly infected another and who failed to attend statutorily required medical appointments was later isolated in hospital under compulsion.¹⁰³ This response was deemed disproportionate to the suspected risk and as such a breach of his Article 5 right to liberty had occurred. But does the *Enhorn* decision indicate a willingness on the part of the courts to apply the brakes to control the extent of intervention for infectious disease? The trigger for decisions that focus on coercion could be the failure or refusal by the infected person to comply with a treatment regime (and thus reducing the risk of infection) rather than the existence of the disease itself.¹⁰⁴ The decision to hospitalize would then meet the requirement emphasized in *Enhorn* that detention should only be used as a last resort, in circumstances where lesser measures are not sufficient to reduce disease risk.¹⁰⁵

The Health and Social Care Act 2008 has moved risk determination to centre stage. The risk of a significant public health hazard now plays a key role in decisions made under the Public Health (Control of Disease) Act 1984. Much of the expansion of statutory powers in England and Wales has taken shape since the *Enhorn* decision; the judicial intervention in this case resulted partially from the nature of HIV and its mode of transmission.¹⁰⁶ Infectious disease control has been an increasingly overt public health priority, with new outbreaks of previously vaccine controlled disease emerging.¹⁰⁷ Moreover, newly emerging

¹⁰¹ See J. Harris & M. Brazier, "Public Health and Private Lives", *Medical Law Review* 4 (1996), 171-192.

¹⁰² For example, see WHO, *WHO's Six-Year Strategic Plan to Minimize the Health Impact of Emergencies and Disasters* (Geneva: WHO, 2015), www.who.int/hac/ercm_strategic_plan_web.pdf (accessed: 15 January 2019).

¹⁰³ *Enhorn v. Sweden* European Court of Human Rights [2005] ECHR 56529/00. Also see R. Martin, "The Exercise of Public Health Powers in Cases of Infectious Disease: Human Rights Implications", *Medical Law Review* 14 (2006), 132-143.

¹⁰⁴ K. Sepkowitz, "How Contagious is Tuberculosis?", *Clinical Infectious Diseases* 23 (1996), 954; R. Coker "Tuberculosis, Non-compliance and Detention for the Public Health", *Journal of Medical Ethics* 26 (2000), 157.

¹⁰⁵ *Enhorn v. Sweden* European Court of Human Rights [2005] ECHR 56529/00, para. 55.

¹⁰⁶ Above, fn. 102 at para. 11.

¹⁰⁷ V.A.A. Jansen, N. Stollenwerk, H.J.J. Jensen, M.E. Ramsay, W.J. Edmunds & C.J. Rhodes, "Measles Outbreaks in a Population with Declining Vaccine Uptake", *Science* 301 (2003), 804.

diseases have and continue to raise global concerns with SARS, H₅N₁ avian influenza¹⁰⁸ and more recently, MERS (Middle East respiratory syndrome) being on the WHO radar.¹⁰⁹ Given this shift towards risk determination in relation to infectious disease control, there is scope, despite the *Enhorn* decision, for aggressive intervention to be justified once identification and perception of risk is ascertained.¹¹⁰

Conclusion

The weighing of collective health interests against individual rights to personal autonomy similarly arises in the vaccination context, and the same balancing process exists. There is a universal aspiration to minimize the probability of risk and the severity of harm from a disease that is preventable through vaccination programmes. Under the National Health Service Act 2006¹¹¹ the Secretary of State for Health is obliged to take such steps as considered appropriate to protect the public in England and Wales from disease or other dangers to health.¹¹² Included within this is the requirement to prevent as far as possible those threats arising in the first place. The Public Health Outcomes Framework, published in 2013, also reinforces a broader approach to health protection with a greater emphasis on positive prevention planning and strategic objectives.¹¹³

The legal framework within England and Wales reflects the international regulatory shift towards a broader interpretation of public health risk as articulated by the WHO.¹¹⁴ It also mirrors an increasingly vocal call within policy circles to embrace some form of coercion within the vaccination system as a

¹⁰⁸ Between December 2003 and 28 June 2005, there were 108 confirmed cases of H₅N₁ avian influenza virus and 54 deaths were reported to the World Health Organization (see, World Health Organization. *Avian Influenza*. See www.who.int/csr/disease/avian_influenza/en/ (accessed: 23 December 2018)).

¹⁰⁹ See www.who.int/csr/disease/coronavirus_infections/update_20130709/en/index.html (accessed: 24 October 2018).

¹¹⁰ K. Calman & G. Royston, "Risk Language and Dialects", *British Medical Journal* 315 (1997), 939.

¹¹¹ National Health Service Act 2006, Section 2A (as inserted by the Health and Social Care Act 2012, Section 11).

¹¹² Implementation of this statutory duty is supported by the Local Authorities (Public Health Functions and Entry to Premises by Local Healthwatch Representatives) Regulations 2013.

¹¹³ Department of Health, *Improving Outcomes and Supporting Transparency – Part 1A: A Public Health Outcomes Framework for England, 2013-2016* (London: TSO, 2013).

¹¹⁴ See WHA58.3 Revision of the International Health Regulations at www.who.int/ihr/about/FAQ2009.pdf (accessed: 12 February 2019).

whole.¹¹⁵ Moving beyond the notion that mandatory vaccination is a moral duty alone, the debate shifts towards whether there is compelling evidence to support vaccination through legal enforcement. In voluntary systems, valid consent acts as the linchpin, with emphasis being placed upon individuals asking questions and discussing the risks and benefits of a given vaccine. However, at times of emergency, such as when a pandemic threatens,¹¹⁶ vaccination programmes are often undertaken with this in order to ‘prevent concrete and serious harm’ occurring.¹¹⁷

Therefore, setting individual rights aside to protect the collective is an accepted practice in certain situations. Autonomy is not absolute. Emergencies legitimise corner cutting, while international legal regulations have moved the goalposts with an ‘all hazards’ approach being applied to health protection. Calls to make certain vaccines compulsory have been made in the UK¹¹⁸ on the basis that shared health needs outweigh individual preferences and compulsion offers the soundest method by which effective herd immunity can be achieved.¹¹⁹ The question of vaccination cannot be based entirely on individual choice and informed consent. It is a public health matter ‘which can be undermined if their implementation depends on individual informed consent’.¹²⁰

This paper illustrates that vaccination programmes can be operated using a variety of different models. For example, Slovenia applies a strong compulsion model which allows very limited flexibility and opt-out. Mandatory vaccines are just that, with fines applied to those who do not comply. Examples of weak compulsion models reflect a variety of different modes of delivery. This can include both direct and indirect encouragement from financial incentives, as seen in Austria and Australia, to limitations on school entry for unvaccinated children, as seen in parts of the US. While in the UK, the vaccination programme has reinforced the rights of parents to accept or reject vaccination. No one ap-

¹¹⁵ ILC-UK, *Immune Response: Adult Immunisation in the UK. Improving access to vaccination for older people* (London: ILC-UK, 2013). Available at www.ilcuk.org.uk (accessed: 20 February 2019).

¹¹⁶ Gostin argues that when there is a significant risk to health resulting from a contagious disease, restriction of individual liberties is defensible. See L.O. Gostin, “Influenza A(H1N1) and pandemic preparedness under the rule of international law”, *JAMA* 301 (2009), 2376-8.

¹¹⁷ M. Verweij & A. Dawson, “Ethical Principles for Collective Immunisation Programmes”, *Vaccine* 22 (2004), 3122-6.

¹¹⁸ In 2009, the former chairman of the British Medical Association, Sir Sandy Macara, called for MMR vaccination to become compulsory. See www.pulsetoday.co.uk/ex-bma-chair-calls-for-compulsory-mmr-jabs/11006836.article#.U-J6a_ldXaE (accessed: 17 February 2019).

¹¹⁹ Although controversial in the UK, Sir Sandy Macara’s approach would limit entry into the state education system until up-to-date vaccination records could be demonstrated by parents. This approach would mirror that of the US, parts of Australia, Greece and Spain.

¹²⁰ O. O’Neill, “Some Limits of Informed Consent”, *Journal of Medical Ethics* 29 (2003), 4-7, at 5.

proach is perfect. Nonetheless, a public health policy which rests upon choice alone leaves the system vulnerable. Parents choosing not to have their children vaccinated, relying upon existing herd immunity is no longer tenable. Despite concerns and questions raised by vaccination programmes, the primary objective that drives it should not be forgotten. Public health protection is the goal with collective health needs ultimately outweighing individual rights.

In the UK, a more proactive vaccination system based on a weak compulsion model should be considered. This might include a list of core vaccines that should be compulsory, while others are voluntary. It might involve the use of vaccination record cards that may be used as part of the school entry process or financial incentives might be an option. Adoption of a vaccination model which seeks to enhance compliance using compulsion for 'high risk' disease, such as measles, while maintaining reliance on consent for others may offer an effective compromise. There is an expectation that governments around the world will ensure vaccine provision against the most contagious diseases is available. This paper argues that this duty to supply vaccines to reduce the risk of preventable disease places a corresponding responsibility upon individuals to receive them. Relying upon a moral duty to ensure effective herd immunity is no longer rational; further steps towards adopting a system of vaccination through legal enforcement should be actively considered.