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Voluntary vaccination: the pandemic effect

Emma Cave
Durham University

Justification of a voluntary vaccination policy in England and Wales rests on tenuous foundations. Two arguments against voluntary vaccination are gaining ground. The first is that globalisation necessitates preparedness strategies for pandemics. Assuming sufficient supply, compulsory vaccination of adults and children constitutes a potential policy option in the context of a severe, vaccine-preventable pandemic outbreak. The second argument is that children have a right to preventive medicine and thus to vaccination. The influence of the UN Convention on the Rights of the Child and its emphasis on parents as the trustees of their children's best interests, and the increasingly global nature of our collective and individual responsibilities with respect to the transmission of vaccine-preventable disease present challenges to the right to refuse vaccination on our own behalf and on behalf of our children. Exploring methods of compulsion and persuasion utilised across Europe, the USA and Australia, this paper argues that necessity and proportionality must be reassessed, and national public health law and policy setting out a graduated and proportionate approach to compulsory vaccination developed as a matter of priority.

Emma Cave, Professor, Durham Law School, Durham University, The Palatine Centre, Stockton Road, Durham DH1 3LE, UK. Email: emma.cave@durham.ac.uk

INTRODUCTION

The exercise of choice by competent adults is a cornerstone of medical law. Competent refusal of treatment must be honoured, even if irrational and even if it will lead to the patient's death. Vaccination is a form of preventive medicine. It carries burdens and risks and there is no guarantee of benefit. It may be that the patient will never come into contact with the virus or that the disease, if contracted, would be mild and uncomplicated. And yet, in this paper I argue that the endurance of voluntary vaccination in England and Wales is susceptible to attack.

What sets medical treatment and vaccination apart is the (at least in part) communitarian public health goals of the latter. Lawrence O Gostin, who is much cited in this paper, has led a series of initiatives to advance the right to health through public health law. Fidler and Gostin describe a policy revolution requiring globalised collective action to prepare for bio-threats such as pandemics.[1] Vaccination policy forms an integral part of national and global preparedness. Assuming sufficient supply, compulsory vaccination constitutes a viable policy option in the context of a severe vaccine-preventable pandemic outbreak.

Vaccination is pertinent not only to pandemic emergencies but also to the routine protection of public health. As most routine vaccination takes place in childhood,

* I am most grateful to the reviewers for their helpful comments.

1. DP Fidler and LO Gostin *Biosecurity in the Global Age: Biological Weapons, Public Health, and the Rule of Law* (Stanford, CA: Stanford Law and Politics, 2007) p 145.

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consideration is given to the role of parental rights and children's collective and individual best interests.[2] I argue that the current UK legal framework fails to set out a clear and proportionate approach. This not only poses a potential threat to public health but also raises the possibility of precipitous, disproportionate legal responses in the event of vaccine-preventable disease outbreak, that threaten human rights and civil liberties.

Prior to introducing the public health and security contexts in more detail, it is pertinent to explain the special nature of vaccination and consider some of the reasons for vaccine hesitancy.

Preventative vaccines stimulate production of antibodies to destroy a particular virus by introducing to a person free of infection a part of an (active or inactive) virus. In the UK, a voluntary routine vaccination schedule starts when a baby is 8 weeks old and continues through adulthood. Vaccine innovation results in the regular addition of new vaccines. In the UK, the meningococcal group B vaccine was added to babies' route immunisation schedule in 2015 and the Human Papillomavirus vaccine was introduced for girls aged 11–14 in 2008. Most vaccines are routinely given in the first 3 years of life, with boosters at adolescence. Adults over 65 are recommended to have an annual flu vaccine and a shingles vaccine at 70. Catch-up vaccination is possible for those who miss vaccinations in childhood. Vaccines for known contagions, such as certain flu strains, are stockpiled or subject to Advance Purchase Agreements and rolled out in times of epidemic.[3] As epidemics of *new* infectious diseases escalate, global efforts are made to expedite the development of effective and safe vaccines. The process is long: vaccines take on average 12–15 years to develop.[4]

Vaccination has been shown to be cost-effective, accessible and of considerable individual and collective benefit. The immunity it confers differs from one vaccine to another and is rarely absolute, though improved access to and uptake of polio and measles vaccination could eradicate the diseases, as occurred in relation to smallpox. Society also benefits from 'herd immunity': those who lack immunity (whether because they cannot or will not be vaccinated or because the disease is vaccine-resistant) are indirectly protected by the vaccination of a significant proportion of the population. The World Health Organization (WHO) estimates that vaccination averts between 2 and 3 million deaths each year[5] but, globally, 18.7 million infants are still missing basic vaccinations.[6]

Vaccination is associated with immediate low risk burdens (soon to be reduced somewhat if promises of needle-free delivery are made good[7]). Though subject to rigorous clinical trials and post-marketing surveillance, very rarely, longer-term side effects can flow from anticipated or unanticipated adverse reactions. Injury, when it

2. London Borough of Newham v KA (Mother) & Ors [2016] EWFC B11; *F v F* [2013] EWHC 2683 (Fam); *LCC v A*, *B*, *C and D* [2011] EWHC 4033; *Re B* (*Child*) [2003] EWCA Civ 1148; *Re C* (*Welfare of the Child*: *Immunisation*) [2003] 2 FLR 1095 (discussed below).

3. NHS England *Pandemic Influenza: NHS Guidance on the Current and Future Preparedness in Support of an Outbreak* (London: NHS England, 2014) Ref 02616.

4. Vaccines Europe 'How are vaccines developed?' available at http://www.vaccineseurope.eu/about-vaccines/key-facts-on-vaccines/how-are-vaccines-developed/ (accessed 12 June 2016).

5. WHO 'Immunisation', available at http://www.who.int/topics/immunization/en/ (accessed 12 June 2016).

6. WHO 'Isolated gains in immunization need to become the norm' (11 December 2015), available at http://www.who.int/immunization/en/ (accessed 12 June 2016).

7. See eg L McAllister et al 'Needle-free jet injection for administration of influenza vaccine: a randomised non-inferiority trial' (2014) 23(384) Lancet 674.

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occurs, can be devastating. The H1N1 flu vaccine used in the 2009–2010 pandemic has recently been linked to narcolepsy in children,[8] and debate continues over possible links between vaccinations and 'Gulf War Syndrome'.[9] Strict liability claims under the Consumer Protection Act 1987 will not succeed unless the vaccine can be shown to be defective. Fault-based civil compensation claims are rarely successful unless vaccines are administered regardless of contraindications, such as known allergies or immunodeficiency. This is because the risk to the individual of contracting the disease is likely to outweigh the risks associated with vaccination.[10] Because vaccination has societal rather than purely personal benefit, most Western countries operate some sort of no-fault compensation or statutory payment scheme.[11] In the UK, the Vaccine Damage Payment Scheme, introduced in the Vaccine Damage Payments Act 1979, established a statutory payment scheme for those seriously disabled[12] by relevant vaccines.[13] Today, eligible victims are entitled to a one-off tax-free payment of £120,000.[14] The 1979 Act is a compromise. Eligibility is limited and £120,000 is pitiful compensation when viewed alongside a civil payment for comparable injury.[15]

At present, Public Health England records relatively high vaccination rates.[16] Where vaccine uptake results in the immunity of a critical proportion of the population, unvaccinated individuals are indirectly protected ('herd immunity'). From a public health perspective at least, it is currently unnecessary to challenge the voluntary vaccination policy,[17] but the balance is precarious and dependent upon the paradigm in which it operates. Two such paradigms are relevant to this paper: national security

8. European Centre for Disease Prevention and Control *Narcolepsy in Association with Pandemic Influenza Vaccination (A Multi-Country European Epidemiological Investigation)* (Stockholm: ECDC, 2012).

9. M Hotopf et al 'Role of vaccinations as risk factors for ill health in veterans of the Gulf war: cross sectional study' (2000) 320 BMJ 1363; C Bates and J Parkinson 'Why hasn't the mystery of Gulf War Syndrome been solved?' BBC News Magazine (16 January 2016).

10. 'Loveday v Renton' *The Times* 31 March 1982. See S Pywell 'A critical review of the recent and impending changes to the law of statutory compensation for vaccine damage' (2000) 4 J Personal Injury L 246.

11. By 2011, Canada and Russia were the only G8 nations without national no-fault compensation programs: R Collier 'No-fault compensation program overdue, experts say' (2011) 183(5) Can Med Assoc J E263. And see C Looker and H Kelly 'No-fault compensation following adverse events attributed to vaccination: a review of international programmes' (2011) 89 Bull WHO 371.

12. Or injured by vaccination in pregnancy: Vaccine Damage Payments Act 1979, s 1(3) and the Vaccine Damage Payments Regulations SI 1979/432, reg 5A. Serious disablement is defined as 'disablement to the extent of 60% or more, assessed as for the purposes of s 103 of the Social Security Contributions and Benefits Act 1922 or s 103 of the Social Security Contributions and Benefits (Northern Ireland) Act 1992 (disablement gratuity and pension)'.

13. The list of relevant vaccines is regularly updated. Most recently, rotavirus and influenza (other than influenza caused by a pandemic influenza virus) were added by the Vaccine Damage Payments (Specified Disease) Order 2015, SI 2015/47.

14. Vaccine Damage Payments Act 1979 Statutory Sum Order, SI 2007/1931.

15. See M Brazier and E Cave *Medicine, Patients and the Law* (Manchester: Manchester University Press, 2016) 10.15; R Tindley 'A critical analysis of the vaccine damage payments scheme' (2008) 19(2) Eur Bus L Rev 321.

16. Public Health England (2015) 9(45) Infection Report (18 December 2015): eg MMR 92.1% for 2 year olds and 94.9% for 5 year olds, narrowly missing the WHO target of 95%.

17. See recommendations of Nuffield Council on Bioethics *Public Health: Ethical Issues* (London: Nuffield Council on Bioethics, 2007) para 4.32.

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and public health. Introducing them in reverse order, vaccination is a preventive measure designed to protect the health of the nation. A public health intervention can be both scientific and social. If the development, resourcing and provision of a 'routine' vaccine is not enough to counter the threat to the public health posed by the particular disease, then the voluntary nature of vaccination may come within the remit of the public health paradigm. In other words, recognition that the exercise of individual liberty is causing collective harm may justify necessary and proportionate restrictions on choice in the interests of the public health.

There are many reasons why individuals reject routine vaccination, only some of which are briefly considered here. Trust of pharmaceutical companies was seriously undermined when research by Dr Andrew Wakefield and colleagues alleged links between MMR vaccination and autism. The paper was later retracted,[18] but in the ensuing media storm many children missed out on, or only partially completed routine MMR vaccination.[19] A significant measles outbreak in Swansea in 2012–2013[20] led to increased efforts to increase routine vaccination.

There is a vast array of online anti-vaccination propaganda and, in some countries, accurate information can be difficult to obtain. In the USA, concern around vaccine safety has resulted in a fall in uptake of childhood vaccinations.[21] This is in part a result of 'omission bias', where the act of exposing a child to the risk of vaccination is perceived as being higher risk than failing to vaccinate, despite scientific evidence to the contrary.[22] Some people have religious reasons for refusing vaccination. Offit explores the use of faith to fight infectious disease. He charts outbreaks of vaccine-preventable disease including whooping cough in California, mumps in New York and measles in Ohio's Amish country.[23] Where significant numbers refuse vaccination, herd immunity is reduced and the voluntary nature of vaccination may become a public health concern.

Public health is increasingly dominated by perceived threats to global and national security. Since the Black Death in the Middle Ages and the 'Spanish flu' of 1918, infectious disease has been of international concern. More recently, as we shall see, globalisation has led to the securitisation of pandemics. HIV/AIDS; tuberculosis; escalating coronavirus (infectious respiratory virus) epidemics such as the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 and Middle East Respiratory Syndrome (MERS) outbreak in 2012; influenza viruses (such as H5N1 'avian flu' in 2003 and H1N1 'swine flu' in 2009); the 2014 Ebola pandemic and the 2016 Zika public health emergency put increased emphasis on the need for swift and coordinated global responses to outbreaks of infectious disease to avert economic, social and humanitarian crises. The development and deployment of vaccination can play a pivotal

18. 'Retracted – AJ Wakefield et al 'Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children' (2010) 275 Lancet 445.

19. NHS Website 'MMR catch-up campaign targets a million children' (25 April 2013), available at http://www.nhs.uk/news/2013/04April/Pages/New-MMR-catch-up-campaign-one-million-children-targeted.aspx (accessed 12 June 2016).

20. NHS Public Health Wales Measles Outbreak Data (July 2013), available at http://www.wales.nhs.uk/sitesplus/888/page/66389 (accessed 12 June 2016).

21. SP Calandrillo 'Vanishing vaccinations: why are so many Americans opting out of vaccinating their children?' (2004) 37(2) U Mich J L Reform 353.

22. See I Ritov and J Baron 'Reluctance to vaccinate: omission bias and ambiguity' (1990) 3 J Behav Decis Mak 263.

23. P Offit *Bad Faith: When Religious Belief Undermines Modern Medicine* (New York: Basic Books, 2015).

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role in combatting perceived threats to economic and social stability and thus to the nation's security. Vaccination formed a key role in the Department of Health's fight against the 2009 swine flu pandemic. Swine flu is highly contagious but usually mild.[24] Ebola, on the other hand is a severe, highly contagious and often fatal haemorrhagic fever. There was no vaccine to tackle Ebola in the 2014 outbreak, but in January 2016 a $5 million Ebola vaccine deal marked the first phase in the production of a global stockpile.[25] A future Ebola pandemic could elicit a very different (national and global) public health response.

The inevitability of future pandemics constitutes a threat to national security, requiring a suitable infrastructure with which to tackle future outbreaks. Deployment or development of vaccination has an integral strategic role. The infrastructure and its public acceptance affect the political boundaries between national security and public health and affect the resilience of rights to refuse vaccination. While I do not suggest that adults and children will be forced to undergo routine vaccination, an array of strategies exist whereby freedom of choice regarding vaccination might be limited. This paper seeks to describe and analyse the convergence of developments in children's rights and the securitisation of infection and to present an argument for enhanced regulation of public health measures. This is important for three primary reasons. First, it outlines the presence of, reasons for and likely proliferation of checks on autonomy regarding vaccination. Identifying trends and drawing attention to the underlying issues is an important precursor to setting policy priorities and developing relevant laws. Secondly, in the event of vaccine-preventable disease outbreak, greater understanding of the convergence of these factors will aid pragmatist communicative strategies and preparedness. Thirdly, understanding the potential legal responses to infectious disease outbreak might prevent panic responses that threaten civil liberties.

The next section explores a range of different measures used to increase vaccination rates in order to demonstrate global variation and the different political and cultural tolerances of vaccination drivers. It defines the ambits of 'compulsion' for the purposes of this paper and considers its perceived effects and validity. In subsequent sections I consider the case for compulsion (broadly defined) in security and public health paradigms, taking into consideration developments in children's rights.

1. COMPULSION

(a) Increasing vaccine uptake

In England and Wales, persuasion is currently the dominant driver of vaccination. Where advice and education is neutral, it serves to enhance autonomous decision making. More nuanced advice 'nudges' people toward vaccination.[26] A wealth of information is provided on NHS websites.[27] More proactive measures favour a

24. NHS Choices 'Swine flu (H1N1)', available at http://www.nhs.uk/conditions/pandemic-flu/Pages/Introduction.aspx (accessed 12 June 2016).

25. J Gallagher 'Ebola: $5 m vaccine deal announced' BBC News (20 January 2016).

26. See eg G Felsen, N Caetelo and P Reiner 'Decisional enhancement and autonomy: public attitudes toward overt and covert nudges' (2013) 8(3) Judgm Decis Mak 202.

27. See http://www.nhs.uk/conditions/vaccinations/Pages/childhood-vaccination-schedule.aspx (accessed 12 June 2016).

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communitarian approach and focus on changing behaviour. Free scheduled appointments for childhood vaccinations are communicated to parents and GPs are incentivised to improve uptake.[28] School-based vaccination programmes reduce the burden on parents and distance vaccination from medical procedure.[29] In Australia, additional incentives have been utilised. Since 1998, social security payments have been linked to vaccination status and the government has boosted payments to doctors to encourage enhanced reminder and record-keeping systems.[30] In 2014, however, 39,000 conscientious objectors and an additional 166,000 children at least 2 months overdue for their vaccinations[31] led to calls for more decisive action.[32] A 'No Jab No Play' campaign has since been launched to restrict childcare for unvaccinated children.[33]

Where the carrot fails, the stick might be used alone or in conjunction with persuasion. Laws requiring vaccination, whether backed by penalties or force and regardless of exemption criteria and enforcement, are referred to in this paper as 'mandated vaccination'. Across North America and Canada, parents are required to vaccinate children before they start school, though medical, conscientious and religious exemptions are frequently sanctioned. The USA has signed but not ratified the UN Convention on the Rights of the Child 1989 (CRC). Rather than interfere with parental control, emphasis is placed on measures that protect others from the implications of parental decisions: Parents are generally at liberty to opt out of vaccination, but not necessarily to expose other children to risk, at least in institutions under state control, such as schools and public workplaces. Some children cannot be vaccinated because they are allergic to a component of the vaccine or for other health reasons. Their protection can only be assured by the vaccination of those around them.[34] Following a multi-state measles outbreak of more than 100 cases emanating from a Disneyland resort,[35] California responded with the most stringent vaccination policy in the USA, proposing to eliminate personal and

28. C Price 'GPs to be paid £1.50 for each child invited under MMR catch-up campaign' Pulse (1 May 2013).

29. AB Middleman and JS Tung 'School-located immunization programs: do parental preferences predict behavior?' (2011) 29(19) Vaccine 3513.

30. Media Statement: S Ley MP '$26 m booster to immunise Australia' (19 April 2015), available at https://www.health.gov.au/internet/ministers/publishing.nsf/Content/B13A5C4233686A99CA257E2E0013E611/$File/SL044.pdf (accessed 12 June 2016).

31. Ibid.

32. T Abbott (Prime Minister) and S Morrison (Minister for Social Services) 'No jab – no play and no pay for child care, media release' (12 April 2015); S Morrison (Minister for Social Services) 'Government ends religious 'No Jab No Pay' of benefits exemption, media release' (19 April 2015).

33. News.cam.au 'Editorial: Time to stop keeping kids immune from jab' (9 May 2013); and see Victoria's subsequent Public Health and Wellbeing Amendment (No Jab: No Play) Act 2015, introduced 1 January 2016.

34. Such policies are fiercely opposed. See eg the Canadian case of *Clowes v Edmonton School District No. 7*, 1915 CarswellAlta 56 Alberta Supreme Court, where it was held that regulations issued under the Public Health Act, s 68 requiring that no pupil could be admitted to school without proof of vaccination, were ultra vires due to conflict with the Truancy Act requirement that all children attend school.

35. M Majumder et al 'Substandard vaccination compliance and the 2015 measles outbreak' (2015) JAMA Pediatrics (May 2015).

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religious belief exemptions for vaccines. Senate Bill 277 is scheduled to take effect in July 2016.[36]

In times of emergency, more draconian powers may be utilised. In the USA, the Model State Emergency Health Powers Act 2001[37] was emulated in many states to aid preparation for bioterrorism or outbreak of natural disease. It included mandated vaccination programmes backed by force. Historically, punishment for failure to vaccinate has also been utilised in England by way of fines and (on non-payment) imprisonment. At its height, the eighteenth century European smallpox epidemic had a death toll of nearly half a million people a year.[38] Wide uptake of vaccines followed Sir Edward Jenner's 1796 discovery that dairy maids who had had cowpox did not go on to develop smallpox. However, uptake fell dramatically amid safety concerns and doubts as to efficacy.[39] Private measures to enhance uptake, such as incorporating vaccination compliance as a term in tenancy agreements[40] and free provision to the poor, met with limited success. [41] In response, smallpox vaccination of infants was mandated in England and Wales in the Vaccination Act 1853, which required fathers to present their infants for vaccinations and generally to pay for them. Sanctions were strengthened in 1861, linking failure to vaccinate and neglect,[42] and again in the Vaccination Act 1871. Lord Herschell's 1896 Royal Commission[43] recommended a more moderate approach, which was reflected in the Vaccination Act 1898. The spread of infection was gradually controlled and following a global vaccination campaign smallpox was declared eradicated in 1980.

This snapshot of historical and international measures demonstrates a broad range of options for restricting vaccination choice. It also reveals issues around the nature of the restrictions, to which we now turn.

(b) Defining compulsion

There is a lack of consensus about the precise ambits of the term 'compulsion' in the context of vaccination policy. Take, for example, Lord Herschell's Royal Commission recommendations that sanctions be imposed on those who failed to present their children for smallpox vaccination without lawful excuse, in contravention of the Vaccination Act 1871. The Commission argued that the legal mandate did not constitute 'compulsion':

> When vaccination is spoken of as 'compulsory', it is only meant that, in case a child is not vaccinated as prescribed by law, a pecuniary penalty is imposed which may be followed by distress and imprisonment. The liability to this penalty no doubt in many

36. SB 277, Pan. Public health, approved June 2015; available at http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB277 (accessed 12 June 2016).
37. See LO Gostin et al 'The Model State Emergency Health Powers Act: planning for and response to bioterrorism and naturally occurring infectious diseases' (2002) 288(5) JAMA 622–628.
38. N Barquet and P Domingo 'Smallpox: the triumph over the most terrible of the ministers of death' (1997) 127(8) Ann Int Med 635.
39. See SL Kotar and JE Gessler *Smallpox: A History* (Jefferson, NC: McFarland, 2013).
40. R v Southwark Guardians' Vaccination Officers [1928] 1 KB 65 involving a petition to search the vaccinations register to assess compliance with the terms of the tenancy agreement.
41. JE Cooney 'Legal decisions affecting medical men and the public health' (1899) Med Ann 623.
42. See eg Allen v Worthy (1869-70) LR 5 QB 163.
43. Lord Herschell *Report of the Royal Commission Appointed to Inquire into the Subject of Vaccination* (London: HMSO, 1889–1897).

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> cases leads to vaccination where it would otherwise be neglected; but, whether the penalty is enforced once or repeatedly, it does not compel vaccination in all cases. If a parent is content to pay the penalty, his child remains unvaccinated … Vaccination could be made really compulsory only by taking the child from the parent and vaccinating it against his will, if he would not himself procure or consent to its vaccination.[44]

More recently, in the State of Victoria, Australia, legislators have denied the compulsory nature of the Public Health and Wellbeing Amendment (No Jab: No Play) Act 2015, which makes enrolment at early childhood services conditional upon vaccination status:

> The legislation does not mandate vaccinations, nor does it require the administration of vaccines without consent. Parents may continue to make a choice not to vaccinate their children. However, Governments have a responsibility to make decisions that balance the best possible community health outcomes with individual choices … [Increasing immunisation rates in the community] is a public health priority …[45]

Lamond distinguishes coercive laws imposing sanction from coercive institutions exercising physical force to ensure compliance. Only the latter, he claims, is irresistible.[46] Coggon disagrees: 'An agent is given a reason or reasons and is either compelled or not.'[47] Coggon gives the example of pressure to sign a contract. It is no less compulsion because the threat is verbal (such as a promise of damage to my car if I refuse to sign) rather than physical. If the threat or force does not produce the desired result, it is not compulsion. It is merely attempted compulsion.[48] The same is true of modern-day examples in the USA that allow parents to refrain from vaccination but then impose strict limits on the unvaccinated child's interaction with others in public places such as nursery, school, college and employment, and even medical practices and paediatric wards[49] – ostensibly to protect the safety of others.[50] The coercive effects on the will of agents can only be measured empirically. Coercion, mandate and even certain methods of persuasion can affect the voluntary nature of vaccination. From a legal perspective, compulsion is a forcible inducement or act of compelling, but enforcement can be variable and selective. From the perspective of the individual, however, compulsion is the state of being compelled. Whether or not the law operates to compel is an empirical matter. Contrary, then, to classical political theorists such as Aquinas, Hobbes, Kant and Locke, who emphasise the *method* of coercion, the focus for the purpose of this paper will be on the *effect* of the action. The labels applied to restrictions on vaccination choice might affect public perception, enhancing or reducing

44. Herschell, above n 43, para 510.
45. Victoria State Government *No Jab, No Play: Frequently Asked Questions* (Melbourne: Health and Human Services, 2015).
46. G Lamond 'The coerciveness of law' (2000) 20(1) Oxford J Legal Stud 39 at 41.
47. J Coggon *What Makes Health Public? A Critical Evaluation of Moral, Legal, and Political Claims in Public Health* (Cambridge, UK: Cambridge University Press, 2012) p 129.
48. Ibid.
49. DS Diekema 'Physician dismissal of families who refuse vaccination: an ethical assessment (2015) 43(3) J L Med Ethics 654; SL Block, 'The pediatrician's dilemma: refusing the refusers of infant vaccines' (2015) 43(3) J L Med Ethics 648.
50. See US National Vaccine Information Center State Law & Vaccine Requirements, available at http://www.nvic.org/vaccine-laws/state-vaccine-requirements.aspx (accessed 12 June 2016).

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acceptability in the public's eye. Where they might compel they are, for the purposes of this paper, considered potential forms of 'compulsion' in light of which implications for public health, civil liberties and human rights will be considered.

(c) The efficacy of compulsion

As Dan-Cohen attests, authority can result in compliance, loyalty and adherence, but so too it can 'provoke resentment and defiance'.[51] The use of penalties and punishment involve a threat of sanction for non-compliance which has potential to be counterproductive. One way in which it might fail to achieve its aims, argues Dan-Cohen, is by robbing voluntary commitment to the goals of vaccination of its normative force, thus impairing appeal to voluntary obedience. Dan-Cohen considers three theories on the relationship between normativity (the appeal to voluntary obedience) and coercion.[52] A reductive approach found in the works of Austin[53] links the normativity of law to the law's coerciveness. This theory was largely displaced by Hart's[54] additive theory of law backed by sanctions, which distinguishes between the normativity of law and its coerciveness as two separate and complementary drivers of compliance. Dan-Cohen's own, disjunctive theory separates norms and sanctions. The normativity and coerciveness of law can conflict; sanctions can detract from the normative force of an imperative. On this basis, coercive threats render the action non-optional. They do not simply offer another reason for action. The two reasons for action, normative and coercive, are mutually exclusive: 'By using coercive means authority opts for mere compliance, while removing the opportunity for voluntary obedience that is a necessary condition for its normative appeal.'[55] According to Dan-Cohen, sanctions designed to ensure compliance undermine the normative appeal of such claims even where the law in question is designed to capture only those few for whom the law was written.[56] In the context of vaccination compulsion, coercive policy could exacerbate anti-vaccination sentiment so that those who might under other circumstances have consented to vaccinate their children object to doing so in light of the state's anti-libertarian position. It seems clear that the normative and coercive forces can conflict, but are they mutually exclusive?

Coggon questions whether everyone within a legal system is threatened by a generally expressed threat.[57] Qualification of the threat, for example limiting sanctions to those who do not have a lawful justification for failing to seek vaccination, will mean that those who fall within the qualification are not incorporated within the threat. Similarly, a threat that addresses a small segment of the population will not necessarily operate on the minds of the rest of the population who undertake the act for normative reasons.[58]

The 1896 Herschell Commission reached a similar conclusion. Following the Vaccination Act 1871, enforcement was variable and often reluctant. One third of children born in 1897 were not vaccinated and 'one-fourth of the Guardians of the Poor disobey the orders of the Local Government Board that they should prosecute for disobedience of the law'.[59] Consequently, it was difficult to establish efficacy of the

51. M Dan-Cohen 'In defense of defiance' (1994) 23 Phil & Pub Aff 24.
52. Ibid, at 25–26.
53. J Austin *The Province of Jurisprudence Determined* (New York: Noonday Press, 1954).
54. HLA Hart *The Concept of Law* (Oxford: Clarendon Press, 1961).
55. Dan-Cohen, above n 51, at 31.
56. Ibid, at 49.
57. Coggon, above n 47, p 133.
58. Ibid.
59. Cooney, above n 41.

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vaccine, especially as a modern system of registration of deaths was only introduced in 1837. The Vaccination Act 1898 responded to repeated outbreaks and calls for a more moderate approach. The severity of the restrictions on personal liberty had become counterproductive. Mandated vaccination would continue, but without the issues that 'render it burdensome'.[60] The 1898 Act reduced penalties for disobedience and removed altogether penalties where parents believed that vaccination would be inimical to their child's health. It attempted to find a course that tackled the threat posed by smallpox with the least possible restrictions on individual liberty.

The Commission relied upon the normative appeal of vaccination laws to enhance uptake of the smallpox vaccine in the majority of cases.[61] Collins and Alanson Picton set out a powerful dissent that rested in part on the refutation of the separation between normative and coercive reasons for action. Arguing that enforcement of vaccination is 'neither possible, nor expedient, nor just',[62] the dissenters recommended the repeal of the compulsory clauses of the Vaccination Acts[63] and also the avoidance of 'indirect compulsion' by way of threatened exclusion from branches of public service.[64]

It is clear from Lord Herschell's report that coercive measures can have a negative effect on voluntary uptake of vaccination. I would argue, however, that it is not the case that compulsion necessarily robs a vaccination policy of normative force. Compulsion must be justified as necessary and proportionate, in which case it has a legitimate democratic role. Viewed from a relational perspective in which the individual is part of a family and society, compulsion need not necessarily be viewed as a negative concept. What is necessary and proportionate is dependent not only on the scientific appreciation of risk in relation to outbreak of disease or falling vaccination rates, but also on a range of other contextual, social and political factors including the health infrastructure and availability of compensation should vaccination result in injury.

The next sections explore the role of different forms of (potential) compulsion according to the paradigmatic context. As we shall see, the boundaries are blurred and susceptible to political influence. The securitisation of infection has implications that extend beyond the outbreak of pandemic.

2. NATIONAL SECURITY

A paradigm shift has occurred in national security.[65] Bio-threats, such as antimicrobial resistance, bio-terrorism and infection, now sit alongside territorial threats as potential

60. The new law would not compel 'those who are honestly opposed to the practice to submit their children to vaccination, and, at the same time, leave the law to operate, as at present, to prevent children remaining unvaccinated owing to the neglect or indifference of the parent'. Ibid, at 524.

61. Herschell, above n 43, para 510.

62. Dissent of Collins and Alanson Picton *Report of the Royal Commission Appointed to Inquire into the Subject of Vaccination* (London: HMSO, 1889–1897) para 296. And see para 300: 'We believe the methods of isolation of the infected, disinfection, and the observance of strict cleanliness are both more successful and more legitimate methods for the State to encourage. They have the advantage of applying the preventive only where it is required: and they do not necessitate an operation upon the person of every health individual.'

63. Ibid, para 301.

64. Ibid, para 302.

65. GH Brundtland 'Global health and international security' (2003) 9 Global Gov 417; EV Bonventre, KH Hicks and SM Okuntani *US National Security and Global Health: An Analysis of Global Health Engagement by the US* (Washington, DC: Center for Strategic and International Studies, Department of Defence, 2009).

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causes of mass injury and death and of political and economic instability. Many countries now classify infection as a potential threat to national security.[66] Infection (which can spread by direct or indirect contact; by skin, air, blood or droplets) has long been a leading cause of global death. What elevates its destabilising potential and renders it a national security issue is the ease with which it now spreads in a globalised, interconnected world. In the event of national or regional outbreak, preparedness – including vaccination where it is available – is all-important.

Public participation in planning is integral to success.[67] Appraisal of risk, necessity and the proportionality of proposed responses is complex and has potential to result in considerable conflict. Global responses are hampered by gaps in the availability and quality of healthcare; differing perceptions of risk; inadequate surveillance, compliance and communication; and by insufficient and inconsistent public health laws. My focus is on the latter. This section will demonstrate the necessity for coordinated public health law structures, including provision regarding vaccination in an emergency, and will go on to assess the relevance of this infrastructure to routine vaccination policy.

(a) Emergency

The securitisation paradigm is in fact a series of related issues incorporating security, emergency and preparedness models. It is not always clear when an outbreak becomes an epidemic (widespread); an epidemic becomes a pandemic (worldwide spread[68]); a pandemic becomes an emergency; or an emergency threatens security. Buzan et al's 'Copenhagen securitisation model' identifies different phases of securitisation, including the identification and acceptance of a threat, emergency reallocation of resources and when the threat is passed, de-securitisation.[69] The stages may play out differently in military, economic, environmental, societal and political sectors, and national responses are dependent on 'domestic political agendas, economic aspirations, social and religious norms as well as international relations between states'.[70] A pandemic threat may constitute an emergency before a single national case is detected. An escalating epidemic can lead governments to declare emergencies at different times depending on perceived risk and this can hamper an effective global response. Much reliance is placed on international organisations such as the WHO to determine the state of emergency and thus stimulate coordinated action.[71] The WHO recently

66. HM Government *National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom* Cm 9161 (London, 2015) paras 3.16–3.17; *US National Security Strategy* (Washington, DC: The White House, 2015) p 4.

67. See eg ML Flear ''Supra-stewardship': a tool for citizen participation in European Union pandemic preparedness planning' (2011) 62(5) NI Legal Q 677.

68. WHO 'What is a pandemic?' (24 February 2010), available at http://www.who.int/csr/disease/swineflu/frequently_asked_questions/pandemic/en/ (accessed 12 June 2016).

69. B Buzan, O Waever and J de Wilde *Security: A New Framework for Analysis* (London: Lynne Reinner, 1998).

70. C Yuk-Ping and N Thomas 'How is health a security issue? Politics, responses and issues' (2010) 25 Health Pol'y & Planning 447 at 447.

71. For criticism of the UK's over-reliance on the WHO, see House of Commons International Development Committee Ebola: Responses to a Public Health Emergency Second Report of Session 2015–16, HC 338, January 2016, p 22.

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declared international public health emergencies in 2014 (Ebola)[72] and 2016 (Zika).[73] The delayed response to Ebola has been much criticised.[74] Gostin and colleagues lament the failure of the WHO to 'live up to its exalted expectations of the postwar health and human rights movement' and urge it to exercise greater normative authority.[75]

Once it is agreed that a state of emergency exists and the threat to national security is real, a coordinated response relies (amongst other things) on aligned public health laws. In the USA, the Center for Law and Public's Health Model State Emergency Health Powers Act 2001[76] attempted to provide a public health law infrastructure to cope with public health emergencies (including, at s 603, an infrastructure for mandated vaccination), but even within North America, acceptance of this infrastructure was variable.[77] The model Act has been criticised for its broad scope and potential to breach civil liberties.[78] In 2005, a UN resolution[79] resulted in the WHO's International Health Regulations 2005 (IHR):

> … to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.[80]

Rendered necessary by the increase in international travel and trade, the Regulations are (from 2007) a binding instrument of international law signed by 194 countries, including all WHO Member States. They cover any 'illness or medical condition, irrespective of origin or source, that presents or could present significant harm to humans'.[81] The Regulations define a 'public health emergency of international concern' as

72. WHO Statement 'Statement on the 1st meeting of the IHR Emergency Committee on the 2014 Ebola outbreak in West Africa' (8 August 2014), available at http://www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/ (accessed 12 June 2016).
73. WHO Statement 'Statement on the 1st meeting of the IHR 2005 Emergency Committee on Zika virus and observed increase in neurological disorders and neonatal malformations' (8 April 2016), available at http://www.who.int/mediacentre/news/statements/2016/1st-emergency-committee-zika/en/ (accessed 12 June 2016).
74. S Moon et al 'Will Ebola change the game? Ten essential reforms before the next pandemic. The report of the Harvard–LSHTM Independent Panel on the Global Response to Ebola' (2015) 386(10009) Lancet 2204.
75. LO Gostin, D Sridhar and D Hougendobler 'The normative authority of the World Health Organisation' (2015) 129(7) Pub Health 854 at 854.
76. See Gostin et al, above n 37.
77. See The Centre for Law and the Public's Health 'The Model State Emergency Health Powers Act' (15 July 2006), available at http://www.publichealthlaw.net/ModelLaws/MSEHPA.php (accessed 12 June 2016), which reported that the Act was introduced in whole or part in 44 states.
78. See eg GJ Annas 'Bioterrorism, public health, and civil liberties' (2002) 346(17) New Eng J Med 1337.
79. UN Resolution 59/27 *Enhancing Capacity-Building in Global Public Health Resolution* (New York: UN General Assembly, 2005).
80. WHO *International Health Regulations* (Geneva: WHO, 2005, updated 2008), available at http://apps.who.int/iris/bitstream/10665/43883/1/9789241580410_eng.pdf (accessed 12 June 2016).
81. Ibid.

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> … an extraordinary event which is determined, as provided in these Regulations: (i) to constitute a public health risk to other States through the international spread of disease and (ii) to potentially require a coordinated international response.[82]

They set out measures to enhance public health response capacities, international cooperation and to control the global transmission of disease. This includes measures to control transmission in a pandemic, such as special public health measures for travellers, by which states may require examination, treatment *and vaccination* of travellers as a condition of entry or exit. While Art 23(4) requires informed consent of the individual or parent, exceptions are set out in Art 32(2), 'to the extent necessary to control a risk'. The WHO can issue temporary recommendations – non-binding recommendations aimed at reducing international spread of disease in public health emergencies.[83] This can include recommendations to 'require vaccination or other prophylaxis'.[84]

The first objective of national security in England and Wales is to 'protect our people'.[85] The Department of Health is responsible for coordinating a response to incidents that affect health and patient care.[86] NHS England can take command of all NHS resources in an emergency.[87] Immunisation strategy in England and Wales is guided by the Joint Committee on Vaccination and Immunisation (JCVI).[88] Since the inception of the Health Protection (Vaccination) Regulations 2009,[89] the Health Secretary has a duty, as far as practicable, to implement the JCVI's recommendations. A Code of Practice sets out a schematic for evaluating new immunisation programmes which can be expedited in the event of pandemic or emergent epidemic.[90] A UK Bio-Security Strategy is promised in 2016 to strengthen international partnerships and form a new Rapid Response Team[91] and the Government has established a £20 million UK Vaccines Network.[92]

Engagement of the security paradigm involves an array of stakeholder, from international bodies such as the WHO, to healthcare professionals, patients and recipients of preventive health measures. Each has different perceptions of risk associated with pandemic and of the responses required. The risk to a nation posed by an escalating epidemic in another country remains difficult to predict. Statistical modelling, however sophisticated, is reliant upon accurate data on likely transmission and effectiveness of (often developing) treatments and vaccines.[93] Consider experiences of two global outbreaks of H1N1 influenza. In 1918–1920, the 'Spanish flu' outbreak resulted in 500 million people being

82. Ibid, para 9. And see Art 12 on 'determination of a public health emergency of international concern'.
83. Ibid, and see Arts 15, 48 and 49.
84. Ibid, Art 18(1).
85. HM Government, above n 66, para 4.1.
86. Civil Contingencies Act 2004. And see NHS England *Emergency Preparedness, Resilience and Response Framework* (Leeds: NHS England, 2015).
87. NHS England, ibid, para 14.3.
88. Established by the NHS (Standing Advisory Committees) Order 1981, SI 1981/597.
89. SI 2009/38.
90. JCVI *Code of Practice* (2013), paras 61 and 66.
91. Ibid, para 5.140.
92. HM Government, above n 66, para 5.138.
93. MJ Keeling and L Danon 'Mathematical modelling of infectious diseases' (2009) 92(1) Br Med Bull 33.

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infected and 50 million deaths.[94] The 2009–2010 outbreak on the other hand, resulted in 457 UK deaths by March 2010,[95] but was ultimately milder than predicted, with significant economic consequences:[96] the UK spent £1.2 billion on 29 million vaccines, antivirals and antibiotics, of which 20 million doses of vaccine were not used.[97]

(b) Civil liberties

A public health emergency can raise difficult questions about the allocation of resources and prioritisation of different groups for treatment and preventive strategies, and can necessitate the curtailment of civil liberties in order to protect the public health. In Europe, citizens are protected from over-zealous public health-based restrictions on liberty by Art 5(1) of the European Convention on Human Rights (ECHR): 'Everyone has the right to liberty and security of person. No one shall be deprived of his liberty save in the following cases and in accordance with a procedure prescribed by law.' It lays down a positive obligation on the state to protect against unlawful interference[98] as well as negative obligations to refrain from certain actions. But Art 5 is a limited right. Article 5(1)(e) makes an exception for 'the lawful detention of persons for the prevention of the spreading of infectious diseases …'. This is applicable when those persons are a danger to themselves or to the public.[99] The implications of Art 5 in the case of mandated vaccination in a security emergency have not been tested, but the European Court of Human Rights held that public health-centred restrictions on the liberty of a 56-year-old man breached Art 5 in *Enhorn v Sweden*.[100] When Enhorn infected a 19-year-old man with HIV, he was required under the (Swedish) Infectious Diseases Act 1988 to inform sexual partners and healthcare staff of his HIV status and to use a condom. When he persistently refused to comply, he was detained for nearly 18 months' duration. The Court held that any deprivation of liberty must be in accordance with national law which must itself be proportionate. Article 5(1)(e) will not justify the restriction on the individual's liberty if either the danger ceases to threaten public health or safety, or viable alternatives to detention exist.

However, given the definitional quandaries around terms such as 'pandemic', 'emergency' and 'threat to national security', and the very real problems in predicting the

94. JK Taubenberger and DM Morens '1918 Influenza: the mother of all pandemics' (2006) 12(1) Emerging Infectious Diseases (Centers for Disease Control and Prevention) 15.

95. Cabinet Office *Independent Review into the Response to the 2009 Swine Flu Pandemic* (2010), chaired by Dame D Hine, s iv, available at https://www.gov.uk/government/publications/independent-review-into-the-response-to-the-2009-swine-flu-pandemic (accessed 12 June 2016).

96. RD Smith et al 'The economy-wide impact of pandemic influenza on the UK: a computable general equilibrium modelling experiment' (2009) 339 BMJ b4571–b4571.

97. Pandemic Influenza Preparedness Team *Factors Associated with Uptake of Vaccination Against Pandemic Influenza* (London: Department of Health, 2011) p 8. And see Cabinet Office Independent Review into the Response to the 2009 Swine Flu Pandemic (2010), chaired by Dame D Hine, available at https://www.gov.uk/government/publications/independent-review-into-the-response-to-the-2009-swine-flu-pandemic (accessed 12 June 2016).

98. *El-Masri v the former Yugoslav Republic of Macedonia* (Application no 39630/09), ECtHR (13 December 2012) § 239.

99. *Guzzardi v Italy* (Application no 7367/76), (1980) ECHR 5, § 98.

100. (2005) ECHR 56529/00. See R Martin 'The exercise of public health powers in cases of infectious disease: human rights implications' (2006) 14(1) Med L Rev 132.

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course and severity of outbreaks of infectious disease, there is a legitimate concern that the WHO's infrastructure or national preparedness strategies might be utilised inappropriately to restrict individual liberties by, for example, mandating vaccination against certain diseases. The emergency paradigm might justify a blurring of the separation of powers between executive, legislature and judiciary. The powers of the legislature and the judiciary (through judicial review), can be curtailed or eliminated to allow short-term crisis management by the executive. In the context of counter-terrorism law and policy, de Londras and Davis demonstrate a '"security bias" resulting in the unnecessary introduction of repressive laws and policies that tend to impact significantly on individual right protections'.[101] They emphasise the importance of cross-institutional involvement to check the powers of the executive. In the context of infectious disease, there is also a risk that long-term battles against infectious disease can be rebranded as national security threats in the event that vaccination rates fall. In the context of the economic crisis, Greene has emphasised the potential misuse of the label 'emergency' to justify executive controls in long-term crises.[102]

Public health law preparedness plans do not always make clear the nature and extent of executive powers. For example, the Czech Republic vaccination policy operates on the basis of decree rather than law in order to facilitate flexibility in the event of an emergency such as a pandemic.[103] The WHO's IHR 2005 form a broad and (necessarily) vague infrastructure. In the crux of a public health emergency:

> … social perceptions of infectious diseases can lead to unethical infringement of civil liberties and stigmatization of the ill, those that treat them and those who otherwise come to be associated with them.[104]

The Presidential Commission for the Study of Bioethical Issues Ethics and Ebola reports that, in 2014, a college in Texas stopped admitting students from countries affected by Ebola, and healthcare workers who had treated Ebola victims were socially excluded and subjected to violence; a travel and immigration ban on HIV positive foreign nationals was only lifted in 2010; and Asians across the world faced discrimination during the SARS epidemic, which started in 2002.[105] There is potential for discrimination to extend to vaccination policy where infection is vaccine-preventable. Historically, there is evidence that mandated vaccination policies can lead by analogy to further restrictions on civil liberties. Consider the much-maligned US Supreme Court decision of *Buck v Bell*, which sanctioned sterilisation of a mildly disabled woman, Carrie Buck:

101. F de Londras and F Davis 'Controlling the executive in times of terrorism: competing perspectives on effective oversight mechanisms' (2010) 30 Oxford J Legal Stud 19 at 21.
102. A Greene 'Questioning executive supremacy in an economic state of emergency' (2015) 35 Legal Stud 594.
103. 'Court: Health Ministry can continue with mandatory child vaccination' *Prague Daily Monitor* 24 February 2015, available at http://www.praguemonitor.com/2015/02/24/court-health-ministry-free-order-child-vaccination (accessed 12 June 2016).
104. Presidential Commission for the Study of Bioethical Issues Ethics and Ebola Public Health Planning and Response (Washington, DC, February 2015) p 26.
105. Ibid, pp 27–28.

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> It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover cutting the Fallopian tubes … Three generations of imbeciles are enough.[106]

Future pandemics are inevitable but the potential for emergency responses to exceed the boundaries of proportionality is clear. The answer lies in preparedness, which should incorporate public health law structures to facilitate a graduated response including, where it is deemed necessary, use of persuasion and compulsion. Since pandemics were recognised as a national security risk in the early 1990s, international communication and global and national preparedness have come far, but there is clearly more to do both in formulating a fuller national public health law preparedness strategy and in ensuring its proper control.[107] The World Economic Forum's Global Risks Report 2015 refers to the

> … potentially devastating impact of the rapid and massive spread of infectious diseases, which reflects the need for a higher level of preparedness for major pandemics at both the country and international levels to address this important risk.[108]

The UN recently warned:

> As the [Ebola] outbreak demonstrated, effective future responses will require country and global preparedness to avoid the reversal of gains in many aspects of development.[109]

Global disparity is problematic. Fidler and Gostin assert that a policy revolution has taken place[110]; national preparedness for pandemics (and other bio-threats) in a globalised age necessitates interaction of a vast array of community, legal and public health structures. Gostin argues that the response to global health hazards extends beyond the scope of healthcare and beyond the control of separate nations. Globalised collective action is required.[111] The UK government has acknowledged that 'No single nation can act alone on such transnational threats.'[112] Surveillance, infrastructure and vaccination might prevent local outbreak, but multilateral public health cooperation is increasingly influential on national vaccination policies and disaster preparedness.

This section has made clear that compulsory vaccination is a potential response to national and international health emergencies, particularly when they are perceived to

106. 274 US 200 (1927), p 207 per Holmes J.
107. R Martin et al 'Pandemic influenza control in Europe and constraints resulting from incoherent public health laws' (2010) 10 BMC Pub Health 532.
108. World Economic Forum *Global Risks Report 2015* (Geneva: WEF, 10th edn, 2015) para 2.3; available at http://www.weforum.org/reports/global-risks-report-2015 (accessed 12 June 2016).
109. UN *The Millennium Development Goals Report 2015* (New York: UN, 2015) p 51; available at http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf (accessed 12 June 2016).
110. Fidler and Gostin, above n 1, p 145.
111. LO Gostin *Global Health Law* (Cambridge, MA: Harvard University Press, 2014) ch 2.
112. HM Government, above n 66, para 3.17.

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threaten national security. An Ebola vaccine is currently under development. Ebola is highly virulent and has a fatality rate of around 50%. Risk of outbreak in the UK could potentially lead to degrees of compulsion if voluntary vaccination proved insufficient to protect the public health.

The potential for global inconsistencies in vaccination policies to hamper a unified pandemic response mean that the very risk of future epidemics and pandemics necessitates flexibility in the boundaries between security and public health paradigms. It is to the latter that I now turn, to show that the formulation of a clearer public health law structure to facilitate graduated compulsion is necessary not only in the context of securitisation of infection but also to tackle national and local outbreaks that are deemed to warrant public health intervention.

3. PUBLIC HEALTH

Public health law governs the powers and duties of the state to constrain the interests of individuals in order to promote the best possible health of the nation. Dan-Cohen argues that

> Authority usually comes clothed in coercion. Although it is of the essence of authority to appeal to our voluntary obedience, it is also characteristic of all important authorities, most prominently the state, to use coercive means to back up this appeal and to secure compliance.[113]

The legal response to the threat to the public health of vaccine-preventable infection encompasses laws, policies and conventions. Its legitimacy is not focused solely on positivist laws, but on the political legitimacy of autonomy constraints as a response to the perceived threat posed by the infection or disease. As such, 'public health' can operate as a political device,[114] framing an issue as a pragmatic problem that counters certain objections based on human rights and civil liberties. In relation to compulsory vaccination, the public health response outside the national security paradigm is reliant on limited public health powers and the criminal law. This section questions the adequacy of the current public health law framework in England and Wales. If we accept, as I argue we must, that individuals have a moral responsibility to prevent harm to others by the voluntary infliction of disease, then there is an argument that the criminal law might be extended to impose penalties on those who cause vaccine-preventable harm to others. I would suggest that such an approach would be heavy-handed. The strengthening of public health measures would be a less restrictive, more appropriate and more effective means of tackling the risks to the public health posed by the collective vaccination response in a public health crisis that falls short of a national security threat.

(a) Criminal or public health law?

Article 25 of the 1948 Universal Declaration of Human Rights requires states to provide a standard of living adequate for health and well-being. The right extends beyond the provision of healthcare to also cover preventive medicine and control of diseases. In

113. Dan-Cohen, above n 51, at 24.
114. See J Coggon above n 47, p 45.

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common with many states, England and Wales have relevant statutory powers to protect public health, including powers of compulsion. A suite of Health Protection Regulations followed the Public Health (Control of Disease) Act 1984.[115] The 'all-hazards approach' of the legislation covers both infection and contamination. The Regulations include a list of notifiable diseases[116] and of local authority powers that include, for example, provisions to keep infected children away from school.[117] Where a threat to human health could present significant harm, a local authority can apply for a Pt 2A Order under the 1984 Act.[118] A Pt 2A Order can require a person to undergo medical examination, be kept in isolation, be decontaminated and subject to restrictions. It cannot require a person to undergo treatment or vaccination.

There is, however, potentially an alternative means of penalising those who cause others harm through the rejection of vaccination and subsequent contraction and spread of disease. Brazier and Harris argued in 1999 that the criminal enforcement of obligations not to cause harm by voluntarily transmitting disease is potentially justifiable in principle:

> Is there any reason to treat disease differently from violence? A slap affronts dignity. A blow may bruise or even break a bone. The hurt will mend. Communicable diseases, to a greater or lesser extent, can kill and inflict irreversible damage to health … The interests of others are prejudicially affected by disease to a greater extent than is the case with much of the overt violence which is the everyday business of the criminal law. Nor should the threat to society as a whole posed by disease be lightly discounted. The highly contagious diseases threaten numbers that even the most notorious serial killer could not dream of.[119]

While knowingly exposing others to infectious disease may not be intentional or deliberate, its voluntary nature connotes responsibility that might in turn justify a legal response to protect the rights and health of others. Though the Offences Against the Person Act 1861 was originally intended to deal with crimes of violence, it was recognised in the 2004 case of *R v Dica* that infection can constitute harm and thus constitute an offence under ss 18 and 20 of the Act.[120] To date, criminalisation has been restricted to reckless (foreseen) transmission of serious sexually transmitted disease such as HIV. However in *R v Marangwanda*,[121] the infection of two girls with gonorrhoea by casual (non-sexual) touching constituted grievous bodily harm. As sexual contact is not a requirement for prosecution, it is difficult to see why the offence

115. As amended by the Health and Social Care Act 2008.
116. Health Protection (Notification) Regulations 2010, SI 2010/659, Sch 1.
117. Health Protection (Local Authority Powers) Regulations 2010, SI 2010/657, reg 2.
118. Health Protection (Part 2A Orders) Regulations 2010, SI 2010/658. Public Health (Control of Disease) Act 1984 ss 37, 38. See Department of Health *Health Protection Legislation (England) Guidance 2010* (London: Department of Health, 2010) p 47. See also Public Health England Health Protection Regulations 2010 Toolkit (2011, revised 2015), available at http://www.cieh.org/policy/health-protection-regulations-toolkit.html (accessed 12 June 2016).
119. M Brazier and J Harris 'Public health and private lives' (1999) 4(2) Med L Rev 171 at 177.
120. *R v Dica* [2004] EWCA Crim 1103. See criticisms in M Phillips and A Sukthankar 'Imprisonment for non-intentional transmission of HIV: can it be supported using established principles for justifying criminal sentencing?' (2013) 89 Sexually Transmitted Infections 276. And see C Stanton 'Criminalising contagion' (2014) 40 J Med Ethics 792.
121. [2009] EWCA Crim 60.

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should be limited to diseases that can be transmitted sexually. Though GBH is limited to the transmission of disease where the effect is 'serious enough',[122] the offence has been applied in relation to herpes,[123] and might equally apply to other potentially serious vaccine-preventable diseases such as certain strains of flu, regardless of the actual ramifications of disease transmission.

There have been several attempts to reform the Offences Against the Person Act, including a draft Bill in 1998.[124] Chapter 6 of a 2015 Law Commission report[125] deals with the criminalisation of disease transmission. The Commission recommended leaving the law on reckless transmission of disease within the general offence of causing injury or harm. Alternatives such as creating a specific offence of recklessly transmitting disease or particular diseases; or limiting criminalisation to intentional transmission were rejected, at least for the present. The Law Commission recommended a specific review of these issues in due course.

Extension of criminal laws to cover the exposure of others to the *danger* of infection has been countenanced in other countries.[126] It is a controversial use of the criminal law[127] that has potential to lead to discrimination of at-risk groups. Nonetheless, acceptance of moral responsibility for our voluntary acts, rather than just those things we desire, might ostensibly justify the imposition of some degree of legal responsibility. Brazier and Harris argue:

> If the … law is to play an effective role in the control of disease, the law should seek to punish an offender's fundamental irresponsibility rather than focus exclusively on the outcome of such irresponsibility. Society's interest is in deterring the infected and infectious from creating unjustifiable risks to others.[128]

Glover-Thomas and Holm argue that a vaccination programme is a public good that is reliant on both availability and uptake. They argue that as long as some people choose vaccination in order to reduce community risk (rather than purely for personal benefit), this creates a reciprocal duty amongst others. This duty involves small risk and burdens, but the financial and health benefits to the state are considerable: 'For those who choose to participate in the system and accept its benefits, it is contended that there is an obligation to participate in recommended vaccinations.'[129] A related argument is set out in the NHS Constitution,

122. Law Commission Reform of Offences Against the Person, Law Com 361 (November 2015) para 6.8.
123. *R v Golding* [2014] EWCA Crim 889.
124. Home Office *Violence – Reforming the Offences Against the Person Act 1861* (Consultation Paper, 1998).
125. Law Commission, above n 122.
126. Ibid, para 6.5.
127. See L Gostin 'The politics of AIDS: compulsory state powers, public health and civil liberties' (1989) 49 Ohio St L J 1017 at 1051. Note that the Crown Prosecution Service *Intentional or Reckless Sexual Transmission of Infection Guidance* (London: CPS, 2012) advises: 'Those who choose not to be tested will not necessarily avoid prosecution for the reckless transmission of a sexually transmissible infection if all the circumstances point to the fact that they knew that they were infected.'
128. Brazier and Harris, above n 119, at 182.
129. N Glover-Thomas and 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) p 35.

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which lists vaccination as a public responsibility,[130] and more general governmental focus on the 'social contract' between the public and the NHS, urging people to take responsibility for their own health.[131]

In this section, I have argued that there is moral responsibility to prevent harm to others by the voluntary infliction of disease and that legal mechanisms exist by which choice restriction might be brought about.[132] Legal mandate could take a variety of forms and I have suggested that it might in theory include criminal law measures. Calling for an approach that balances threats to liberty and health, Brazier and Harris warned in 1996 that 'If the will is present, the means can be found to punish those who spread disease.'[133] Should vaccination levels fall or pandemic threaten our shores, there is a clear potential for greater restrictions on choice. In a measles outbreak in 2013, a YouGov poll revealed that the majority supported 'making it legally compulsory for parents to have their children vaccinated with the MMR injection':[134] 55% of Britons were in favour, rising to 62% in the Midlands and Wales, where the outbreak was most severe. Articulation of legal and policy public health mechanisms would facilitate a proportionate response in the event of both vaccine-preventable global pandemics and more localised outbreaks of infection. This would reduce the risk of overreaction such as might occur if criminal law measures were utilised to punish disease transmission.

4. PROTECTING CHILDREN'S BEST INTERESTS

So far, the paper has focused on arguments that levels of compulsory vaccination are justified to protect public health across both security and public health paradigms. Given that both routine vaccination and pandemic vaccination policies often prioritise childhood vaccination, this section considers the impact of arguments based on parental autonomy rights and children's welfare rights.

The right to the highest attainable standard of health set out in Art 25 of the Universal Declaration of Human Rights is not emulated in the ECHR. For children, the effect of this omission is accentuated by the Convention's negative obligation in Art 8 to protect the freedom of parents to make certain decisions about their children. The doctor patient relationship is governed by a legal commitment to autonomy and informed decision making.[135] Children's rights, however, cannot be grounded in autonomy because not all children are capable of autonomous decision making. As we shall see, prioritisation

130. Department of Health *The NHS Constitution* (London: DH, 2015): '3b Patients and the Public: Your Responsibilities, 'Please participate in important public health programmes such as vaccination.'

131. Department of Health News 'New social contract between the public, health and care services' (15 July 2015), available at https://www.gov.uk/government/news/new-social-contract-between-the-public-health-and-care-services (accessed 12 June 2016).

132. For a fuller account of the criminalisation of disease transmission (from multidisciplinary and international perspectives), see C Stanton and H Quirk (eds) *Criminalising Contagion: Legal and Ethical Challenges of Disease Transmission and the Criminal Law* (Cambridge, UK: Cambridge University Press, 2016).

133. Brazier and Harris, above n 119, p 183.

134. W Jordan 'Majority want compulsory vaccinations' (YouGov, 2013), available at https://yougov.co.uk/news/2013/04/11/majority-support-compulsory-vaccinations/ (accessed 12 June 2016).

135. Montgomery v Lanarkshire Health Board [2015] UKSC 11, at [108] per Lady Hale; at [80] per Lord Kerr and Lord Reed.

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of the best interests of the child in the CRC might be utilised to limit parental rights to refuse to vaccinate children if it can be shown to be necessary to protect their best interests.

(a) Parental rights

The Children Act 1989 introduced the concept of parental responsibility, which it defined as 'all the rights, duties, powers, responsibilities and authority which by law a parent of a child has in relation to the child and his property'.[136] Parents have powers to make decisions about children in their care, including the right to consent to and refuse medical treatment and preventive care on the child's behalf. There are a number of limitations on these powers. First, doctors are able to challenge parental decisions where they are perceived to conflict with the child's best interests. Where the matter cannot be resolved, a court will make a best interests determination.[137] Secondly, the parental duty to act in the child's best interests is controlled to the extent that omissions constitute criminal neglect,[138] manslaughter[139] or necessitate the child to be taken into care.[140] But in the face of familial unity, the courts currently have little latitude to interfere with a parent's decision to refuse vaccination. Consider the words of Baker J in the recent case of six-year-old Ashya King, whose parents removed him from hospital and the UK to find alternative treatment:

> It is a fundamental principle of family law in this jurisdiction that responsibility for making decisions about a child rest with his parents. In most cases, the parents are the best people to make decisions about a child and the State – whether it be the court, or any public authority – has no business interfering with the exercise of parental responsibility unless the child is suffering or is likely to suffer significant harm as a result of the care given to the child not being what it would be reasonable to expect a parent to give.[141]

As long as a policy of voluntary vaccination endures, the power of the courts to impose vaccination on individual children is largely limited to parental disputes, which have consistently been resolved in favour of vaccination. This is because once a case comes before the court, parental wishes are relevant only in so far as they 'may illuminate the quality and value to the child of the child/parent relationship'.[142] The courts have been unimpressed by arguments that vaccination is non-essential and invasive, and have extoled the benefits to children of preventive medicine.[143] In *Re C* (*Welfare of the Child*: *Immunisation*),[144] the court made the orders sought by two fathers who wanted their daughters (aged 4 and 10) to receive a range of routine vaccinations

136. Children Act 1989, s 3(1).
137. *An NHS Trust v MB* [2006] EWHC 507 (Fam), at [107] per Holman J: '[Parental] wishes, however understandable in human terms, are wholly irrelevant to consideration of the objective best interests of the child save to the extent in any given case that they may illuminate the quality and value to the child of the child/parent relationship.'
138. Children and Young Persons Act 1933, s 1(1).
139. *R v Lowe* [1973] QB 702.
140. Children Act 1989, s 31(2).
141. *Re Ashya King* (*A Child*) [2014] EWHC 2964 (Fam), at [31].
142. *The NHS Trust v A* [2007] EWHC 1744, at [16] per Holman J.
143. See *Re C* (*Welfare of Children*: *Immunisation*) [2003] 2 FLR 1095, at [22] per Thorpe J.
144. [2003] 2 FLR 1095, CA.

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contrary to the wishes of their mothers who considered the vaccines unsafe. In *LCC v A, B, C and D*,[145] parental responsibility of four children (aged 5, 6, 9 and 13) was shared by the local authority, which sought vaccination of the children, and the natural parents, who objected on the basis that they suspected that their first child's autism was a result of the MMR. Theis J held that vaccination was in the four children's best interests. Finally, in *F* (*Mother*) *v F* (*Father*),[146] Theis J held that vaccination would be in the best interests of an 11 and a 15 year old. Along with the mother, the two 'charming, intelligent, articulate and thoughtful'[147] young people objected to vaccination. Fifteen-year-old L, who objected principally on the basis of her veganism (given that gelatine is an ingredient of the vaccine), had been given the first of two MMR vaccines as a baby and therefore benefited from heightened immunity.[148] These decisions were not based on the public interest: the primary consideration was the welfare of the children. However, much store was put in the Department of Health recommendation that vaccination is in children's medical interests and this recommendation is based on the value of vaccination to children both individually *and collectively*.

(b) A case for limiting parental rights?

Judicial acceptance that vaccination is generally in the best interests of children might form the basis of a challenge to parental authority if it could be established that there was no breach of Art 8 because protective measures were proportionate to the aim of protecting the child.[149] Article 8(1) is qualified by Art 8(2), where intervention is proportionate and necessary to protect '… health or morals, or to protect the rights and freedoms of others'.

The CRC was ratified by the UK in 1990. It has not been incorporated into law, though legislation in Wales requires ministers to have due regard to the Convention.[150] Its judicial application facilitates a more comprehensive protection of children's rights than would be achievable under the ECHR. The CRC acknowledges the rights, responsibilities and duties of parents, but Art 5 requires that they are exercised so as to provide 'appropriate direction and guidance *in the exercise by the child of the rights recognised in the Convention*' (my italics).

Turning to children's rights,[151] Art 6 of the CRC protects the right to life, survival and development, and Art 24 the right to the highest attainable standard of health, including measures 'to diminish infant and child mortality' and 'to develop preventive healthcare'.[152] Article 3 provides that 'the best interests of the child shall be a primary consideration'. The CRC rejects a traditional approach based on the natural sociobiological authority of parents over children, and adopts a liberal social-constructive

145. [2011] EWHC 4033.
146. [2013] EWHC 2683. And see *London Borough of Newham v KA* (*Mother*) & *Ors* [2016] EWFC B11, per Carol Atkinson J, at [117]–[118].
147. [2013] EWHC 2683, at [5].
148. E Cave 'Adolescent refusal of MMR inoculation: *F* (*Mother*) *v F* (*Father*) [2013] EWHC 2683 (Fam)' (2014) 77(4) Mod L Rev 630.
149. *RK and AK v the United Kingdom* (no 38000/05), ECtHR, 30 September 2008.
150. Rights of Children and Young Persons (Wales) Measure 2011, s 1.
151. As opposed to human rights that apply to children: see L Ferguson 'Not merely rights for children but children's rights: the theory gap and the assumption of the importance of children's rights' (2013) 21 Int'l J Children's Rts 177.
152. UN CRC 1989, Arts 24(2)(a) and 24(2)(f).

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position in which parental authority is grounded in the child's right to participation, equality and (present and future) liberty.[153]

In England and Wales, the response in the Children Act 1989 to Art 3 was to make the welfare of the child the paramount consideration in court proceedings concerning the upbringing of a child.[154] Furthermore, recent debate about the direct enforceability of the Convention, and Art 3 in particular, strengthens arguments that parental rights must be exercised in the child's best interests even beyond the scope of the Children Act.[155]

Engelhardt outlines four different understandings of the family from which flow different views of the authority of parents in medical disputes. He points out that the view taken in the CRC – that parents are guardians of children's rights – is not universally supported. The result, he contends, is that the best-interests approach might be formally supported while in practice parental autonomy is allowed to flourish.[156] I would submit that evidence of harm to children would justify a more restrictive approach. That evidence may not currently exist, but it is not fanciful to suggest that in future it might and almost certainly will.

In times of pandemic, the mental, physical and physiological attributes of children can subject them to particularly high levels of risk and family-centred care becomes very important. Voluntary vaccination of children during a recent pandemic reveals surprising contrasts. The vaccine against H1N1 influenza in 2009 was offered to 'at risk' groups including pregnant women, those with chronic disease and children under 5. But in England and Wales, only 23.6% to 26.1% of under 5 year olds were vaccinated.[157] Contrast this with the Netherlands, with 80% coverage, and Norway with 60%.[158] The pandemic was milder than had been expected, and low uptake might also be explained by virtue of concerns about vaccine safety. H1N1 vaccine uptake tells a cautionary tale about the predictability of pandemics. It tells an equally important lesson about reliance on parental consent.

Parents can also decide to take unvaccinated children abroad and expose them to risk of disease. Yellow fever is the only disease specifically designated in the WHO's IHR 2005[159] as requiring proof of vaccination or prophylaxis (subject to exemption) as a condition of entry to certain countries. Depending on destination, the NHS recommends vaccination for hepatitis A, typhoid and cholera, but parents are free to ignore the advice on their children's behalf. Even in relation to routine vaccination, 8% of parents of children aged 2 had not taken them for the MMR vaccination in 2014–2015. Uptake of the nasal flu vaccine was 38.5% for 2 year

153. See JT Engelhardt Jr 'Beyond the best interests of children: four views of the family and of foundational disagreements regarding pediatric decision making' (2010) 35(5) J Med & Phil 499.
154. Children Act 1989, s 1(1): 'When a court determines any question with respect to – (a) the upbringing of a child; or (b) the administration of a child's property or the application of any income arising from it, the child's welfare shall be the court's paramount consideration.'
155. *R* (*HH*) *v Deputy Prosecutor of the Italian Republic*, *Genoa*; *and two other cases* [2012] UKSC 25, at [15] per Lady Hale; *R* (*on the application of SG*) *and Others v Secretary of State for Work and Pensions* [2015] UKSC 16, at [256].
156. Engelhardt, above n 153.
157. Pandemic Influenza Preparedness Team *Factors Associated with Uptake of Vaccination Against Pandemic Influenza* (London: Department of Health, 2011) p 25.
158. Ibid.
159. WHO, above n 80.

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olds compared with 72.7% for those over 65, though the risks associated with complication are similar.[160]

A number of countries allow routine vaccination without parental consent, relying on a mixture of public health and welfare-based considerations. According to the Child Rights International Network (CRIN), courts in Croatia and Slovakia have rejected claims that vaccination of children without parental consent breaches parents' constitutional rights.[161] In Croatia, which has mandated vaccination since 1999, opposition on grounds that vaccination poses an unacceptable threat to child health, was rejected in 2014.[162] In 2015, the Czech Republic upheld the constitutionality of a decree imposing fines on parents who fail to secure vaccination for their children on the basis that the public health is elevated above individual rights.[163] A similar argument was recently raised to defend a mandated vaccination policy in Turkey. There, the vaccination programme, which requires that infants receive 16 different vaccination doses in their first 2 years, was extended and enforced following the influx of Syrian refugees, which ostensibly exacerbated the risk of infection. The Supreme Court of Appeals 2nd Civil Chamber, upholding the policy, held that a 1-year-old child could be vaccinated without the consent of its parents in the interests of the public health and to protect the child's best interests pursuant to the CRC.[164] Five months later, however, the decision was overruled by the Constitutional Court, which held that vaccination without consent is unconstitutional,[165] offending Art 17 of the Turkish Constitution, which protects the 'corporal integrity of the individual'. Amendments to vaccination laws will follow.

In England and Wales, emphasis on parental rights will endure as long as vaccine uptake is sufficient to protect children's collective interests. Best interests is not limited to medical interests, and strong judicial commitment to protecting parental rights is in part a response to the relational and interconnected nature of parental and children's rights. In the current climate, the harm that would befall a child taken from its parents and vaccinated against their will would far outweigh the medical benefits to the child that flow from vaccination. High uptake of routine vaccination boosts herd immunity and protects children who lack immunity. Were this situation to change, a graduated approach to restricting the choices of parents might be deemed both necessary and proportionate.

CONCLUSION

Vaccination aims to protect individuals and those with whom they may come into contact, but also to eradicate disease or increase herd immunity. The aims are thus

160. Public Health England, above n 16.
161. CRIN 'Compulsory vaccinations' (CRINMail 1435, 1 July 2015).
162. CRIN 'Mandatory vaccinations' (CRINMail 34, 22 April 2014).
163. Editorial 'Court: health ministry can continue with mandatory child vaccination' *Prague Daily Monitor* 24 February 2015, available at http://www.praguemonitor.com/2015/02/24/court-health-ministry-free-order-child-vaccination (accessed 12 June 2016).
164. CRIN 'Compulsory vaccinations' (CRINMail 1435, 1 July 2015); Editorial, 'Parental permission not needed for child vaccination, top court rules' *Hurriyet Daily News Turkey* 22 June 2015, available at http://www.hurriyetdailynews.com/parental-permission-not-needed-for-child-vaccination-top-court-rules-.aspx?pageID=238&nid=84292 (accessed 12 June 2016).
165. Editorial 'Parental consent needed for vaccination: Turkey's top court' *Hurriyet Daily News Turkey* 16 November 2015, available at http://www.hurriyetdailynews.com/parental-consent-needed-for-vaccination-turkeys-top-court.aspx?pageID=238&nID=91200&NewsCatID=373 (accessed 12 June 2016).

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individual and collective. This paper has demonstrated an increasingly strong case for restrictions on choices. The clearest case for compulsion is in a national security emergency. Vaccines can provide a vital tool in the effort to combat infectious disease, particularly when used in conjunction with treatment and isolation techniques. In 2014, the outbreak of Ebola was most severe in Guinea, Liberia and Sierra Leone. Over 11,000 people died.[166] Potential vaccines were urgently pursued and their development prioritised.[167] Assuming plentiful supply,[168] would England and Wales' voluntary vaccination policy survive in the context of a further outbreak? The WHO's IHRs 2005 provide a broad public health law structure under which vaccination might be required. Such measures would not offend Arts 5 or 8 of the ECHR provided that they were necessary to avert or mitigate a public health disaster and the method of compulsion (which I have argued exists on a spectrum) was the least restrictive means of achieving the aim. I have identified factors that make necessity and proportionality difficult to judge and therefore open to flexible interpretation. These relate to the unpredictability of pandemics and their effects and the resulting definitional quandaries around terms such as 'emergency', 'threat to national security' and even 'pandemic'. The threshold for action can differ from country to country, and from one outbreak to another. This leaves the application of the WHO's broad infrastructure susceptible to misuse with potential adverse implications for civil liberties.

Conversely, there may be times when an outbreak or threat of disease does not fall within the securitisation paradigm but nonetheless threatens the public's health. The UK government refers increasingly to patients' personal responsibilities for their own health as part of a social contract with the NHS.[169] The NHS Constitution refers expressly to patient responsibility to take part in vaccination programmes.[170] Moral responsibilities to undergo vaccination are dynamic, relational and multifaceted, as is clear, for example, from the pressure placed on healthcare workers to accept vaccination in times of pandemic.[171] Even when vaccination rates are high, the moral obligation to vaccinate ourselves and our children might justify measures in the interests of the public health that make it harder to opt out of vaccination. Where the risks to the public health are heightened, I have shown that the criminal law could potentially be utilised to deter and punish those whose rejection of vaccination leads to transmission or even risk of transmission of preventable disease. I have argued that this would constitute an inappropriate use of the criminal law, likely to exacerbate discrimination. The juridification of public health measures at an international level

166. Data Team 'Ebola in graphics: the toll of a tragedy' *The Economist* 30 December 2015.
167. The development process was escalated and recent Phase III trials point to a highly efficacious candidate: AM Henao-Restrepo et al 'Efficacy and effectiveness of an rVSV-vectored vaccine expressing Ebola surface glycoprotein: interim results from the Guinea ring vaccination cluster-randomised trial' (2015) 386(9996) Lancet 857; WHO 'News release: World on the verge of an effective Ebola vaccine' (31 July 2015), available at http://www.who.int/mediacentre/news/releases/2015/effective-ebola-vaccine/en/ (accessed 12 June 2016).
168. Considerable debate surrounds the equitable distribution of scare resources in a pandemic. See eg HV McLachlan 'A proposed non-consequentialist policy for the ethical distribution of scarce vaccination in the face of an influence pandemic' (2012) 38 J Med Ethics 317.
169. Department of Health and The Rt Hon Jeremy Hunt MP *New Social Contract Between the Public, Health and Care Services* (London: DH, 2015).
170. Department of Health, above n 130.
171. See eg R Booy et al 'Mandating influenza vaccination in health-care workers' (2011) 378(9803) Lancet 1626.

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paves the way for adoption of more supportive, multidimensional, graduated national interventions that are tailored to the severity of the risk.

Security and public health arguments in favour of restrictions on vaccination choice apply irrespective of whether the vaccine is aimed at adults or children. Where parents make decision on behalf of children, additional child welfare and parental autonomy considerations are bought to bear. In a number of countries, the combined effects of public health and child welfare arguments have led to restrictions on parental choice. The courts in England and Wales have rejected the categorisation of vaccination as invasive and unnecessary, and instead characterised it as preventive medicine in the best interests of the child. Parental disputes have all been resolved in favour of vaccination, even when the young people themselves have objected. Emphasis on parental choice is currently commensurate with children's best interests, but the balance could be upset by evidence of harm to children's health interests. Paul Offit, the Chief of Infectious diseases at the Children's Hospital of Philadelphia, argues that parents who decide against vaccination make a choice for their own children and for those with whom they come into contact, including those too young or ill or allergic to receive vaccination. 'What is paramount?' asks Offit, 'the freedom to make bad health decisions or the right of the community to protect itself from those decisions?'[172]

This paper has demonstrated the fragility of the UK's voluntary vaccination policy in light of the cumulative impact of globalisation, public health and child welfare considerations. In the context of the flexible paradigms of national security and public health, the patient's right to refuse medical intervention is subject to challenge. As we have seen in other countries, a fall in uptake or rise in infection rates can quickly elevate an outbreak to epidemic or emergency status and be used to justify compulsion as necessary and proportionate. The potential to compromise human rights and civil liberties can be mitigated through the development and enactment of national public health laws and policy to provide a proportionate and graduated approach to compulsory vaccination in its various forms. In England and Wales, this is a matter of priority.

172. 'Should childhood vaccination be mandatory?' BMJ.com (14 May 2012), available at http://www.bmj.com/press-releases/2012/05/14/should-childhood-vaccination-be-mandatory (accessed 12 June 2016).

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