Mandating Covid-19 Vaccination for Healthcare Workers: A Non-Consequentialist Analysis

Tyler Paetkau – Philosophy, Bioethics Unit July 2023 A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of masters of arts in philosophy © Tyler Paetkau

Introduction1
Chapter 1 – The Case for Mandates
1.1 Beneficence
1.2 Non-Maleficence
1.3 Autonomy
1.4 Justice
1.5 From Duty to Mandates
1.6 Conclusion
Chapter 2 – Challenges, Alternatives, and Institutional Obligations
2.1 The Duties of Patients
2.2 Healthcare Institutions
2.3 Governments
2.4 The Public
2.4.1 The Day-to-Day Public
2.4.2 The Public and Democratic Engagement
2.5 Conclusion
Chapter 3 – The Balance of Duties Among Parties
3.1 Special Obligations
3.2 Deprioritization of the Culpable
3.3 The Utilitarian Objection
3.4 Conclusion
Chapter 4 - Intrusiveness, Proportionality, and the Scope of Healthcare Workers Duties61
4.1 The Intervention Ladder and the Distribution of Duties
4.2 The Narrow Ladder
4.3 The Justification of Mandates70
4.4 The Extent of the Duty of Care73
4.5 Conclusion
Chapter 5 Conclusion
References

Table of Contents

Abstracts

English Abstract - This paper critically examines the ethical justifications for vaccinations for vaccine mandates for healthcare workers during the Covid-19 pandemic. Adopting a non-consequentialist framework, I explore the rights-based arguments from both sides of the debate as well as the extent and implications of healthcare workers duty of care during the pandemic. Ultimately, I argue that healthcare workers possess a duty of care and that vaccination is one tool for fulfilling this duty. However, it is only one of a mixture of possible tools. As such, I propose that the duty of care does not entail a duty to be vaccinated. Moreover, I argue that governments and healthcare institutions possess duties of care similar to that of healthcare workers and that mandates are not justified as a tool for forcing healthcare workers to pick up the slack created by the failures of institutions.

French Abstract - Cet article examine de manière critique les justifications éthiques des vaccinations obligatoires pour les travailleurs de la santé pendant la pandémie de Covid-19. Adoptant un cadre non-conséquentialiste, j'explore les arguments fondés sur les droits des deux côtés du débat ainsi que l'étendue et les implications du devoir de diligence des travailleurs de la santé pendant la pandémie. En fin de compte, je soutiens que les professionnels de la santé ont un devoir de diligence et que la vaccination est un moyen de remplir ce devoir. Toutefois, il ne s'agit que d'un outil parmi d'autres. Je propose donc que le devoir de diligence n'implique pas l'obligation de se faire vacciner. En outre, je soutiens que les gouvernements et les établissements de soins de santé ont des devoirs de diligence similaires à ceux des travailleurs de la santé et que les mandats ne sont pas justifiés en tant qu'outil pour forcer les travailleurs de la santé à combler les lacunes créées par les défaillances des établissements.

Acknowledgements

TP is the sole contributor/Author to this manuscript and is responsible for the content.

My thanks to my supervisor Daniel Weinstock for his advice, feedback, and guidance through the preparation of this manuscript. I would also like to thank Phoebe Friesen, whose BIO 680 provided the original inspiration of this paper.

List of Abbreviations

HCWs – Health Care Workers NPIs – Non-Pharmaceutical Interventions PPE – Personal Protective Equipment ICU – Intensive Care Unit

Introduction

The Covid-19 pandemic has brought to the fore questions concerning the limits of the duties of healthcare workers (HCWs) and how far they must go to serve their patients. In particular, it has raised questions of whether HCWs have a duty to be vaccinated and, if so, whether vaccine mandates are an acceptable tool for enforcing that duty. Vaccines are seen as one of the best tools for protecting patients from nosocomial infections as well as protecting HCWs. At a time when hospitals are stretched beyond their breaking point, every infected HCW is one less worker available to provide lifesaving care. Similarly, each patient infected with Covid-19 becomes one more patient needing scarce resources.

Vaccination against Covid-19 is a powerful tool for mitigating these harms and protecting healthcare capacity. Widespread vaccination directly eases the burden on the healthcare system as it reduces the number of Covid-19 patients and the severity of cases. Furthermore, it reduces the potential for nosocomial Covid-19 infections. Vaccination of HCWs has similar impacts as it reduces HCW absenteeism and the potential for HCWs to serve as disease vectors. Finally, vaccination directly benefits the HCW by reducing the risk and severity of infection.

Despite the clear scientific consensus concerning the safety and efficacy of vaccination against Covid-19, health authorities face an additional adversary in the fight against the virus. That is vaccine hesitancy among HCWs. When offered early access to inoculation against Covid-19 in December 2020, 20% of eligible Canadian HCWs in a multi-center study refused to be vaccinated (Dzieciolowska et al. 2021). Although uptake has increased over time, as of August 2021, only 89% of HCWs in Quebec and "more than 80%" in Manitoba had received their first dose, despite second doses being widely available (Vogel and Duong 2021). In response, governments across Canada implemented various forms of vaccine mandates, making immunization against Covid-19 a condition of employment as an HCW (Cukier 2021). While there is little formal work analyzing the impact of these mandates on healthcare capacity or patient outcomes, a study in British Columbia demonstrated a significant increase in uptake among unvaccinated HCWs following the announcement of the provincial mandate (Yassi et al. 2022). Yet despite their impact on uptake, mandates have ignited a firestorm of debate. Those against mandates argue that such requirements violate HCWs' rights to bodily autonomy. Furthermore, they claim that HCWs often have competing obligations to family, community, and broader society. As such, it is unjust for healthcare institutions to force HCWs to fulfill one set of commitments while neglecting another. Finally, they argue that mandates may do more harm than good as they remove unvaccinated HCWs from their lifesaving roles at a time when healthcare capacity is already stretched beyond its limits.

In contrast, those in favour of mandates hold that HCWs have a duty to care for their patients and that this duty entails a duty to be vaccinated. In addition to citing the safety and efficacy of vaccines, they argue that by remaining unvaccinated, HCWs choose to risk harming their patients by neglecting to act in a way that would reduce the risk of nosocomial infection. For many, vaccine refusal on the part of HCWs is "unethical and appalling," and they see these HCWs as "putting patients at risk and prolonging the very crisis they have been on the frontlines fighting" (Emanuel, Guido, and Hong 2021).

This project seeks to disentangle these arguments. But more importantly, it aims to add crucial context missing from this debate. Until now, the debate over mandates has focused almost solely on the roles and obligations of HCWs and the potential for HCWs to harm or benefit patients. However, this narrow focus neglects to consider the broader context in which HCWs operate. Included in this context are alternative methods for fulfilling the HCW's duty of care as well as the duties of healthcare institutions, governments, and society. This project aims to broaden the discussion and to delineate whether and how these factors impact the obligations of HCWs and the justifications for mandates.

While there are arguments for and against mandates from various ethical perspectives, here I focus on the non-consequentialist case for mandates. Such a focus may seem unnatural as consequentialism tends to dominate decision-making in public health. However, whereas a consequentialist is limited to considering the balance of costs and benefits, non-consequentialist theories can consider this balance while also weighing the rights of the HCW and the patient. More importantly, for this project, a non-consequentialist approach incorporates considerations of the duties uniquely associated with the role of an HCW and whether authorities are justified in enforcing HCWs to fulfill their ethical obligations.

In making the non-consequentialist argument, I rely on the framework of principlism. That is, I investigate the duty of care as it applies to the four pillars of principlist ethics: beneficence, non-maleficence, justice, and autonomy. This approach has several benefits. First, alongside consequentialism, principlism is perhaps the ethical framework most common to public health and bioethics. As such, by drawing on principlism, the arguments below draw on a broadly used framework and will be less foreign to many in medicine and public health. Second, principlism provides a structured way of unpacking the extent of the duty of care. Third, principlism is bypasses disagreements concerning fundamental ethical justifications. As described by Tom L. Beauchamp and James F. Childress in their work *Principles of Biomedical Ethics*, "the four clusters of principles … do not constitute a general ethical theory" (Beauchamp and Childress 2013, 17). Instead, principlism is intended to operate at a mid-level between specific rules and fundamental ethical justifications such as consequentialism or deontology (Beauchamp and Childress 2013, Ch. 1). As such, it allows practitioners with differing ethical commitments to engage ethical issues with a common framework. In the following, I seek to analyze the case of vaccine mandates at this mid-level so that the conclusions will be acceptable to those with a variety of fundamental ethical commitments.

In the following, I argue that HCWs possess a duty of care toward their patients. However, these duties are multiply realizable. While vaccination is one tool for fulfilling these duties, it is only one of a mixture of possible tools. Thus, an HCWs duty of care does not entail a duty to be vaccinated. Second, I argue that governments, healthcare institutions, and the public possess duties of care like those of healthcare workers. As such, mandates are unjustified as a tool for forcing HCWs to pick up the slack created by the failures of other parties.

This argument will proceed in four chapters. The first presents the case for a duty to be vaccinated. Included in this case are considerations of beneficence, non-maleficence, autonomy, and justice. Chapter two broadens the scope of the debate by considering the obligations of other parties to the healthcare relationship, while chapter three argues that the failures of these parties to fulfill their duties do not impact the duty of care of HCWs. Finally, chapter four concludes by considering how we determine the extent of the duty of care and whether vaccination is a duty of HCWs despite the failures of other parties.

Chapter 1 – The Case for Mandates

The Covid-19 pandemic has pushed the Canadian healthcare system and many HCWs beyond their breaking point. Patients have gone without urgent care due to shortages of critical equipment such as ventilators and beds in intensive care units (ICUs) (Sen-Crowe et al. 2021). In many cases, HCWs have been forced to decide which patients will receive lifesaving care and which will go without (Jöbges et al. 2020; Vigo et al. 2020). Resources for less urgent care, such as cancer screening and treatment, have been diverted in an attempt to address each wave of infections resulting in significant delays in diagnosis and treatment (Sud et al. 2020). For these patients, even a modest delay in intervention may dramatically impact their disease's progression and their chances of survival.

For HCWs, the situation has been similarly grim. To treat the dramatic increase in patients, HCWs have been forced to work significant overtime (Carrière et al. 2020; Brophy et al. 2021; Berkhout, Sheehan, and Abbey 2021). This strain is compounded as infected HCWs are temporarily unable to work, ensuring an even heavier burden for those remaining. The stress of these working conditions has taken a significant toll on the mental and physical health of HCWs. However, many were not so lucky. Between the outbreak of Covid-19 and May 8th, 2020, 152 888 infections and 1413 deaths were reported among HCWs (Bandyopadhyay et al. 2020). By May 2021, the World Health Organization (WHO) estimated that between 80,000 to 180,000 HCWs had died due to Covid-19 infections, with most of these deaths occurring while vaccines were unavailable (World Health Organiziation 2021).

Vaccines are a powerful tool for improving these outcomes. Although vaccines have not eliminated the risks of working as an HCW, they reduce them considerably. High rates of vaccine efficacy have resulted in a reduction in the number of HCWs become infected along with a decrease in the severity of infections and an improvement of outcomes for those who contract Covid-19 (Hall et al. 2021; Jones et al. 2021; McGrath et al. 2022). The benefits of vaccination have led many to argue that HCWs have a duty to be vaccinated and that vaccine mandates are justified as a tool for requiring HCWs to fulfill their duty. While mandates can take many forms, here I focus on mandates that require HCWs to be vaccinated as a condition of employment.

Non-consequentialist arguments for vaccine mandates are based on the duty of care possessed by HCWs. However, the limits and extent of this duty can be challenging to determine as the malleability of the concept has allowed it to be applied equally to ethical theories which often seem contradictory and yield conflicting results. Such failure to delineate what is involved in the duty of care has led Daniel K. Sokol to argue that "duty of care, in the medical context, is often invoked as a sort of quasi-biblical commandment" and that "its definitional vagueness, combined with its rhetorical appeal, may be used to justify actions without the need for rational deliberation" (Sokol 2006, 1238).

Despite this ambiguity, it is possible to outline the broad strokes of the duty of care in a non-consequentialist context. More importantly, for the current project, we can determine how this duty informs the debate over vaccine mandates. While not strictly non-consequential, principlism provides a valuable framework for understanding this duty. Introduced in 1979 through both the *Belmont Report* and *Principles of Biomedical Ethics* by Tom L. Beauchamp and James F. Childress, principlism proposes four principles for ethical decision-making in medicine (Beauchamp and Rauprich 2016). These are beneficence, non-maleficence, autonomy, and justice. However, it must be emphasized that the following arguments are not grounded in principlism as a justificatory theory. Instead, the four principles are used to unpack the basis of the duty of care.

Below I explore how these principles relate to the duty of care. Specifically, I investigate how the circumstances around Covid-19 produce two distinct aspects of the duty of care. These are:

1. A duty to act to meaningfully prevent transmission to patients and the public, and

2. A duty to act to meaningfully protect HCWs from infection, thereby protecting healthcare capacity.

Hereafter I refer to these duties as "the duties of infection control." However, it is crucial to note that these are not stand-alone duties. Instead, they are derived from the broader duty of care. In acting to fulfill the duties of infection control, HCWs are acting to fulfill their duty of care in the areas of beneficence, non-maleficence, autonomy, and justice.

1.1 - Beneficence

Integral to the duty of care and modern medical ethics is the notion of "beneficence." As defined by Beauchamp and Childress, beneficence is a "moral obligation to act for the benefit of others" (2013, 203). This notion is intimately tied to the duty of care. Perhaps the most straightforward extension of such a duty is what I term "direct actions of beneficence." These are the actions available to HCWs to ensure that they benefit their patients by providing care. HCWs are uniquely positioned to provide lifesaving care. Due to training, access to resources, and laws allowing healthcare workers to perform acts such as surgery, HCWs can medically benefit patients in ways unavailable to other members of society. As such, an HCW's duty of care entails a duty to carry out direct actions of beneficence (Beauchamp and Childress 2013).

A necessary condition of these role-related responsibilities is the relative health and wellbeing of the HCW. If a doctor cannot work due to illness, she cannot save lives or care for the sick. Vaccination against Covid-19 has been demonstrated to significantly impact outcomes for HCWs. A study of 7445 HCWs spread over five tertiary-care hospitals from November 15, 2020, through April 18, 2021, found an estimated vaccine efficacy of 94.16% for fully vaccinated HCWs (H.C. Maltezou, Panagopoulos, et al. 2021). Furthermore, unvaccinated HCWs had over twice the incidents of absenteeism compared to vaccinated HCWs (11.8 versus 4.7 episodes of absenteeism per 100 HCWs, respectively). When vaccinated workers were absent due to infection, the absence was significantly shorter, with an average of 6.9 days per vaccinated worker compared to 11.9 days for unvaccinated workers. From this, it is clear that vaccination on the part of HCWs benefits patients. It prevents individuals from becoming ill and limits the illness's length and severity, thus enabling HCWs to provide care or to return to these duties sooner than possible without vaccination.

These benefits establish vaccination as an effective tool for ensuring HCWs can carry out direct acts of beneficence. As such, some may argue that it is a required action to fulfill the duty of care. Still, I propose this duty also includes what I term "indirect actions of beneficence." These actions are not indirect in that the HCW does not take them. Instead, they are indirect in that by taking specific actions, HCWs avoid unnecessarily consuming scarce healthcare resources, thus indirectly ensuring these resources are available for other patients.

In addition to absenteeism and presenteeism (lost productivity due to illness), infected HCWs create costs for the healthcare system. Such costs include "healthcare seeking, laboratory tests, reverse transcriptase polymerase chain reaction (RT-PCR) tests, imaging tests, treatment, hospitalization, admission to intensive care unit (ICU) and intubation" (H. Maltezou, Giannouchos, et al. 2021). These costs have a tangible impact on patient outcomes. In publicly funded healthcare systems such as Canada's, these tests and interventions consume resources that could be dedicated elsewhere. Such considerations are especially relevant during pandemics when HCWs and institutions must make life-and-death decisions about who will receive lifesaving care. Few places better demonstrate the need to conserve scarce healthcare resources than Alberta in the fall of 2021. At that time, the Alberta Government sought help from the neighbouring British Columbia and Saskatchewan to alleviate the Covid-19 induced strain on the Alberta healthcare system (Rieger 2021a). With its ICUs at 169% of baseline capacity, insufficient resources were available to handle the further influx of patients. However, British Columbia and Saskatchewan could not help due to strains on their own healthcare systems. Eventually, Alberta began airlifting patients to provinces under less pressure, such as Ontario. In addition, Alberta brought in HCWs from out of province.

While such measures likely saved lives, they cost the healthcare system tremendously. Of course, we can hardly blame HCWs who take reasonable precautions to avoid infection. However, when an HCW becomes infected after refusing vaccines, it seems that they bear some responsibility for consuming scarce healthcare resources. Every infected HCW is not only a worker unable to take direct actions of beneficence, but if they are partially culpable for their infection, they could be seen as failing to take indirect actions. By being vaccinated, HCWs act to prevent this outcome and to fulfill the duties of infection control. As such, vaccination can be argued as an appropriate tool for fulfilling an HCWs duty of care as it relates to beneficence.

1.2 Non-Maleficence

Considerations of non-maleficence and beneficence can be traced back millennia in works such as Hippocrates' *Epidemics*, where he states that "the general rule by which the physician should regulate his treatment is 'to do good, or at least to do no harm'" (Adams 1886). Establishing a firm boundary between the duties of beneficence and non-maleficence can be difficult. Often, an action could be characterized as both benefiting or avoiding harming a patient. Similarly, a harmful action could be characterized as a failure to act to benefit the patient. For instance, the failures of indirect actions of beneficence described above could be characterized instead as bringing about harm through negligence.

This close relationship between the two concepts is reflected in the foundational documents of modern bioethics. Whereas Beauchamp and Childress list non-maleficence and beneficence as distinct principles in *Principles of Biomedical Ethics*, the Belmont report combines them under "beneficence." Still, the Belmont report identifies both aspects under this heading when it lists the "two general rules" of beneficence as "(1) do not harm and (2) maximize possible benefits and minimize possible harms" (United States. National Commission for the Protection of Human Subjects of and Behavioral 1978, 6).

Duties of non-maleficence may provide the most robust case for vaccination as an action entailed by an HCW's duty of care. They are certainly the most straightforward. HCWs who transmit Covid-19 to patients have harmed those patients. This harm is far from a theoretical concern as nosocomial infection has been identified as a "major contributor to the burden of COVID-19" (Cooper et al. 2021). For many patients, such as immunocompromised transplant patients, such an infection could easily be deadly. Nonetheless, any preventable nosocomial can be considered a harm, even if its consequences are less dire. While many patients may experience no long-term negative health outcomes from an infection, even a brief illness may force them to miss work or important family events. Asymptomatic individuals who acquire a nosocomial infection may inadvertently infect loved ones who are more susceptible to adverse outcomes. Or, being diligent in their efforts not to infect others, they may test positive despite being asymptomatic. They may be required to miss work without compensation due to public health requirements to quarantine. For individuals living paycheck-to-paycheck, this lost income could be disastrous.

As such, it is clear that the duties on non-maleficence possessed by HCWs entail a duty to act to prevent transmission. This action, of course, is one of the duties of infection control discussed above and many have argued that vaccination is an effective tool for fulfilling this duty (Martin-Fumadó et al. 2021; Loh et al. 2022; Rimedio, Galante, and Picozzi, 2022).

1.3 Autonomy

A central factor in the duty of care is the right to and respect for autonomy. At its most basic level, autonomy can be defined as "self-rule that is free from both controlling interference by others and limitations that prevent meaningful choice" (Beauchamp and Childress 2013, 101). Key to the exercise of autonomy are the twin conditions of liberty and capacity. For an action to be truly autonomous, it must be free from undue influence or coercion (liberty), and the agent making the decision must have the information and capabilities necessary for making a reasonably informed decision (capacity).

For Eric Cassell, the primary function of medicine is to restore and preserve the patient's autonomy (Cassell 1977). While many would dispute this claim, there is little doubt that concerns of autonomy are central in modern bioethics. As a patient, the individual's control over their body is inherently reduced. They are seeking healthcare because there is something wrong with their body that is beyond their power to control. Often, these medical issues further limit autonomy by limiting one's ability to communicate or otherwise navigate the world. Thus, part of the duty of care is the duty of healthcare providers to preserve the patient's existing autonomy and restore their autonomy to the degree possible through ameliorating the health issue.

However, determining the scope and limitations of this duty is complicated by the fact that the HCW also possesses a right to autonomy (Rimedio, Galante, and Picozzi 2022). The result is that many arguments about vaccine mandates focus on the tension between the HCWs' right to autonomy and their duty of care. Here I focus on the narrower question of the tension between the autonomy of the HCW and their duty of care to preserve and restore the patient's autonomy.

Compared to non-maleficence and beneficence, concern for autonomy is a relatively recent development in medical ethics. While not altogether absent in historical approaches to bioethics, substantive discussions on the topic in North America only gained steam in the 1970s (Saad 2018; Friesen et al. 2017). Prior to this time, medicine was dominated by a paternalistic style where the doctor would act as they saw best with little concern for the wishes of the patient. In the worst cases, this resulted in actions such as the Tuskegee Syphilis Study, forced sterilization of women, and medical experimentation on prisoners. The vast majority of these actions were undertaken without the patient's knowledge or consent, and the well-being of patients was seldom safeguarded. Instead, these actions were justified by dubious appeals to the benefits to public health, science, or broader society.

In response to revelations of the Tuskegee study and similar medical research abuses, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was created in 1974 (J.H. Evans 2000). The commission, in turn, produced the Belmont Report, widely considered to be one of the founding documents of modern bioethics. It is little wonder then that the Belmont report places a heavy emphasis on the respect for autonomy with its insistence that "subjects, to the degree that they are capable, be given the opportunity to choose what shall or shall not happen to them" (United States. National Commission for the Protection of Human Subjects of and Behavioral 1978, 10). In such a phrase, we see distress at the history of non-consensual experimentation on the bodies of others and a determination that individuals should have control over the medical interventions to which they are subjected.

While the Belmont Report was written to apply to subjects of medical experimentation, HCWs still clearly possess a right to autonomy (Rimedio, Galante, and Picozzi, 15-17). Included in this is the right of the HCW to exercise autonomy over what enters their body and whether they receive medical interventions such as vaccines. However, this right is not absolute. For any individual in society, one commonly cited limit to their right to autonomy is the harm principle proposed by John Stuart Mill. This principle holds that:

"[the] sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their-number, is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others" (Mill and De Quincey 1885).

In this statement, we see the intimate connection between autonomy and non-maleficence. All members of society have a strong right to autonomy. However, this right holds only to the point that the actions of the individual cause harm to others.

Refusing vaccination increases one's chances of harming patients. In this light, the harm principle provides a strong argument that an HCW's right to autonomy does not extend to a right to refuse vaccination. However, the arguments for limiting an HCW's right to autonomy extend far beyond the harm principle. Many argue that this right is diminished or that HCWs forfeit entire aspects of this right when they take on the role of an HCW. Such augments hold that "because ultimately the health care worker has more choice about being in the hospital than his or her patient, the onus to be accommodating weighs more heavily on the health care worker" (Cortes-Penfield 2014, 2062).

Similarly, some arguments justify the overriding of HCW autonomy via the mandating of vaccines by arguing that the role of an HCW entails acceptance of a certain level of risk. HCWs are not permitted to decline to operate on an HIV positive patient or fulfill other risky duties (Cortes-Penfield 2014, 2062). Since the risks associated with vaccination are equal to or less than those HCWs regularly consent to in the line of duty, health authorities are justified in exposing HCWs to vaccine-associated risks.

Central to both arguments is that HCW made an autonomous decision to enter the profession. The role of an HCW carries obligations and limitations that restrict exercises of autonomy that may be appropriate in other contexts. By entering employment as an HCW, these individuals consented to these obligations and constraints. Moreover, some hold by entering the profession, HCWs agree to reasonably foreseeable risks (Schuklenk 2020). While there may be no ongoing bioterrorism attack or pandemic when the HCW enters the profession, it is easy for the HCW to consider that potential future and the risks that their chosen profession would entail in that scenario.

A severe outbreak of an infectious disease such as Covid-19 was reasonably foreseeable. In the 21st century alone, HCWs in Canada have had to contend with the 2002 SARS outbreak and the 2009 H1N1 pandemic. Similarly, while the 2014 Ebola outbreak had less impact within Canada, the global nature of the response ensured that the details of the epidemic were widely publicized (Gerlach 2016; Humphries, Radice, and Lauzier 2017). As such, it was reasonably foreseeable that taking on the role of an HCW entailed agreeing to the risk of working during a pandemic. In turn, consenting to work during a pandemic involves consenting to the interventions used to mitigate and control the spread of disease. Vaccination is one such intervention.

Furthermore, many, if not most, health authorities already mandate certain vaccinations as conditions of employment. In Canada, health authorities in Ontario require HCWs to demonstrate "evidence of immunity for certain communicable diseases such as measles, rubella, varicella, [and] tuberculosis" (Ontario Hospital Association 2022). Similarly, British Columbia mandates several vaccines for HCWs as a condition of employment (BCCDC 2023). While specific requirements differ between and within provinces, vaccination as a condition of employment for HCWs is relatively standard. As such, accepting vaccination is already a part of the mixture of risks and benefits to which HCWs consent when they enter the profession. By autonomously entering the workforce as an HCW, these individuals agree to waive their right to refuse certain vaccinations. New pandemics and, therefore, new vaccines are a reasonably foreseeable role-related risks, HCWs can be understood as consenting to new vaccinations with a sufficiently favourable risk/benefit profile. Thus, some may argue that while HCWs possess a right to autonomy, this right does not extend to vaccine refusal.

In addition to these concerns, the patient's interests impact the moral character of an HCWs exercise of autonomy. By exercising their autonomy to refuse vaccination, the HCW acts against the interests of the patient (H.C. Maltezou and Tsakris 2011; Bradfield and Giubilini 2021). Just as the HCW has a right to bodily autonomy, patients have a right not to be exposed to unnecessary risk while receiving healthcare (Pūras et al. 2020). Moreover, they have the right to understand the risks to which they are exposed and make an informed decision as to whether to be exposed to them (Kirby 1983). As an unvaccinated HCW increases the risks to the patient,

some gone so far as to propose that patients may have a right to a fully vaccinated care team (Schwartzberg, Levenson, and Appel 2022). In each of these cases, the right to autonomy of the patient limits the exercise of the HCW's right to refuse vaccination while continuing to work as an HCW.

Finally, others have argued that patients' rights outweigh those of the HCW due to the limitations imposed on the patient (Rimedio, Galante, and Picozzi 2022; Bradfield and Giubilini 2021). During a medical crisis, a patient faces minimal options. They can either seek medical intervention or risk dying without it. Many medical conditions requiring inpatient treatment increase the vulnerability to and severity of outcomes from a Covid-19 infection, such as how a cancer patient receiving chemotherapy has a reduced immune system. In this case, the patient's autonomy is constrained by their circumstances, and they have no choice but to be made vulnerable. By contrast, the HCW has a much broader array of available options. Due to the vulnerability and limited autonomy of the patient, their rights trump those of the HCW to refuse vaccination.

When all factors are weighed, considerations of autonomy seem to support vaccination as an action for fulfilling the HCW's duty of care. Although it is essential to acknowledge the right to autonomy of HCWs, the patient's rights and the situation's broader context carry more weight in these circumstances. While patients are often in care due to issues beyond their control, HCWs are in the position to provide care due to their autonomous choices. When they chose their profession, they agreed to limit their voluntary actions. Moreover, they could foresee the potential for novel pandemics and the mandating of vaccines to fight these pandemics. In contrast to this autonomous choice, the patient is vulnerable and has reduced autonomy. As such, it is the HCW's duty to preserve this autonomy and to restore it to the degree possible. Vaccines are a tool for fulfilling this duty.

1.4 Justice

While duties of justice introduce new aspects to an HCWs duty of care, to a large extent, considerations of justice serve to amplify the duties discussed above. That is, rather than introducing a new type of duty, considerations of justice serve to intensify the duties of beneficence, non-maleficence, and autonomy. Specifically, duties of justice highlight how the disease burden of Covid-19 may exacerbate existing inequalities and how HCWs can act to prevent this.

Issues of justice surrounding infection from Covid-19 are perhaps best thought of as issues of distributive justice. The disease burden of Covid-19 is not distributed evenly. Some individuals have opportunities and resources to decrease their risk of infection through means such as remote work, grocery delivery, etc. Similarly, these individuals likely have better access to healthcare, medications, sick days, and other means to minimize the consequences if they do get infected. In contrast, many individuals lack these resources.

There are, of course, many different theories and approaches to distributive justice. One distinguishing factor of these theories is their level of paternalism and the degree to which they focus on the reasons for inequalities. Theories such as prioritarianism, capabilities theory, and relational egalitarianism fall towards one end of the spectrum in that they tend to emphasize the adverse effects of unjust distributions rather than the circumstances leading to them. As such, they are less concerned with questions of personal responsibility and more concerned with the relative standing of individuals in society. For instance, prioritarianism holds that it is more

important to benefit the worst off in society and that these benefits carry more weight than benefits to those who are better off (Adler and Holtug 2019). Since the disease burden of Covid-19 is unequal, these theories would likely demand that HCWs act to alleviate or at least act to prevent contributing to the worsening of these injustices (Nielsen 2022). Vaccination would be one such action.

In contrast, theories like luck egalitarianism take little issue with inequalities in distribution so long as these inequalities result from the free choices of those affected. There are many variations of luck egalitarianism. However, at their core, they share the notion that "it is unjust for some individuals to be worse off than others through no choice of their own," and they "den[y] that inequalities are unjust when produced by variations in voluntary choice against a background of equal opportunity" (Casal 2007, 322). "Option luck" is the term used to characterize the consequences of one's freely made decisions. If an individual were to gamble away their student loans, society does not owe that student compensation as the student made a free choice to risk their money. By contrast, "brute luck" describes the consequences of situations beyond the control of the individual (R. Dworkin 2018). If someone is born blind, society owes them the resources necessary to compensate for their condition or alter society to eliminate barriers for blind individuals.

If the unequal burdens of Covid-19 can be ascribed to personal responsibility, then a case could be made from a luck egalitarian perspective that considerations of justice do not substantially alter the duties of HCWs. Individuals have a choice as to their profession. As such, if freely choosing to work in a customer service job increases one's exposure to Covid-19 and fails to provide the financial resources for mitigating its effects, it seems as if the HCW has no responsibility for the consequences of this. However, while individuals doubtless have a degree of control over their risk exposure, this focus on personal responsibility misses how large portions of one's risk exposure to Covid-19 are beyond their control. Part of this variation can be ascribed to random chance. Despite taking reasonable precautions and following public health guidelines, someone can become infected due to being in the wrong place at the wrong time. Moreover, two people exposed at the same time may have significantly different immune responses, with one becoming severely ill while the other remains asymptomatic (Langton et al. 2021). As such, a significant portion of the variation of the burden of Covid-19 can be attributed to randomness.

Yet much of the variation in disease burden is far from random. Neither is it within the individual's control. Instead, a significant degree of the variation of disease burden is determined by social factors such as socioeconomic status, race, and gender. Each of these factors has been demonstrated to impact one's susceptibility to Covid-19 infection and the outcomes for those infected. Lower-income earners are likelier to work frontline jobs such as grocery store clerks, gas station attendants, and healthcare aides (Brudney 2020). As such, they are significantly more likely to be exposed to the virus. In the early stages of the pandemic, these workers were celebrated for their sacrifice in risking their safety to provide these vital services. However, the reality is much more grim.

Due to their low income, lack of transferable skills, and the economic disruptions brought about by the pandemic, workers in these positions had little choice but to continue in their roles. They lacked the financial means to quit their job, and doing so voluntarily would make them ineligible for governmental income supports such as the Canadian Emergency Response Benefit (Canada 2022). Moreover, changing jobs to a non-frontline position would be challenging due to the high unemployment and low job vacancy resulting from the pandemic. These issues are exacerbated by the specialization of many frontline workers in customer-facing roles and their lack of training that is easily transferred to a non-frontline environment. While those in white-collar professions transitioned relatively seamlessly to remote, many frontline workers had no choice but to continue to expose themselves to elevated levels of risk (Brudney 2020).

In addition to exposure from work, lower SES individuals are at increased risk in many other aspects of life. They are more likely to rely on public transit and live in communal living situations such as having multiple roommates or living in large family units (Barri et al. 2021; Ahmad et al. 2020), increasing the risk of contracting Covid-19. When infected, low-income individuals lack resources to mitigate the harms, such as accessing healthcare in countries where such services are largely privatized. While Canada's publicly funded healthcare system lowers this barrier, it does not eliminate it. Employees in lower-paid professions are less likely to have flexible work schedules that allow them to miss work (Golden 2001). Moreover, commuting to an appointment via public transit requires more time than commuting via personal vehicle.

Even if they can take time off, low-income employees are less likely to have paid sick days (Clemans-Cope et al. 2008). Since many of these employees live paycheck to paycheck, they may be forced to choose between going to the doctor and paying their bills. This lack of support likely influences their decision to test for infection. Depending on the existing health regulations, a positive result could mean prolonged isolation, entailing a significant loss of income. Even for those living in a public healthcare system, there are substantial income-based barriers to Covid-19 testing and mitigation. As such, low-income individuals are more likely to be infected and more vulnerable to severe infections and death.

In contrast, the employers of those with higher SES are more likely to provide paid sick days (Clemans-Cope et al. 2008). They are more likely to have free time and available means of transport to get to the doctor or a vaccination centre. They have more disposable income to mitigate the impacts of Covid and the public health isolation requirements. Whether it be by purchasing pharmaceuticals to aid recovery or by paying to have restaurants meals and groceries delivered to their houses, those with higher SES possess financial recourses to mitigate the harms of Covid.

However, such resources go beyond the material. People's social networks primarily comprise those with similar SES to themselves (Clemans-Cope et al. 2008). As such, those with higher SES possess resources in the form of relationships that significantly mitigate the impacts of an infection. Higher SES individuals are more likely to have a partner or spouse who works from home and can thus care for them when they become sick (Bloom and National Bureau of Economic 2013). They are more likely to have friends and family who are wealthy enough to retire and are therefore available to provide free childcare during an infection. They are likelier to be friends with doctors who can provide free consultations or prescribe medication. Between personal and material resources, those with higher SES possess many ways to mitigate the worst harms of Covid-19.

In many ways, working a low-income, frontline job is inherently choice-limiting. Even if these workers wished to act to protect themselves, these choices are unavailable to them. Still, suppose these limited choices in the present are the result of free choices in the past. In that case, luck egalitarianism may hold that HCWs have no additional responsibilities to this group. I will address this fully at the end of this section. First, I will discuss how race and gender, factors over which individuals have little control, impact one's risk exposure to Covid-19. Of course, the racial wealth gap and gender pay gap mean many of these issues are intimately tied to SES. However, aside from income, pandemics tend to have significantly worse impacts on women and Black, Indigenous, and People of Colour (BIPOC).

Women and BIPOC individuals are more likely to work in frontline positions that increase their risk of exposure to Covid-19 (Brudney 2020). On average, they make less money, have less job security, and have less workplace benefits (Block and Galabuzi 2011; Fortin, Bell, and Böhm 2017). They are overrepresented in sectors that do not accommodate telecommuting and were especially hard hit by public health orders requiring institutions to close or individuals to stay home (Brudney 2020; Carli 2020). As a result, women were 24% more likely to permanently lose their job during the pandemic when compared to men and racialized BIPOC individuals lost jobs at rates higher than white indivuals (Dang and Nguyen 2021; Gemelas et al. 2021).

Outside of the workplace, women are more likely to suffer poor outcomes from Covid in the home. They are more likely to be the head of single-parent households, and even when they have a partner, they tend to bear the majority of household duties, including caring for children and elderly relatives (Carli 2020, 649). Moreover, this burden of care is exacerbated by the closures of daycares and schools due to Covid-19. Following the closure of schools, 48% of women in two partner households reported being the sole care provider for their children compared to 11% of men (Croda and Grossbard 2021, 3). Many women were forced to leave the workforce entirely to fill the childcare gap (Landivar et al. 2020). Even if these women could continue working from home, many were forced to balance acting as de-facto teachers for their children, resulting in an overburdening of mothers and further loss of work hours and income (Croda and Grossbard 2021).

As with women, BIPOC individuals are at higher risk of infection and poor outcomes from Covid-19 for several reasons. Along with the issues associated with the racial wealth gap, BIPOC communities are more vulnerable to adverse social determinants of health, such as environmental racism and lack of access to healthy food due to food deserts and food insecurity (Flagg and Campbell 2021). These factors contribute to higher rates of chronic illnesses such as diabetes, hypertension, and obesity, which are associated with worse COVID-19 outcomes. Accessing healthcare can be a challenge for these communities due to constraints on finances, transportation, flexible work schedule, etc. Moreover, many of these communities lack sufficient healthcare infrastructure. As such, accessing healthcare can require significant travel for individuals from poorer neighbourhoods and those residing in remote indigenous communities (Nguyen et al. 2020). Even if they have access, many BIPOC individuals may hesitate to seek care. The legacy of medical racism in North America, ranging from the Tuskegee syphilis experiment to the non-consensual vaccine trials on Indigenous children in Canada, has left many BIPOC individuals with a justified distrust of the medical establishment (Lux 1998; Savoia et al. 2021).

When considering SES, gender, and race, it is clear that these are primarily the results of brute luck. A person has little control over their race or gender. Similarly, they are born into a particular economic situation. Of course, individuals have a degree of option luck in these situations. Through hard work and smart choices, they may be able to improve their SES, move to a neighbourhood free from the effects of environmental racism, or work their way into a job that allows telecommuting. Still, the options are more limited, and the obstacles more significant for those from these groups. Moreover, the gender wage gap and racial wealth gap are systemic issues. While it may be difficult to blame any one case on these issues, at a population level, it is clear that society limits the option luck of these groups and exercises a degree of brute luck in keeping them in worse-off situations.

These worse-off situations put them at higher risk of infection and death from Covid-19. As such, luck egalitarianism supports mitigating the impacts of brute luck on these groups. A straightforward way to do so is by mandating vaccines for HCWs. By being vaccinated, HCWs take a step to avoid causing further harm to those likely to be worse off. This action recognizes that luck plays a role in people's health outcomes and that access to healthcare is not evenly distributed. Moreover, it acknowledges HCW's responsibility to benefit their patients and not cause them harm.

Finally, it recognizes that vaccination status does not discriminate based on the patient's personal responsibility. It may be that some patients treated by an HCW require care due to option luck alone. However, most patients will be there due to some combination of option and brute luck. For some, the portion of brute luck will be much higher than that for which they can reasonably be blamed. In cases where brute luck plays a contributing role, HCWs have a responsibility to mitigate the risks of Covid-19. Since it is impossible to be vaccinated for these patients and not for those who are fully responsible for their situation, it seems as if duties of justice demand that HCWs be vaccinated to fulfill their duty of care.

1.5 From Duty to Mandates

From the above, it is clear that the duty of care of HCWs entails a duty to act to protect patients and themselves from infection. Vaccination is a straightforward tool for fulfilling this duty. Vaccination enables HCWs to benefit their patients and prevents the HCWs from inadvertently causing harm. It also fulfills the requirements of justice and serves to promote patient autonomy. While HCWs have a right to autonomy, this right does not extend to refusing to fulfill one's duty of care. However, what is less clear is whether governments and healthcare institutions are justified in mandating vaccination as a method of requiring HCWs to fulfill their duty of care.

Many have argued that variations on the considerations above are strong enough to support vaccine mandates (Bradfield and Giubilini 2021; Loh et al. 2022). However, Roland Pierik goes beyond these arguments in his discussion of the parallel case of mandating childhood vaccinations. Using vaccination against measles as a case study, Pierik argues for an unqualified mandate on childhood vaccinations (Pierik 2018). That is, he argues that vaccination be mandatory for every child and that there be no exceptions for exemptions based on religious or conscientious objections. In support of this claim, he provides two primary arguments. First, parents who reject vaccination fail to act in their children's best interest. Second, governments are responsible for protecting the public good of herd immunity.

Since vaccination against measles must occur when children are too young to decide for themselves, a level of paternalism is justified. While this decision-making responsibility would typically default to the parents, Pierik argues that the potential consequences are too grave to allow them to reject vaccination. While he agrees that parents have significant rights in choosing how to raise their children, he argues that "the freedom of parents as to how to raise their children should not result in the avoidable risk of death or lifelong disability for their children (2018, 386). Implicitly drawing on the harm principle, he argues that while parents are free to believe and act as they please, the state is responsible for intervening "when these beliefs manifest themselves in actual practices that might harm others, including their children" (2018, 386).

There are strong parallels between Pierik's argument and the case for mandating Covid-19 vaccines for HCWs. However, there are also differences. Perhaps the most significant of these is that in the case of HCWs, the mandates are being forced on an individual who is competent to make an informed decision, whereas in the case of childhood vaccination, the government is acting as a substitute decision-maker for an individual incapable of choosing for themselves. For Pierik, the government is justified in taking over the paternalistic role of the parents because the parents are failing to act in the child's best interest (Pierik 2018). In contrast, HCWs are full adults and can decide for themselves. In general, broader society is responsible for respecting autonomous decisions, even when the decision seems to run contrary to the individual's best interest (G. Dworkin 1988).

However, upon closer inspection, the cases are not so disanalogous. Rather than understanding the mandate as enforcing a choice on a competent HCW, we should understand it as the government choosing in the patient's best interest. Governmental paternalism is justified in the case of childhood vaccines because the child is incapable of deciding for themselves. If they were capable, we assume that they would choose the option that we perceive to be in their best interest, protecting their health. Patients tend to have an analogous inability to choose. The severity of many conditions or accidents precludes the choice not to seek care for many patients. Furthermore, many patients may not be able to be vaccinated due to being immunocompromised or having specific health conditions or allergies. Some will be children too young both to be vaccinated and to decide for themselves whether to go to the hospital. If Pierik is correct in arguing that mandates are justified in that they protect those who cannot choose for themselves, it seems that mandates for healthcare workers can be justified on similar grounds. Nevertheless, there is a difference between mandating a vaccine to protect the individual receiving a vaccination and mandating a vaccine to protect a third party. In the case of childhood vaccination, it is the child receiving the vaccine who benefits. In the case of the HCWs discussed above, the justifying benefits appear to be the benefits experienced by the patient. Pierik's second justification for mandates addresses this concern. Here, he argues that government has a responsibility to "guard the common good of herd immunity in society, in order to protect vulnerable persons who cannot protect themselves for medical reasons" (2018, 387). That is, whether to vaccinate a child is not merely a decision regarding the child's well-being; it is a public health decision that affects the community's well-being. As such, the government is responsible for ensuring the public good of herd immunity by "incentivizing sufficiently high vaccination rates" (Pierik 2018, 387-388). Moreover, Pierik argues that mandating vaccination distributes the risks and benefits of vaccination as it protects both the individual and those around them.

This argument clearly supports mandating vaccination for HCWs. The duty of care possessed by HCWs entails a duty to protect and benefit their patients. Herd immunity is an effective tool for achieving this protection, especially in the case of protecting vulnerable patients. Of course, it is not necessary for 100% of individuals to be vaccinated in order to achieve herd immunity. Perhaps there is room for allowing some HCWs to opt out of vaccination if they have sufficient justification. In the case of childhood vaccination, Pierik argues it is impossible to establish legitimate measures of religious or conscientious objection to vaccination and that allowing exemptions on these basis risks compromising herd immunity (Pierik 2018, 391-393). Although this argument seems sound, there is an even clearer case for disallowing such exemptions for HCWs.

While it may be unrealistic to legislate our way to herd immunity within broader society, it is possible to approximate herd immunity within each healthcare institution. However, there will always be some patients who cannot be vaccinated. Similarly, in our current political climate, there will always be some portion of patients who refuse vaccination and cannot be compelled to be vaccinated. Attempting to ensure herd immunity within a hospital would require balancing the number of unvaccinated employees with exemption with the number of unvaccinated patients. Not only would this monitoring unnecessarily consume resources, but it would likely result in turning away unvaccinated patients. Many have argued that it is unjust to turn away patients in need based on their refusing vaccination (Schuman, Robertson-Preidler, and Bibler 2022; Parker 2022). Moreover, it is certainly unjust to turn away those in need who cannot be vaccinated through no fault of their own. As such, the closest healthcare institutions can get to herd immunity is by mandating vaccination for all HCWs. While it is unlikely that herd immunity can ever be reached due to the necessary permeability of the healthcare institution with broader society, the principles that justify herd immunity as a public good do the same for reduced transmission within healthcare institutions.

1.6 Conclusion

It is debatable whether any of the arguments from beneficence, non-maleficence, autonomy, or justice can on their own provide a sufficient case for mandating vaccination against Covid-19. Nevertheless, when taken together and combined with Pierik's arguments, they present a compelling case for requiring HCWs to live up to their duty of care. Vaccination on the part of HCWs benefits patients. It enables HCWs to serve more effectively in their lifesaving roles and saves healthcare resources that can be used to benefit patients in other capacities. Similarly, vaccination prevents harm to patients by decreasing the chances of nosocomial infection. While it is essential to acknowledge and respect HCWs' right to autonomy, this right must be balanced against patients' rights. In the context of Covid-19, the rights of the patient and the duty of care of the HCW seem to override the right to autonomy of the HCW. As mandates were reasonably foreseeable and the HCW made the autonomous choice to enter the profession and to consent to the associated mixture of risks and benefits, their claim to refusing vaccination on the grounds of autonomy is significantly weakened.

In each of these areas, vaccination provides a clear action that contributes to fulfilling an HCWs duty of care. While it would be preferable for HCWs to fulfill their duty of their own free volition, some may argue that the risk/benefit profile of the vaccines and the context of the Covid-19 pandemic justifies the implementation of mandates. However, it is crucial to note that neither the duty of care of Pierik's arguments entail a duty to be vaccinated. Instead, they entail the duties of infection control. Again, these are:

- 1. A duty to act to meaningfully prevent transmission to patients and the public, and
- 2. A duty to act to meaningfully protect HCWs from infection, thereby protecting healthcare capacity.

As such, if we accept that authorities are justified in mandating the fulfillment of these duties, only the duty itself can be mandated, not the action taken to fulfill the duty. If there exist reasonable alternative actions capable of fulfilling the duty at a similar or lesser cost, then those actions must be permitted as options. In chapter four, I will argue that such alternatives exist. As such, mandating vaccination is unjustified. However, first I will argue that the case for mandates is significantly weakened by the failures of other parties in the healthcare system. These failures and their impact on the HCW's duty of care are the topic of chapters two and three.

Chapter 2 – Challenges, Alternatives, and Institutional Obligations

The previous section presented the basis for the obligation of HCWs to be vaccinated. HCWs have a duty of care to their patients. In turn, this larger duty is comprised of duties to support the patient's autonomy, promote just outcomes within the healthcare setting, and to seek to benefit and avoid harming their patients. However, HCWs are only one of several parties involved in protecting and benefiting patients. In this chapter, I briefly sketch some of the duties held by patients, healthcare institutions, and the public. Ultimately, I argue that the singular focus on HCWs' failure to be vaccinated obscures how other parties have failed to protect patients and HCWs.

Every healthcare interaction during a pandemic involves a minimum of five parties. These are the patient, the healthcare worker(s), the healthcare institution, the government(s), and the public. Discussion on the vaccination status of HCWs has understandably focused on the roles and responsibilities of HCWs. However, these discussions have largely failed to consider the duties of these other actors and how the actions of these actors impact the ability of HCWs to fulfill their obligations. In many cases, drawing clean distinctions between these actors is impossible. For instance, HCWs are simultaneously potential future patients, members of the public, and representatives of the healthcare institution. As such, the duties discussed below often overlap. Still, it is possible to identify distinct duties held by each party, even if any individual may hold the duties of multiple parties.

2.1 – The Duties of Patients

Out of all the parties involved in the healthcare interaction, patients are the most vulnerable and are arguably owed the most by the other parties. After all, the duties of HCWs are duties of care *to the patient*. However, this does not absolve patients of all duties in the healthcare interaction. In particular, patients have duties during a pandemic that parallel the duties of HCWs (Simonds and Sokol 2009). These are:

1. A duty to protect healthcare capacity by acting to prevent themselves from becoming patients or spreading infection to others, and

2. A duty to act to follow the instructions of HCWs and public health officials and to act to promote the shortest possible recovery time for themselves (H.M. Evans 2007).

In a pandemic, patients have a duty to protect themselves and others through the diligent use of personal protective equipment (PPE) when it is possible for them to do so. The efficacy of such interventions will be discussed fully in chapter four. Patients also possess a duty to follow the instructions of HCWS regarding their care. Whether it be taking the provided medication, refraining from unnecessarily using the call button, or working with HCWs towards specific outcomes such as working with a respiratory therapist, patients must work with the care team to maximize the impact of the interventions and minimize their demands HCWs. In doing so, they avoid unnecessarily consuming healthcare resources that could be better spent elsewhere.

During the Covid-19 pandemic, it appears that most patients have been reasonably reliable at fulfilling these duties. While there exists isolated cases of individuals resisting medical advice and intervention, there has not been large scale failures of patients to fulfill their duties (Booth and Adam 2021). The same cannot be said for individuals in public life – before they become patients. These failings will be discussed under 2.4 – duties of the public.

2.2 Healthcare Institutions

Healthcare institutions are made up of and influenced by many parties. In addition to the individual frontline staff, administrators, etc., there are those who shape the overall institution, such as a CEO or board of directors. As a collective, these institutions possess significant duties toward patients regarding Covid-19 (Simonds and Sokol 2009). In particular, healthcare institutions have duties of infection control that are variations on the duties of HCWs. These are:

1. A duty to act to meaningfully prevent transmission to patients and others within the healthcare institution, and

2. A duty to act to meaningfully protect HCWs from infection, thereby protecting healthcare capacity.

- 3. A duty to ensure adequate capacity for the care and protection of patients,
- 4. A duty to ensure adequate capacity for the care and protection of HCWs.

First, institutions must supply the material goods necessary for the HCW to complete their tasks. From the bringing together of relevant experts to the acquisition of life-saving medication and equipment to the provision of physical space for procedures and recovery, institutions must procure goods and resources that individual HCWs either cannot obtain or could not obtain on a similar scale or with such efficiency. Crucially, this duty also includes providing PPE to keep HCWs safe and ensure they can continue fulfilling their life-saving roles. Without these goods, HCWs would be unable to fulfill their duty of care.

Healthcare institutions also have duties to ensure HCWs can continue to operate longterm rather than burning through HCWs like disposable items. In addition to protecting the physical health of HCWs, intuitions must safeguard the mental health of their employees by ensuring that HCWs receive sufficient time off (Jalili et al. 2021; Riedel et al. 2022). Similarly, they must ensure that HCWs have the resources necessary to avoid burnout and cope with the additional strain introduced in crises such as a pandemic. In part, this support may take the form of ensuring HCWs have access to adequate mental health care or that reasonable steps are taken to ensure that HCWs are not subject to unnecessary burdens. For instance, by establishing firm policies around who receives a limited supply of a life-saving resource, such as ventilators, healthcare institutions can ensure that individual HCWs are not subject to the moral injury of having to decide who receives life-saving care and who will die (Hick et al. 2020).

During the Covid-19 pandemic, healthcare institutions nationwide failed in these duties. To make matters worse, these failures occurred despite Canada's experience with previous pandemics. In particular, the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS) in Canada resulted in the deaths of 44 Canadians and the probable infection of 438 others. In the aftermath of SARS, the government commissioned the "Learning From SARS," which was intended to provide a "third party assessment of current public health efforts and lessons learned for ongoing and future infectious disease control" (Naylor et al. 2003, 1). Unfortunately, by the time Covid-19 hit Canada in early 2020, little action had been taken on crucial recommendations within the report.

Section 5C.5 of "Learning From SARS" addresses the need for increased surge capacity and calls for the building of a surge capacity that is based around "'business as usual', thereby allowing effective redirection of resources in time of need" (Naylor et al. 2003, 102). In addition, it draws attention to the necessity of adequate funding for "usual public health and personal health service needs," as shortfalls in these areas make it all the more challenging to muster surge capacity when it is required (Naylor et al. 2003, 102).
During the height of the COVID-19 pandemic, the healthcare system in Canada faced significant challenges. Despite the lessons of the SARS outbreak, which emphasized the importance of surge capacity and robust healthcare systems, hospitals were overwhelmed with patients, resulting in overcrowding and resource scarcity (Hassan and Mahmoud 2021; Shoukat et al. 2020). Additionally, the pandemic exacerbated pre-existing shortages of healthcare workers, especially nurses and personal support workers (Lopez et al. 2022). This staffing crisis led to increased burnout among HCWs, heightened anxiety and depression levels, and a reduction in the system's ability to effectively manage the surge in COVID-19 cases (Galanis et al. 2021; Søvold et al. 2021).

Across the country, nurses worked overtime to address the staffing gap, resulting in heightened stress and burnout (Carrière et al. 2020; Galanis et al. 2021). The staffing shortage led to delays in care and the cancellation of elective procedures, leading to deteriorating health outcomes for many patients (Sud et al. 2020). The mental health toll of the pandemic on HCWs was another significant issue. High levels of stress, anxiety, and PTSD symptoms were reported among HCWs, yet institutional responses to protect and promote their mental health were often insufficient (Lopez et al. 2022; Søvold et al. 2021; Galanis et al. 2021). Work conditions, including long working hours, inadequate breaks, and inconsistent guidelines around COVID-19 management, exacerbated this crisis.

Infection control measures were also tested during the pandemic. Despite the emphasis on robust infection control protocols in the "Learning From SARS Report," numerous COVID-19 outbreaks occurred in hospitals and long-term care homes, suggesting gaps in effective infection control measures, including PPE provision and use (Leal et al. 2023; Elkrief et al. 2020; Liu et al. 2020). During Covid-19, Canada's healthcare systems failed patients and HCWs in significant ways. These failures caused avoidable harm to patients. Mandating vaccines for HCWs is an attempt to prevent these harms. However, ground-level HCWs such as nurses and orderlies are not responsible for these failures. Moreover, the strain and scale of duties expected of HCWs during the pandemic were directly increased by these failures, leading to increased numbers of patients. As such, the slack created by these failures seems a poor justification for mandates.

2.3 Governments

One step removed from healthcare institutions is the duties of governments (Simonds and Sokol 2009). These are the duties to ensure that institutions and HCWs can fulfill their duties of care. Most obviously, this duty involves shaping the legislative landscape in such a way as to ensure that institutions can provide care without fear of unnecessary legal challenges. In publicly funded healthcare systems such as Canada's, the duty also involves ensuring adequate funding for the healthcare system, including funding healthcare infrastructure and ensuring that healthcare institutions can pay HCWs and procure and maintain adequate equipment.

In addition to these straightforward duties, governments have a duty to take a long view of public health and healthcare. By sufficiently investing in health research, governments contribute to promoting better outcomes for future patients. By establishing infrastructure and relationships for monitoring outbreaks both within and between provinces as well as internationally, governments increase the likelihood of early detection of epidemics, thus enabling swifter efforts and disease prevention and mitigation.

Crucially, none of the duties listed here can be carried out by HCWs, nor are HCWs able to achieve similar benefits. Whether the government fulfills these duties has a direct impact on patients and on HCW's abilities to fulfill their duty of care. If healthcare institutions are not properly funded, there will be inadequate infrastructure, resources, and HCWs to serve patients. Similarly, if governments fail to take steps to identify and mitigate potential disease outbreaks, more individuals will become sick, leading to an overburdening of the healthcare system and straining HCWs capacities to deliver adequate care.

In many ways, Canada has failed in these duties. Like the failures of healthcare institutions, some governmental failings are most clearly seen by investigating the actions taken since the outbreak of SARS. In reaction to SARS, Canada established the Public Health Agency of Canada (PHAC) and the Global Public Health Intelligence Network (GPHIN) to enhance the nation's capacity to respond to public health threats. These strong forward-looking actions could have significantly improved Canada's response to Covid-19. However, over time, resources and focus shifted away from these organizations, particularly GPHIN (Lee and Piper 2021; Robertson 2020). This shift, beginning under a Conservative government focused on fiscal restraint. However, it was continued by a Liberal government seeking to address domestic crises like the opioid epidemic. This deprioritization likely compromised Canada's ability to detect and respond to the emerging COVID-19 pandemic.

GPHIN's diminished role may have resulted from a perceived lower risk of a significant pandemic during a relatively quiet period in global health threats, a shift in resources to address pressing domestic health issues, or a lack of understanding of GPHIN's importance in global health security (Lee and Piper 2021; Robertson 2020).Whatever the reasons, the decision to divert resources from GPHIN before the COVID-19 pandemic significantly impacted its early warning capabilities, delaying Canada's preventive measures and the global response to the outbreak. In addition to failures preceding the outbreak of Covid-19, the government also failed the public and HCWs during the outbreak. The "Learning from SARS" report emphasized that in the face of a public health threat decisions on public health interventions need to be taken quickly and often with incomplete information" (Naylor et al. 2003, 96). However, while there were noted strengths in Canada's response to the early stages of the COVID-19 pandemic, the country was also criticized for its slow implementation of measures such as widespread testing, contact tracing, and mask mandates, which potentially contributed to the virus's spread (Yu et al. 2020; Syed 2022). Miscommunication and fragmentation were also issues, with different provinces adopting varied approaches to the pandemic (Fafard et al. 2021, 463-467).

While it may be possible to argue that such failures are excusable in the early stages of a pandemic, governments continued to delay action well into the outbreak. There is perhaps no better example of this than the 2021 Calgary Stampede and the following roll-back of public health orders. In the summer of 2021, amidst the ongoing COVID-19 pandemic, the government of Alberta made a controversial decision to proceed with the Calgary Stampede, an event notorious for its large crowds and high levels of interpersonal contact. This decision was made despite against the advice and protests of many public health experts who warned of the potential super-spreader event that could result (Heidenreich 2021b; Reiger 2021b).

Notwithstanding these warnings, the Alberta government pushed ahead. Following the Stampede, the Alberta Government significantly rolled back its COVID-19 public health measures. Announced as part of the province's "Open for Summer" plan, from July 29, 2021, quarantine for close contacts of confirmed COVID-19 cases was no longer mandatory, albeit still recommended (Sidu and Wright 2021; Mertz 2021). Asymptomatic testing was also discouraged, and testing for mild symptoms was only made available at select assessment centres. Mask

mandates were lifted across the province, though they remained compulsory in high-risk settings like public transit, healthcare facilities, and continuing care settings. Around the same time, the province announced an end to widespread contact tracing and by August 16th, those who tested positive for Covid-19 were not required to isolate and provincial supports for those isolating were wound down (Malone and Smith 2021; Wong 2021).

Prior to the Stampede, the province reported around 100 new cases per day in early July 2021. However, by the end of August, daily case counts had spiked to over 1,000, reaching over 2,000 daily new cases by mid-September (CBC News). In September 2021 alone, Alberta reported 45,664 cases in a province of just over 4.3 million people (Frew 2021). By comparison, during this same period Ontario, with a population over triple that of Alberta at 14.5 million people, was seeing daily case counts fall under 500 (Wilson 2021). Consequently, hospital capacity was overrun in Alberta, forcing hospitals to postpone elective surgeries and other non-emergency care to accommodate COVID-19 patients (Frew 2021).

Yet despite runaway case counts, the Alberta government resisted implementing a vaccine passport, a policy designed to decrease the spread of Covid-19 by allowing businesses and venues to operate as usual if they require proof of vaccination, a negative rapid test result, or documentation of a medical exemption from patrons. Despite dramatically lower-case counts, many provinces announced and implemented such passports long before the Alberta Government announced on September 15th that they would be introducing their euphemistically titled "restriction exemption program" (Lindsay 2021; Lau 2021; Powers and Carter 2021; Frew 2021). Following the announcement, daily vaccine doses in Alberta tripled – indicating the substantial ability of the government to shape public actions and flatten the curve (Bellefontaine 2021).

Unfortunately, by then, the healthcare system was pushed well past its breaking point. Following warnings from healthcare and labour unions that the healthcare system is "collapsing right in front of our eyes," the Alberta Government requested assistance from other provinces in late September 2021 and plans were made to airlift ICU patients to Ontario (CBC News ; Reiger 2021a). In addition, the Alberta government requested help from the Federal Government including requesting military help in transferring Covid-19 patients to other provinces, and requesting the Federal Government augment Alberta's healthcare capacity by supplying ICU nurses and other healthcare professionals (Reiger 2021a). However, it must be noted that the Alberta Government had turned down prior offers of aid from the governing Federal Liberal Party, opting to wait until the day after the federal election to make the request (Reiger 2021a). This delay was widely criticized as being politically driven, with one political scientists from the University of Calgary stating that "they [the Alberta Government] were putting partisan political interests ahead of the health and wellbeing of Albertans" (Reiger 2021a).

This delay in action on the part of the Alberta Government had real consequences for patients and HCWs. Surgeries were postponed, patients went without lifesaving care, and significant resources were expended (Reiger 2021a). Furthermore, HCWs faced increased risks of infection, burnout, and the many other consequences of attempting to fulfill one's duties amid a healthcare system collapse. Again, these same consequences are pointed to as justifications for mandating vaccines for HCWs. By putting politics over people's lives, the Alberta Government harmed patients and HCWs. Yet it is, in part, these harms that are used to justify vaccine mandates.

2.4 – The Public

As the most broadly defined group, the public has many duties that directly overlap with those above. Members of the public work in healthcare institutions, government, and are potential future patients. Moreover, the same individuals have different roles in the public sphere. Broadly, we can categorize these as the public's day-to-day behavior and the roll of the public in democratic engagement. I explore both of these below.

2.4.1 – The Day-to-Day Public

Members of the public possess a duty to take reasonable precautions to avoid becoming patients and making others into patients. This duty includes complying with public health guidelines such as masking and social distancing requirements or requirements to quarantine if infected. It involves foregoing risky behaviour, such as attending large social gatherings or participating in sports that might land the person in the hospital for reasons unrelated to Covid-19. Vaccination, when possible, is another step that patients can take to fulfill the duty of avoiding becoming ill unnecessarily. By fulfilling these duties, individuals contribute to HCWs' ability to fulfill their duty of care. Doing so reduces the likelihood that they or those they encounter will become patients. Thus, they take reasonable steps to reduce the strain on the healthcare system, ensuring that limited resources are not unnecessarily spent.

Many individuals have failed to fulfill these duties. Across Canada, individuals have directly defied public health orders by attending church services, in-person dining, and other large in-person events while making little to no effort to mitigate the potential spread of the virus. At a church in Calgary that refused to reduce capacity to comply with public health guidelines, an inspection by Alberta Health Services found that "only two of approximately 75 attendees were wearing masks, the pastor and church staff were unmasked and rows in the auditorium were full, with people sitting side-by-side in rows less than two metres apart. The inspection also found that there was no cleaning or disinfecting of high-touch surfaces between services" (Rieger 2021b).

Likewise, the Whistle Stop Cafe in Alberta defied public health orders by refusing to close for in person dining. Following the announcement of this refusal, hundreds of people flocked to the cafe to support the decision and to similarly defy the orders. The owner bragged that "we have live music, which has been deemed against the rule. We have dine-in service, which is against the rules, we have people congregating and visiting, which is against the rules, and I don't think I've seen one masked person here, which is against the rules" (Komadina 2021).

Such actions demonstrate a disregard for, or at the very least a carelessness towards one's health and the health of others one might infect. In addition, many Canadians have failed to protect themselves and others by refusing vaccination. Of course, like the duties of HCWs, refusing vaccination is not necessarily a failure if individuals are taking other steps to reduce their potential for getting sick or spreading infection. However, many who refuse vaccination also refuse to comply with public health orders such as masking and social distancing (Latkin et al. 2021). Intuitively, this carelessness seems relevant to the care one is entitled to and the lengths that HCWs must go to in delivering that care. If patients have not done the bare minimum to protect themselves, why should HCWs be required to make sacrifices to benefit the patient? Moreover, by refusing to take steps to protect themselves, these individuals risk worsening the quality of care for no-fault patients by consuming healthcare resources and placing additional strain on the system.

The choices of these individuals impact the relationship between HCWs and patients by unnecessarily consuming resources and placing greater demands on HCWs. In turn, these failures compromise the HCWs' ability to fulfill their duty of care. It is reasonable that these choices would alter the scope of that duty. David Shaw captures this notion in his discussion of using vaccination status as a criterion for refusing patients during the pandemic. Much of his argument concerns the just allocation of scarce medical resources. While questions of triage are beyond the scope of this paper, Shaw's arguments shed light on the current debate when he proposes that refusing vaccination status is a valid measure for triaging patients and for refusing care for Covid-19 (Shaw 2022, 885). Like the arguments in chapter one supporting an HCWs duty of care, Shaw draws on luck egalitarianism to suggest that choices such as refusing vaccination matter when determining what is owed to a patient (Shaw 2022, 886). For Shaw, vaccination is medical care. Since unvaccinated individuals have refused medical care, it is appropriate to factor in this decision when allocating scarce medical resources.

Curiously, Shaw does not consider his argument to support turning patients away based on their refusal to take other precautions such as masking and social distancing as "those are public health precautions, while vaccination is a health(care) intervention[s]" (Shaw 2022, 886). This distinction seems dubious. However, even if we accept it, there are significant reasons why the actions of patients should not impact the duties of HCWs. There may be valid reasons for refusing vaccination, and it is difficult to determine a patient's motivations. Moreover, there is little agreement as to which grounds for refusal are "socially or ethically valid" (Schuman, Robertson-Preidler, and Bibler 2022). Triaging patients based on vaccination status risks exacerbating inequities as racialized groups are less likely to be vaccinated. Finally, the most prominent reason against treating patients differently based on their actions is that the vaccination status of HCWs does not distinguish between patients. While some patients may be at fault for their hospitalization, others are not. As such, even if we accept Shaw's arguments, it may be that HCWs have an obligation towards the no-fault patients and that meeting these obligations has spillover benefits for at-fault patients.

Still, it is clear that the actions of some patients place burdens on HCWs and set the stage for poorer outcomes for all patients. By refusing to be vaccinated and comply with public health orders, these patients increase demand on HCWs and the healthcare system. It is, in part, this demand that is used to justify mandatory vaccinations for HCWs. However, while HCWs have duties to their patients, it is not clear that they have a duty to compensate for preventable demand. Moreover, if there exist alternative interventions for fulfilling the baseline duty of care, it is not clear that the increased demand created by the failures of patients should raise the bar of the duty of care so as to include vaccination.

2.4.2 – The Public and Democratic Engagement

In addition to day-to-day activities, the public has a duty to shape the healthcare system through the democratic process. In a democracy, the public shapes government policies through voting, protests, consultations, and other forms of democratic engagement. However, the public in Canada has failed to support healthcare workers by continuously voting for governments that have cut funding for healthcare or failed to prioritize healthcare (Schuklenk 2020). This pattern has been observed in several provinces, leading to a decline in resources and support for healthcare workers, compromising the quality of patient care and straining the healthcare system.

In Ontario, the province has been criticized for implementing a boom and bust healthcare funding cycle which left the province unprepared for Covid-19 (Ferguson 2023). In Alberta, the

United Conservative Party (UCP) under Premier Jason Kenney introduced changes to healthcare funding in 2019, including eliminating thousands of healthcare positions and reducing funding for health services (Lawrence 2019). These cuts strained the healthcare system and impacted the support and resources available for healthcare workers, ultimately affecting patient care. Quebec has also seen healthcare funding reductions under the Coalition Avenir Québec (CAQ) government, which led to concerns about the availability of resources and support for healthcare workers (Leah and Shingler 2022). Across Canada, provinces have seen similar cuts, resulting in significant consequences for the healthcare system and its ability to meet the needs of patients and healthcare workers.

This lack of funding has a direct impact on the number of HCWs available to serve patients and the resources available to do so, as well as the resources available to protect HCWs, such as quality PPE (Schuklenk 2020). Moreover, it impacts the number of HCWs available to fill in when HCWs get sick, burnt out, or need to take time off for other reasons. Increasing funding also decreases the chances of burnout in the first place, as increasing the number of HCWs in each institution reduces the strain on each HCW (Sharifi, Asadi-Pooya, and Mousavi-Roknabadi 2021; Lopez et al. 2022). Yet it is precisely this lack of capacity that is being used in part to justify mandating vaccines for HCWs. Mandates are thought to be justified in part by their ability to prevent absenteeism and presenteeism. But in a properly funded healthcare system, an HCW missing a shift is much not only less of an issue, but it is also less likely due to improved infection controls, lower rates of stress, etc.

HCWs are not responsible for this lack of funding. Yet during the pandemic, many have gone to great lengths and worked incredible hours to serve their patients. Mandates are, in part, a demand that HCWs compensate for this lack of funding and sacrifice even more than they already have. When combined with the shortcomings of other parties, such a demand is clearly inappropriate.

2.5 - Conclusion

The actions of other actors in the healthcare interaction impact HCWs' abilities to fulfill their duty of care. By disregarding public health orders and voting for cuts to the healthcare system, individuals and the public increase the number of patients in care while reducing available resources. Similarly, healthcare institutions increase the number of covid infections and reduce patient outcomes by neglecting to provide adequate infection control measures. Again, these failings directly impact the demands on HCWs. Moreover, by failing to protect the mental and physical health of HCWs, failing to provide adequate surge capacity, and failing to ensure sufficient staff, healthcare institutions reduce the resources available to HCWs to meet these demands.

Finally, governments across Canada also failed HCWs and patients during the Covid-19 pandemic. By defunding vital resources such as the PHCAC and GPHIN, successive governments ensured that HCWs began the marathon of the pandemic with their hands tied behind their backs. By failing to act in a timely manner to reduce transmission, governments ensured that healthcare capacity would be overwhelmed and HCWs would be forced to deal with record numbers of patients. In this context, it seems dubious to demand that HCWs pick up the slack created by the failures of these parties. Yet perhaps the fact that HCWs have the ability to be vaccinated entails a responsibility to act despite the failures of others. The next chapter explores this question.

Chapter 3 - The Balance of Duties Among Parties

HCWs possess a duty to of care for their patients. Yet there remains the question of how far they must go in fulfilling these duties. It is clear that other parties have failed to fulfill their duties during Covid-19 and that these failures have worsened patient outcomes and increased the burden on HCWs. What is less clear is whether these failures impact the duties of HCWs. That is, as the group most intimately involved in patient care other than the patients themselves, do HCWs have a duty to pick up the slack created by these other parties and to take additional actions that would not be expected or required if these other parties fulfilled their duties? This chapter argues that they do not.

In his work "The Demands of Beneficence," Liam Murphy investigates the extent of duties of benefits in cooperative contexts (1993). That is, contexts in which multiple parties impact the outcome. In particular, Murphy aims to develop a theory immune from issues of overdemandingness. Overdemandingness refers to a critique often levied at moral theories which, when implemented, demand excessive sacrifice, effort, or altruism from individuals, exceeding what seems reasonable or sustainable in real-world circumstances. This critique is often directed at ethical systems like utilitarianism, which in its purest form, could require individuals to constantly act in ways that maximize overall happiness or welfare, regardless of personal cost.

Concerns of overdemandingness are central when considering the duties of beneficence. However, these concerns are also generalizable to duties of non-maleficence, autonomy, and justice. In each of these areas, a balance must be struck between promoting the overall good and acknowledging individual limitations regarding resources and personal capacity. As such, it is highly relevant to determining the limits of the duty of care of HCWs. The ability for ethical principles to result in overdemandingness is clearly seen in what Murphy terms "the simple principle of beneficence" (Murphy 1993, 268-272). This principle requires each individual to promote as much good as they can, irrespective of the actions of others. In doing so, it draws no distinctions between actors and their varying capacities to contribute. Moreover, it demands that as long as there is a need that they can fill, the individual act to fill that need regardless of personal cost.

In response to these concerns, Murphy proposes the "cooperative principle" and the closely associated "compliance condition" (1993, 272-281). The cooperative principle holds that the sacrifice or contribution required from an individual should correspond to what would be optimal under full compliance from all parties involved. Each actor is expected to contribute their fair share to a collective endeavour, with the understanding that everyone else is also doing the same. This approach moderates the demands on individuals, preventing undue burdens and promoting more equitable contributions. Moreover, it shifts the perception of beneficence from a purely self-sacrificing act to a cooperative investment in a shared project, where all participants ultimately enjoy the benefits of collective effort.

An essential aspect of the cooperative principle is the compliance condition (Murphy 1993, 272-281). This condition holds that everyone is morally obliged to contribute or make sacrifices as if all others were fully complying. This condition acts as a fairness mechanism, preventing a situation where some individuals bear a disproportionate share of the burden because others are not fulfilling their roles. It limits the demands on individuals, ensuring that the obligations of beneficence are reasonable and within the capacity of each participant. As such, the compliance condition ensures the demands of beneficence do not become overdemanding, all while acknowledging the cooperative nature and interconnectedness of many issues.

Core to Murphy's case is his "fairness argument" (Murphy 1993, 281-283). This argument maintains that it is fundamentally unfair for certain individuals to bear the burden of others who choose not to contribute to the collective good. Murphy asserts that the Cooperative Principle, when guided by the Compliance Condition, helps to mitigate this unfairness. It safeguards against the exploitation of those willing to contribute to the collective good by those who decide not to contribute, creating a more balanced and fair society. The Cooperative Principle thus respects both the collective good and individual fairness.

When applied to the case of Covid-19, Murphey's theory makes clear that HCWs should not be expected to pick up the slack created by other parties. Under the simple principle, HCWs would be required to take any and all actions likely to benefit their patients. Vaccination is one such action. However, under the cooperative principle, we should only expect HCWs to take actions that would be sufficient under conditions of full compliance. That is, we should only expect them to take actions that would be sufficient to fulfill their duty of care in situations where patients, the public, healthcare institutions, and the public were also fulfilling their duties.

This compliance condition significantly weakens the case for vaccine mandates as it lowers the floor as to what an acceptable alternative to vaccination would be. No longer does the alternative intervention need to be the same or equal in efficacy to vaccination. Instead, it must be sufficient to fulfill the duty of care under situations of full compliance. Nevertheless, I argue in chapter four that there exist reasonable alternatives to vaccines that are equal or greater in efficacy. As such, the major role of the compliance condition in this case is not lowering the floor but in establishing a ceiling on the duty of care. If the available interventions are sufficient to fulfill the duty of care under conditions of full compliance, we cannot demand that HCWs be vaccinated in addition to using the alternative intervention, even if this vaccination increases the protection of HCWs and patients above the level provided by the alternative alone. While vaccination is a morally praiseworthy act and should be promoted, forcing it on HCWs in an effort to pick up the slack created by the failures of others is unjust.

However, one may raise three main objections to the application of Murphy's theory to the duty of care of HCWs. These are:

1. Times of crisis, such as pandemics, produce special obligations for HCWs that go beyond their standard duty of care,

2. Accepting Murphey's view would allow for the deprioritizing of patients who fail to fulfill their duties,

3. The benefits of vaccination for HCWs outweigh the costs and concerns over rights and level of duties.

Each of these objections will be explored below.

3.1 – Special Obligations

The first objection proposes that HCWs have special obligations toward their patients. Special obligations refer to ethical duties arising from a unique or intimate relationship between individuals (Murphy 1993). Unlike general obligations that apply universally, special obligations are typically context-specific and often involve a higher level of moral duty or responsibility. These special obligations can't easily be subsumed under a cooperative framework as they apply individually and separately to each person in the relationship rather than being shared collectively. Perhaps the patient-HCW relationship is the type of relationship that entails such obligations. Special obligations are most clearly seen in close relationships such as with friends and family members (Jeske 1998). Parents have special obligations towards their children that they do not have towards other children. While these parents have duties towards other children, such as duties of respect, the parent-child relationship entails duties of care that go above and beyond these baseline duties. These include spending sufficient time with their children, nurturing their talents and interests, investing in their educational development, etc. Although it may be morally praiseworthy for parents to invest in other people's children in similar ways, such actions are not considered an obligation.

The notion of "special obligations" does not conflict with Murphy's theory. Instead, he acknowledges some cases seem to exist outside of the application of the cooperative principle to which special obligations would apply (Murphy 1993, 290-292). He gives the example of a case where person A and person B can save two drowning children at little cost to themselves. However, if either A or B alone saves both children, the one doing the saving will miss their flight and vacation. In contradiction to the cooperative principle, it seems that morality demands A save both children, even if B fails to comply. Murphy admits that this intuitive result contradicts the compliance condition. However, he proposes that such immediate cases of rescue fall outside the cooperative projects to which the cooperative principle applies (Murphy 1993, 290-292). As such, these cases are best covered by special obligations.

When considering whether special obligations can entail a duty to be vaccinated for HCWs, it must be established what relationship or context would entail these obligations. What is special about the HCW's obligations? Perhaps an argument could be made that HCWs have a special relationship with patients, like parents have a special relationship with children. Not that this relationship is one of paternalism. Instead, it is a relationship in which the patient has limited autonomy and depends on the healthcare worker. Moreover, perhaps the specialized skills of HCWs are akin to the nearness that entails the special obligation of rescue in the case of drowning children. One could argue that these skills require the HCWs to take action to benefit their patients.

While these arguments may sound promising, the notion of "special obligations" they present immediately collapses into the duty of care. It is precisely these skills and relationships that entail the HCW's duty of care outlined in chapter one. As Sokol states:

By virtue of their profession, doctors and nurses have more stringent obligations of beneficence than most. They have obligations to a specified group of persons (their patients) that nonmedical personnel have no obligation to help. The term "duty of care" refers to these special obligations. (Sokol 2006, 1238)

The emergency room surgeon must cut into the patient who requires surgery. This duty is entailed by the surgeon's training and their relationship of nearness and dependency to the patient. Both duties derive from the professional role of the surgeon. Even if the surgeon had these skills and was near the patient, it is debatable whether the surgeon would be morally required or even permitted to perform surgery unless they are operating in their professional role. Thus, any special obligations of HCWs fit under the duty of care described in chapter one.

Still, some may argue that the unique circumstances of the pandemic give rise to special obligations that go beyond the standard duty of care. For instance, Simonds and Sokol could be understood as saying as much when they claim that "during major catastrophes, the duty of care of the health service changes to a different mode than in normal circumstances. The service may be stretched beyond capacity and hard decisions will have to be made" (2009, 306). This argument is the strongest case that can be made for such obligations in that it narrows the scope of special obligations to circumstances that are out of the norm and in which HCWs could supposedly have an impact. Here, it is not the baseline healthcare demands that are akin to the

drowning child. Instead, the pandemic is like a burst dam that floods a town, and the skills are like a boat that allows them to rescue patients.

However, I argue that this is not an increase in the kind of duty. Rather, it is an increase in degree. Prior to and during a natural disaster, HCWs have a duty of care toward their patients (Simonds and Sokol 2009). The circumstance of the earthquake increases the lengths to which an HCW must go to fulfill this duty in the areas of beneficence, non-maleficence, autonomy, and justice. After an earthquake, the duty of care may demand that the HCW sacrifices personal interest and work hours normally considered unreasonable to benefit their patients. However, it does not introduce entirely new duties that cannot already be accounted for by the four components of the duty of care. While there are valid criticisms that these four duties fail to capture the full scope of the duty of care, any expansion of this scope would apply to the duty of care in general, not just in emergencies (Friesen et al. 2017). As such, if vaccination is a special obligation of HCWs, it must be an extension of the HCW's pre-existing duty of care. Thus, it must be a necessary action for fulfilling the increased level of duty entailed by the pandemic.

It must be noted that overwhelmingly HCWs have been rising to meet this increased duty in other areas. From mandatory overtime to the personal risk to HCWs' health, the pandemic placed extraordinary demands on HCWs (McGilton et al. 2021; Brophy et al. 2021; Søvold et al. 2021). These demands have resulted in significant costs to HCWs, including negatively impacting their mental and disrupting their ability to fulfill obligations to friends, family, and their broader communities (Lopez et al. 2022). Still, healthcare workers have risen to the challenge. In every respect, they have continued to care for their patients and to meet the demands of the pandemic, despite the cost and the risk. Thus, even though the emergencies such as the pandemic increase the level of duty of HCWs, it appears that HCWs have been meeting this increased obligation. Still, there remains the possibility that the increased duty of care entails a duty of vaccination. I argue that this is not the case. As outlined in chapter one, vaccination is a method for fulfilling two aspects of the duty of care. These are:

1) the duty to prevent transmission to patients and the public, and

2) the duty to protect HCWs from infection, thereby protecting healthcare capacity. However, even under the increased demands of a pandemic, these are multiply realizable duties in that vaccination is only one of several potential methods for fulfilling these duties. If alternative interventions are available that are sufficient for fulfilling these aspects of the duty of care, vaccination cannot be considered required. I address the question of alternative interventions fully in section 4.3 and argue that vaccination is not required.

3.2 – Deprioritization of the Culpable

A second concern with applying Murphy's theory to the healthcare context is that it would allow for the deprioritization of patients based on their failure to comply. If patients have failed to take reasonable steps to protect themselves, then they have failed in their duties to fulfill their side of the compliance condition. As such, they are partially culpable for the circumstances in which they find themselves and for the increased demands placed on HCWs. On its face, it would seem that Murphy's view would require only a diminished duty of care for these patients as they would not be in this situation under conditions of full compliance.

This situation touches on a broader debate in bioethics on the extent to which the moral culpability of patients affects the duty of care of the HCWs. Outside of Covid-19, there has been

considerable discussion as to whether or not it is appropriate to refuse certain treatments to smokers. Those arguing in favour of refusal cite concerns over personal responsibility and resource allocation (Peters, Morgan, and Gluch 2004; Underwood and Bailey 1993). Those arguing against the deprioritization of culpable patients hold that healthcare workers have a duty of care to these patients regardless of their culpability (Shiu 1993; Glantz 2007). Finally, there are concerns as to whether it is appropriate to allocate healthcare based on blame and whether smokers can appropriately be held fully responsible due to factors such as the social determinants of smoking rates (Pawlik et al. 2009).

For the sake of argument, let us accept that it is morally wrong to deprioritize patients based on their culpability. There are two reasons why Murphey's theory will not lead to deprioritization. First, there is a limit to the extent to which an HCW must go to fulfill their duty of care. For instance, Sokol argues that "doctors are under no moral obligation to donate one of their kidneys to one of their patients," even if doing so would benefit the patient, and no alternative kidney is available (Sokol 2006, 1238). Similarly, during the pandemic, the Red Cross declared the first-ever blood crisis in response to a shortage of blood donations (Red Cross 2022). Although requiring every HCW to donate blood would likely have benefited patients by solving this shortage, doing so would mandate an action that seems to clearly fall outside the HCW's duty of care.

Part of this limit is tied to the risk and cost to the HCW. There is a difference between requiring HCWs to treat culpable patients and requiring HCWs to take on additional risks and costs to do so (Schuklenk 2020). Treating smokers entails no additional risk to the HCW. By contrast, vaccination is far from risk-free. In addition to the costs to rights and bodily autonomy, vaccination carries risks of side effects. While these are usually minor, even minor side effects

can have significant costs for individual HCWs. For an orderly who is a single parent, missing a few days from work due to the side effects of a vaccine may result in being unable to pay rent or the childcare that allows the orderly to come to work. Moreover, while medically severe side effects are rare, they are not unheard of. For instance, multiple deaths within Canada have been linked to individuals receiving the AstraZeneca vaccine (CBC News 2021; Heidenreich 2021a).

While we can accept that HCWs have a duty to treat culpable patients, they should not be expected to take on additional risks to compensate for the conditions created by these patients' culpability. This highlights the second reason why Murphy's theory will not lead to the deprioritization of patients. The level of duty of HCWs does not change based on the patient's culpability. Whether or not patients are culpable, HCWs have a duty of care towards these patients. The level of this duty is established by considering what would be sufficient under full compliance. Thus, the patient's actions do not shift the obligations of the HCW. Instead, the HCW has a duty to treat each patient as if that patient had fully complied.

Here, it is essential to note that Murphy's framework does not suggest that HCWs have similar levels of duties to the public. HCWs possess skills and resources that have more significant impacts than the average person. As such, under full compliance, we would still expect HCWs to sacrifice more during a pandemic than the average person.

The justification of these different levels of sacrifice, even under full compliance, becomes clear when looking at the case of climate change. Climate change is perhaps the largest cooperative issue of beneficence ever faced. As such, it is arguable that each person alive has a duty to comply and sacrifice personal benefits to decrease their carbon footprint. However, a subsistence farmer in a low-income country has considerably less potential for impact than the billionaire CEO of a highly polluting company. Even under full compliance, we expect the CEO to sacrifice more than the farmer. While the gulf between HCWs and the public is not so dramatic, there are clear differences in their potential for impact. As such, we can expect a higher level of sacrifice from HCWs during a pandemic. However, as I will argue in chapter four since the duty of care does not entail vaccination, it cannot be required of HCWs.

Section 3.3 – The Utilitarian Objection

The final objection to the application of Murphy's theory comes from utilitarianism. While acknowledging the harms to HCWs of vaccine mandates, a utilitarian may argue that the benefits of full vaccination outweigh the harms. In section 4.3, I argue that there exists alternative interventions for achieving the same ends as vaccination. As such, these alternatives change the risk-benefit calculus, as when used in tandem with these interventions, the benefits of vaccination are marginal at best. Still, a utilitarian could argue that while the benefits may be marginal for any individual HCW or patient when scaled to the population level, these benefits are significant. As such, these benefits outweigh the costs of vaccination and institutions are justified in mandating vaccines for HCWs.

However, there are reasons to think that even a utilitarian calculus would oppose vaccine mandates for HCWs. In their 2022 paper, Bardosh et al. argue that mandatory vaccine policies will have widespread unintended consequences (Bardosh et al. 2022). The consequences they consider are broad-ranging and effects behavioural psychology, socio-economic consequences, political and legal effects, and effects on the integrity of science and public health. While each of these areas is cause for concern, many of these consequences are speculative and difficult to quantify. Still, there remain two costs to mandates that are more immediate and for which the consequences are readily apparent. These are the effects on healthcare capacity and the consequences for marginalized members of society.

During the pandemic, healthcare capacity in Canada was stretched beyond its breaking point. Increased patient numbers paired with infections among HCWs and years of chronic underfunding of the healthcare system resulted in skyrocketing overtime, worsening patient-to-HCW ratios, and a decreased quality of care for patients (Qureshi et al. 2022; Ariste, Béjaoui, and Dauphin 2019; Stewart 2022). While mandating vaccination may increase the number of vaccinated HCWs, it reduces the overall number of HCWs due to unvaccinated workers being fired or placed on leave. These concerns led both Ontario and Quebec to walk back their mandates in November 2021 (Aziz 2021). As such, while mandating vaccination may increase protection among HCWs, this benefit comes at significant costs to patient care and the burden on vaccinated HCWs. Ultimately, it results in an overall decline in healthcare capacity, harming both HCWs and patients.

Second, there are negative effects on the marginalized and the worst off in society. In general, vaccine hesitancy is higher among BIPOC individuals than white individuals, and higher among those with lower income and less education (Statistics Canada 2022b, 2022a). These groups, along with women, are overrepresented in healthcare professions that are less well-paid and require less formal training, such as orderlies and nurses (Brudney 2020). Unsurprisingly, these are the same healthcare professions that account for most vaccine hesitancy among HCWs (Dzieciolowska et al. 2021). The costs of a vaccine mandate are not equal for all hesitant HCWs. Women, BIPOC individuals, and lower income individuals are the least well-situated to bear these costs as they have fewer resources to compensate for any side effects or negative outcomes of vaccination.

Similarly, when compared to HCWs such as doctors, HCWs with less formal training likely have less savings to fall back on if they lose their employment. Specialized training is highly correlated with job portability, and thus, members of this less-trained group will have a worse time finding alternative employment (B. Hansson 2009). These demographic factors ensure that mandates for HCWs will disproportionately affect those who are least well-positioned to bear the cost. Moreover, it will mean the average cost of the mandate for each individual will be greater than first presumed when the utilitarian cost-benefit analysis is conducted.

It must be noted that these are largely empirical arguments. If the demographic makeup of HCWs were to shift substantially, this change would lessen the force of the objection from negative effects on the worst off. Similarly, if healthcare institutions had sufficient capacity, firing unvaccinated workers would not have the same negative impacts on capacity or patient care. Still, these factors are largely in balance with one another. The utilitarian argument gains its force from the benefits to healthcare capacity provided by vaccines. If healthcare capacity was such that firing unvaccinated workers produced only minimal costs to the system, then there is little to be gained by increasing capacity through mandated vaccination. As such, the utilitarian objection is self-limiting in that it requires a very specific set of circumstances for the benefits of mandated vaccination to outweigh the costs. Once we consider the broader consequences discussed by Bardosh et al., it is difficult to see a situation in which mandated vaccines produce a positive cost-benefit analysis.

While this response provides grounds for questioning the utilitarian case for mandates, it is itself fundamentally utilitarian. As such, it could be seen as ceding the argument to the utilitarian perspective. However, even if we accept that utility could be gained through the vaccination of HCWs, there exists strong non-consequentialist grounds for resisting mandating vaccination in order to gain benefits above and beyond those provided by PPE. In particular, the non-consequentialist framework used throughout these chapters holds that certain actions are justified even if they fail to maximize benefits or result in harm.

We have already accepted that there are limits to how far HCWs must go in benefiting their patients. They need not benefit their patients by donating organs or blood. While a utilitarian may argue that HCWs need not make such sacrifices as doing so would result in disutility, the non-consequentialist perspective holds HCWs need not make these donations even if doing so would maximize utility. Part of what constrains an HCWs duty of care is their roles as what Sokol describes as "multiple agents" (Sokol 2006). HCWs are not merely HCWs. Rather, they are parents, community members, friends, etc. Each of these roles comes with a set of rights and obligations. In times of crisis, these roles can conflict with one another. As such, "the limits of the duty of care are thus also defined by the strengths of competing rights and duties" (Sokol 2006, 1239).

Crucially, these rights and duties cannot be simply weighed against one another in a utilitarian calculus with the HCW compelled to perform the weightier action. Instead, individuals must make an autonomous decision as to how best to balance the competing commitments within their personal lives. For autonomy to be a right, it must include the right to choices not in ones best interest, that is, choices that do not maximize utility (Jotterand, Amodio, and Elger 2016). As such, for HCWs to have a right to choose how they balance conflicting duties, they must also have a right to make the choice that does not maximize utility.

One such case is raised by Doug McConnel in his discussion of the tension between the HCWs duty of care and their duty to their family (McConnell 2020). McConnel argues that

During a pandemic, HCWs with family members in the same household may be justified in neglecting portions of their duty of care in order to protect their families. As members of families, HCWs have a duty to protect their households from infection. Since working an HCW during a pandemic risks passing the infection to their household, the HCW has the competing duties of serving their patients and protecting their household. Of course, McConnel acknowledges that the validity of this choice is constrained by factors such as the level of infection risk, alternatives for protecting the family, and the role of the HCW in the healthcare system. Still, McConnell holds that there exists cases where HCWs are justified in protecting their families over serving their patients, thus clearly failing to maximize utility.

Another area in which it may be permissible for HCWs to act against utility maximization is in cases of conscientious objection. In such cases, HCWs decline to provide healthcare services to patients due to the procedure conflicting with the religious or ethical commitments of the HCW. While it is hotly debated when and to what degree conscientious objection is appropriate, many argue that there is a place for HCWs to uphold their personal commitments and in doing so chose not to benefit their patients (McConnell and Card 2019; Lamb 2016; Lachman 2014; Birchley 2012).

Of course, there is a difference between choosing to maximize utility for oneself and causing harm to others. However, if we accept that HCWs need not donate organs to patients in need, that there is a role for conscientious objection, or the validity of choosing to protect one's family, we have already accepted that some amount of failure to benefit is appropriate. While the available choices are constrained by the duty of care, the choice cannot be determined solely by utility maximization. The question then becomes how to determine the range of acceptable choices. This process will be discussed in chapter four.

3.4 - Conclusion

While it is clear that HCWs have a duty of care, it is similarly clear that this duty has limits. I have argued that these limits are set at the level of action that would be required of HCWs under conditions of full compliance. As such, it is reasonable to expect more of HCWs in crisis situations such as the Covid-19 pandemic. Likewise, it is reasonable to expect more of HCWs than the public. However, it is not reasonable to expect HCWs to pick up the slack created by the failures of compliance of other parties.

Still, this raises two major questions. First, how do we establish a reasonable level of duty under full compliance? Second, is it possible that vaccination is an action required by the HCW's duty of care, even under conditions of full compliance? I address these questions in Chapter four.

Chapter 4 – Intrusiveness, Proportionality, and the Scope of Healthcare Workers Duties

I have argued that HCWs are only one of many parties who possess duties within the healthcare relationship during outbreaks such as Covid-19. I have also argued that while the failure of some parties to fulfill their duties may increase how pressing a situation is and lead to worse outcomes for those involved, these failures do not necessitate an increase in the duties of parties beyond the level that would be sufficient under full compliance. However, two significant questions remain. 1) How do we determine the limits of an HCW's duty of care? And 2) would vaccination be a duty of HCWs even under conditions of full compliance? I address these questions below. Ultimately, I argue that while vaccination is a morally praiseworthy action, it is only one option for fulfilling the HCW's duty of care. So long as proportionate, less invasive alternatives are available, HCWs are justified in choosing these alternatives over vaccination. As

such, whether vaccination is a duty is in part an empirical question that depends on the nature of the infection and the availability and efficacy of alternative interventions.

4.1 – The Intervention Ladder and the Distribution of Duties

When determining whether an action should be considered an aspect of an HCW's duty of care, two central considerations are proportionality and intrusiveness. These considerations are often most explicit in discussions of public health interventions and their justifications. The principle of proportionality holds that the degree of infringement on personal freedoms should be proportional to the benefits that the public health intervention is expected to deliver (Nuffield Council on Bioethics 2007). Through considerations of proportionality, policymakers seek to avoid an unnecessary breach of personal autonomy or freedom and to ensure that the public health intervention is justifiable. For instance, as second-hand smoke presents significant health risks to non-smokers, it is considered proportionate to impose restrictions on smoking in indoor public places or close to building entrances. Despite this representing an infringement on the freedom of smokers, these regulations are deemed proportional due to the health benefits gained by reducing exposure to second-hand smoke and by the reasonableness and accessibility of alternative places to smoke.

Closely related to "proportionality" is the principle of "intrusiveness." This principle suggests that when several interventions are available to achieve a public health goal, the option which infringes least on the liberty of individuals or is the least coercive should be chosen (Nuffield Council on Bioethics 2007). Through considerations of intrusiveness, policymakers seek to respect individual liberties while striving to achieve public health goals. Again, smoking provides an example of utilizing less intrusive approaches. Banning cigarettes may have public health benefits. Smoking contributes significantly to the burden of diseases such as lung cancer, chronic obstructive pulmonary disease, and cardiovascular disorders (World Health Organiziation 2020). However, banning cigarettes would be a significant intrusion on the liberty of smokers and raises serious ethical questions about the limits of state authority.

While some alternatives are available for smokers, there are also less intrusive strategies that have been proven effective in reducing smoking rates. One such approach is the use of warning labels on cigarette packaging. These labels, which typically include graphic images depicting the health risks of smoking, have been found to significantly influence smoking behaviour, making them less likely to start smoking and more likely to quit (Huang, Chaloupka, and Fong 2014). As such, banning smoking in public places is seen as striking an appropriate balance between proportionality and intrusiveness, whereas banning smoking outright is not.

The 2007 Nuffield Council on Bioethics report draws heavily on proportionality and "intrusiveness. In formalizing considerations of these principles, the report proposes the following three tests:

- 1) The balancing test Are the aims of public health sufficiently important to permit the intervention in question?
- 2) The suitability test Will the intervention achieve the desired end? And
- 3) The necessity test If a particular objective can be achieved by more than one means, then the means should be chosen that causes the least intrusion while still achieving adequate effectiveness (Nuffield Council on Bioethics 2007, 36).

As a structured framework for integrating these considerations into policy decisions, the Nuffield Report proposes the "intervention ladder," where each rung represents a more intrusive intervention. As such, "the higher the rung on the ladder at which the policy maker intervenes, the stronger the justification has to be" (Nuffield Council on Bioethics 2007, 42). If a lower rung is a proportionate response, the intervention represented by that lower rung should be

implemented, and there is insufficient justification for moving up the ladder. The proposed

intervention ladder includes the following eight rungs, where rung one represents the least

intrusive option and eight the most intrusive:

8) Eliminate choice. Regulate in such a way as to entirely eliminate choice, for example through compulsory isolation of patients with infectious diseases.

7) Restrict choice. Regulate in such a way as to restrict the options available to people with the aim of protecting them, for example removing unhealthy ingredients from foods, or unhealthy foods from shops or restaurants.

6) Guide choice through disincentives. Fiscal and other disincentives can be put in place to influence people not to pursue certain activities, for example through taxes on cigarettes, or by discouraging the use of cars in inner cities through charging schemes or limitations of parking spaces.

5) Guide choices through incentives. Regulations can be offered that guide choices by fiscal and other incentives, for example offering tax-breaks for the purchase of bicycles that are used as a means of travelling to work.

4) Guide choices through changing the default policy. For example, in a restaurant, instead of providing chips as a standard side dish (with healthier options available), menus could be changed to provide a more healthy option as standard (with chips as an option available).

3) Enable choice. Enable individuals to change their behaviours, for example by offering participation in an NHS [National Health Service] 'stop smoking' programme, building cycle lanes, or providing free fruit in schools.

2) Provide information. Inform and educate the public, for example as part of campaigns to encourage people to walk more or eat five portions of fruit and vegetables per day.

1) Do nothing or simply monitor the current situation (Nuffield Council on Bioethics 2007, 42).

Elsewhere, the intervention ladder has been criticized for the inability to separate the

rungs of the ladder and that it is often unclear where a specific intervention falls (Dawson 2016).

While I agree with these criticisms, the ladder remains a useful tool for facilitating

considerations of proportionality, intrusiveness, and the justification of an intervention. For instance, depending on how it is characterized and to which HCWs it applies, mandating vaccination for HCWs could be seen as falling on rung seven or eight. But regardless of whether this intervention can be assigned to a single rung, the ladder makes clear that mandating vaccination is a significantly intrusive policy that requires a high level of justification. As such, it is essential that less intrusive measures be exhausted before resorting to mandates.

Still, just because mandates exist toward the top of the ladder, this does not mean they are not justified. If there exists no proportionate response that is less intrusive than mandates would be considered appropriate by the standards set by the Nuffield Council. There are reasons to think this is not the case for Covid-19. However, first, it is necessary to discuss how the intervention ladder and similar approaches in public health policy limits the realm of potential policy considerations through a narrow focus on changing the behaviour of individuals.

4.2 – The Narrow Ladder

The current intervention ladder concept underscores the ethical considerations surrounding measures that directly impinge upon individual liberty to promote health, such as imposing smoking bans or enforcing food labelling. By prioritizing individual behaviour as a locus for intervention, the ladder foregrounds personal responsibility for health. However, this approach downplays the role of systemic and environmental factors on health outcomes, including socioeconomic status, access to healthcare, or the built environment. Similarly, it downplays the role of other actors, such as patients, the public, healthcare institutions, and governments. This narrow focus on individual behaviour change is evident in the intervention ladder's emphasis on shaping personal choice. Even at the higher levels, the rungs are still presented as guiding choice (rung six), restricting choice (rung seven) and eliminating choice (rung eight). This focus is also evident throughout the report in statements such as "personal behaviours can have a significant effect on health, and therefore a common theme in public health policy is behaviour change" (Nuffield Council on Bioethics 2007, 41). This statement is, of course, true. Individual behaviours matter a great deal for public health. However, what is lacking from the report is a discussion of ways in which policies shape the social determinants of health beyond their ability to shape individual behaviour. Perhaps the closest the report comes to this broader discussion is when it states that:

The success of public health interventions often depends on more than the cooperation of members of the population. Many different stakeholder groups, including health professionals, the corporate sector, non-governmental organisations (NGOs), institutions of civil society and the media, can have a crucial role to play (Nuffield Council on Bioethics 2007, 43).

However, even in this discussion, the success being discussed is the success of policies in shaping individual behaviour. For instance, when considering the role of media, the report states that "health and science programmes and features can assist people in forming their views about public health matters" as well as how the media can "provoke or amplify public concerns by inaccurate, biased or unhelpful portrayal of risks and evidence" (Nuffield Council on Bioethics 2007, 44). In this way, the report largely obscures the role of systemic factors and other parties in individual outcomes.

Of course, the report's statements on the role of the media are also true. However, by formulating the intervention ladder around the protection of individual autonomy, the Nuffield Council's approach emphasizes actions that shape individual behaviour. Though these considerations are instrumental in public health policy, focusing solely on them neglects an essential facet of health promotion strategies. That is, actions taken by parties other than the affected individual. For instance, stricter emissions standards have been shown to reduce the prevalence of conditions such as asthma and heart disease associated with air pollution (Olmo et al. 2011; Kampa and Castanas 2008). These rules operate on a broad, systemic level rather than depending on individual choices. Corporations can have similar impacts. When it comes to housing, individuals can only choose between available options. By improving insulation, heating, and ventilation in residential construction, corporations can demonstrably lower the incidence of health issues linked to substandard housing (Krieger 2010). Finally, community organizations can improve health in ways such as fighting food insecurity, (Sharareh and Wallace 2022), providing housing support, and increasing equitable access to healthcare services (Bovaird 2007).

These interventions represent only a few ways actors beyond the individual shape public health outcomes and how individuals' health can be improved without necessitating changes in personal behaviour. When considering the justification of mandates, it is essential not to exclude such interventions. By broadening the conception of the intervention ladder, we consider not just the actions of individuals but also structural factors that shape health outcomes and the roles and responsibilities of other actors in shaping these factors. This perspective better aligns with a comprehensive understanding of the social determinants of health and provides a more encompassing and nuanced view of ethical considerations in public health policy-making.

Part of this broader framework requires ensuring that all potential interventions be considered and that interventions are not excluded merely by the framing of the issue. Such exclusion of policies can be seen by the framing of the issue of unvaccinated HCWs. Vaccinating HCWs has significant benefits for their health, patients, and healthcare capacity. If we approach the problem as an issue of low vaccine uptake in healthcare workers, the intervention ladder will naturally limit interventions to those impacting levels of uptake. Thus, the focus will be on interventions that influence the behaviour of HCWs. In contrast, framing the issue as the best way to protect HCWs, patients, and healthcare capacity broadens the landscape of available interventions such as those discussed in chapter two. These interventions have considerable impacts on the outcomes we care about without resulting in coercing or manipulating HCW behaviour. Whether or not they are ultimately the best choice, they must be considered alongside interventions aimed at increasing uptake.

Note that the approach of the broad ladder does not conflict with the goals of the intervention ladder as presented by the Nuffield report. The necessity test proposed by the report requires that "if a particular objective can be achieved by more than one means, then the means should be chosen that causes the least intrusion in the lives of the individuals or communities concerned while still achieving adequate effectiveness" (Nuffield Council on Bioethics 2007, 36). When interventions are successful without requiring individual behaviour change, they are less intrusive than those that restrict or eliminate the choice of individuals. Therefore, when the ladder is broadened to accommodate systemic interventions or interventions by other parties, the best intervention will often be the one which does little to interfere in the lives of individuals.

When considering vaccine mandates for HCWs, it is clear that there exist multiple interventions that are not intrusive on HCWs. Prior to the outbreak of a pandemic, governments can invest in infrastructure such as GPHIN and ensure an adequate stockpile of PPE. Healthcare authorities or governments can improve ventilation in hospitals and ensure an adequate number of facilities of sufficient size so as not to overcrowd hospitals during a pandemic (Naylor et al. 2003). In chapter two, I argued that actions such as these are duties of these parties. Of course, once a pandemic is in progress, there may not be time or resources to undertake these actions.

During a pandemic, it will likely be required to move up the intervention ladder and implement more intrusive interventions. Among these are mask mandates, vaccine passports, and vaccine mandates for HCWs. However, even here, mandates for HCWs exist higher up the ladder than many alternatives. Mask mandates stipulate the compulsory wearing of masks in certain settings to prevent the spread of the virus. While such an intervention is no doubt intrusive, the intervention does not infringe on personal bodily autonomy or privacy in a significant way. Rather, it requires a non-invasive modification to personal attire. Given that the behaviour change is reversible and the potential physical discomfort or inconvenience an individual faces is temporary, the policy is minimally intrusive (Flood et al. 2020).

While more intrusive than mask mandates, implementing vaccine passports is considerably less intrusive than vaccine mandates for HCWs as it does not directly mandate vaccination. The choice to get vaccinated or forego the potential benefits of the passport still rests with the individual (Osama, Razai, and Majeed 2021). Crucially, these benefits tend to be for non-essential services such as dining in restaurants or attending live entertainment. Therefore, although the passport system may indirectly influence individuals' vaccination decisions, it does not force an individual to choose between losing their job or accepting an irreversible medical intervention.

In contrast, vaccine mandates for healthcare workers are markedly more intrusive. These mandates dictate that healthcare workers receive a Covid-19 vaccine, directly tying the medical intervention to their employment conditions(Gur-Arie, Jamrozik, and Kingori 2021). Implementing such a mandate infringes on personal bodily autonomy as it necessitates a non-
reversible intervention under threat of potential job loss. The stakes are higher, and the intrusion on personal freedom is more substantial.

By broadening the intervention ladder, it becomes clear that mandates are a last resort and that many alternative interventions are less intrusive. Whether or not alternative proportionate interventions exist is an empirical question that will be addressed in section 4.4. However, even if these interventions are insufficient to protect patients and HCWs, they will impact HCWs' abilities to fulfill their duty of care. I have argued that governments, the public, and healthcare institutions possess duties to enact these interventions and that their failure does not necessitate HCWs picking up the slack. Nevertheless, there remains the question of the level of each HCWs duty under full compliance. That is, is it possible that the duty of care possessed by HCWs would require them to be vaccinated even under conditions of full compliance and are institutions justified in mandating this action? I explore this below.

4.3 – The Justification of Mandates

The issue of vaccine mandates for HCWs contains two distinct components:

- 1) Does the HCW's duty of care entail a duty to be vaccinated? And,
- 2) If so, are institutions justified in mandating vaccination.

Some may argue that there is no real distinction between these components. An institution's duty of care requires, in part, ensuring that the HCW's duty of care is fulfilled. As such, if the duty of care of HCWs entails vaccination, the duty of care of institutions may require mandating vaccines.

However, I propose there exists a higher threshold of justification needed for mandating an action than for determining that one's duty of care requires the action. In part, this higher threshold corresponds with a greater degree of intrusiveness. It is more intrusive for a government or healthcare institution to mandate an action than for individuals to choose it for themselves. The coercive action of a mandate causes harm that cannot be attributed to the outcomes of the action. That is, the mandate is a harm in itself. Mandating an action violates the freedom and autonomy of the individual (Flanigan 2017). In addition, it may harm the individual's dignity and relieve them of the moral responsibility to act. These harms raise the threshold of justification for a mandate beyond the justification required for establishing an action as entailed by the duty of care.

Moreover, the coercive parties' role in the situation seems relevant as to whether or not they are justified in mandating the behaviours of other parties. This argument is closely related to the issues of compliance discussed in chapter three. If governments and healthcare institutions have acted reasonably to fulfill their duties of care, they are more justified in requiring HCWs to do the same. But if these parties have failed in their duties of care, thus worsening the situation, these failures undermine the justification for mandates. Consider the case of climate change. There is an argument to be made that individuals have a duty to reduce their carbon footprint by switching to a plant-based diet. However, it would be unjustified for a government to ban all animal products for the sake of reducing the country's emissions while at the same time continuing to expand fossil fuel infrastructure and subsidize the fossil fuel industry.

Even if we accept that individuals have this duty, the behaviour of parties with coercive power impacts whether they are justified in using it. Still, there may be cases that are sufficiently urgent to justify a mandate, even in the absence of reasonable compliance. Many of the institutional duties of care pertaining to Covid-19 require long-term investment. Despite failing in these areas, parties may be justified in implementing a mandate as vaccine uptake could still be influenced, yielding positive outcomes. In contrast, it may be too late to significantly impact long-term duties such as ensuring adequate healthcare infrastructure. Still, even if a mandate is ultimately justified, it is crucial to recognize that failures of compliance by the coercive party raise the threshold of justification required for implementing a mandate.

If we accept these arguments, the threshold for justifying a mandate is quite high. Nevertheless, the choice is not always between an all-encompassing mandate or no mandate. A middle ground can be found through policies such as exemptions. As will be discussed in section 4.4, intrusiveness is, to some degree, subjective. Therefore, exemptions to general policies could be provided based on excessive intrusiveness. Such exemptions are already provided to many policies based on religious or medical reasons. Underlying these exemptions is the recognition that violating one's religious commitments is intrusive and burdensome (Navin 2018). This same notion could be expanded to intrusiveness more generally. Thus, by incorporating a robust procedure for evaluating and granting reasonable exemptions without undermining the mandate, it would be possible to lower the threshold of justification for the mandate.

Whether a mandate is justified depends on many factors. Not only must the mandated intervention pass the tests of proportionality and intrusiveness, but the mandating party must be sufficiently compliant. Alternatively, the situation must be dire enough to override concerns over the lack of compliance. Moreover, there must be reasonable exemptions available so as to lower the level of intrusiveness. However, even if these conditions are met, one significant hurdle prevents vaccine mandates from being justified. The primary factor on which a mandate depends is whether the subject's duty of care entails the mandated action. As has been argued above, an HCW's duty of care does not entail vaccination. Instead, it entails that they take steps to reasonably fulfill their duties of infection control. In the following section, I argue that there

exist alternative interventions for fulfilling these duties. As such, vaccine mandates are unjustified.

4.4- The Extent of the Duty of Care

HCWs have a duty of care to their patients. I argued in chapter one that this duty can be understood as stemming from duties to benefit and avoid harming one's patients, as well as to promote patient autonomy and justice. Beyond patients in direct care, these duties extend to the public more broadly through the HCW's duty to prevent the unnecessary spread of infections and to take actions to protect healthcare capacity. In the context of Covid-19, the HCW's duties to patients and the public are most directly executed through the duties of infection control. These are:

1. The duty to prevent transmission to patients and the public, and

2. The duty to protect HCWs from infection, thereby protecting healthcare capacity. Vaccinations seem an obvious tool for fulfilling these duties. If vaccines effectively prevent transmission and protect HCWs, then it appears as if HCWs should be vaccinated to fulfill their duty of care. However, it is essential to remember that the duty of HCWs is not a duty to be vaccinated. Rather, it is a duty of care which requires HCWs to act to protect their patients, themselves, and healthcare capacity. Vaccination is one tool for fulfilling this duty. But it is only one of several potential tools. For instance, proper use of PPE and improved ventilation in hospitals have been demonstrated to provide similar benefits (Cheng et al. 2021; Mizukoshi et al. 2021). As such, if HCWs can fulfill their duty through alternate means, vaccination may not be required. These alternatives will be discussed below. However, first it is essential to discuss

considerations that cut against the justification of vaccination as a duty entailed by an HCW's duty of care.

HCWs have a duty to benefit their patients. But there exist reasonable limits to how far an HCW must go in fulfilling this duty. While HCWs may not be obligated to donate a kidney or give blood, many cases are less clear-cut. Often, what determines how far an HCW must go in fulfilling their duty of care is the extent to which this duty conflicts with obligations arising out of the HCW's role as a multiple agent. It is easy to see how vaccination could conflict with duties stemming from an HCWs other roles. Consider an HCW who is a parent to a newborn child and is also breastfeeding. During the early stages of the pandemic, there was a lack of definitive scientific consensus on the safety of the COVID-19 vaccine for breastfeeding mothers. As such, the HCW may view her duty as a parent to ensure the safety of their breastfeeding child to be in conflict with her duty to be vaccinated. Even though early data suggests the vaccines are safe for breastfeeding mothers and their infants, it may be reasonable for the mother to exercise caution until more long-term data is available (Sakalidis et al. 2022). In the alternative case where vaccination of the mother posed a significant risk to breastfeeding infants, the conflict is even more stark.

The existence of competing duties raises the threshold for justifying vaccination as an action entailed by the duty of care. For vaccination to be entailed by the duty of care, it must not only demonstrate a significant benefit in terms of reducing the spread of disease and protecting healthcare capacity, but also that this benefit outweighs potential harms caused by infringing upon the HCW's rights and competing obligations. Moreover, it must be significantly better than alternative interventions so as to justify the harms.

Any duty entailed by the duty of care must also be balanced against the HCW's right to autonomy. Vaccination is no exception. In chapter one, I argued the patient's right to autonomy outweighs the HCW's right to autonomy. Being a patient is an autonomy-restricting state in which the patient is dependent on the HCW. In contrast, the HCW has a greater degree of control over whether or not to be in the healthcare setting. As such, all else being equal, the patient's right to autonomy should trump the HCWs.

Nevertheless, preferencing patients' rights does not entail waiving the rights of HCWs or that the HCW's rights do not carry weight when calculating the extent of the duty of care. The principle of autonomy suggests that individuals have the right to make informed decisions about their healthcare, which also extends to HCWs (Beauchamp and Childress, 2013). The professional duty of an HCW does not eliminate this right. Like the issue of competing duties, considerations of autonomy raise the threshold that vaccination must meet in order to be considered a duty of HCWs. Is vaccination against Covid-19 capable of meeting this threshold? Here, the broad intervention ladder provides some guidance. That is, whether vaccination is justified as a duty of HCWs can be understood as whether it is a proportionate response, and whether less intrusive alternatives exist.

Determining whether vaccination is a proportionate response rests on two factors. The first concerns the conflicting considerations that weigh against vaccination. These include the issues discussed above such as considerations of autonomy and conflicting duties. The second concerns the empirical nature of vaccination. That is, is it effective at fulfilling the HCWs duty of care. When combined, the key question of proportionality is whether the vaccine is effective enough that it overrides the conflicting considerations of autonomy and competing duties. In the

case of proportionality of interventions for HCWs during Covid-19, any intervention must fulfill the duties of infection control. These are:

- 1) Meaningfully prevent transmission to patients and the public, and
- 2) Meaningfully protect HCWs from infection, thereby protecting healthcare capacity.

The question of invasiveness is similarly tied to concerns over conflicting considerations. The more invasive an action is, the more it overrides an HCW's right to autonomy and ability to carry out competing duties. However, unlike proportionality, the question of invasiveness is largely comparative. While an action might be a proportionate response, any available alternative actions weaken the justification for the more invasive action. If the alternatives are both less invasive and equally efficacious at fulfilling the duty and if the action is available to the agent, then there is little justification for considering the more invasive action to be required. If the HCW can fulfill these actions while minimizing conflicts with their rights and other duties, there is good reason to reject the more invasive option as one entailed by their duty of care. In this way, considerations of invasiveness serve to highlight differences in the levels of justification between equally efficacious actions.

Such calculations become more difficult where there is a mismatch between efficacy and intrusiveness. Consider a highly intrusive action that is also highly effective. Even if alternative actions are available, if they are less effective, the fact that they are less intrusive may not be enough to justify the less intrusive policy over the intrusive alternative. In such cases, it may not be possible to establish clear guidelines as to when an action should be considered a duty. Instead, intrusiveness and proportionality must be balanced against one another.

When it comes to vaccination against Covid-19, some argue that vaccination is clearly entailed by an HCWs duty of care (Bradfield and Giubilini 2021; Loh et al. 2022). There is

significant evidence supporting the effectiveness of COVID-19 vaccines, both in terms of protecting healthcare workers (HCWs) themselves and in mitigating the transmission of the virus to patients. Numerous studies demonstrate that the vaccines reduce the risk of severe illness, hospitalization, and death among HCWs (Hall et al. 2021; H.C. Maltezou, Panagopoulos, et al. 2021). This protective effect is critical, as HCWs are at high risk of exposure due to their frontline roles. For instance, one study found that COVID-19 vaccines were over 85% effective in preventing symptomatic disease among HCWs, which aligns with their efficacy in the broader population (Hall et al. 2021). Furthermore, vaccines are not just beneficial for HCWs but also indirectly safeguard patients. Vaccination reduces the likelihood of an HCW contracting the virus and subsequently transmitting it to patients (Eyre et al. 2022; Harris et al. 2021). For vulnerable patient populations (e.g., the elderly, immunocompromised), this preventive measure is crucial. Thus, vaccination can be argued as a proportionate and necessary action on the part of HCWs.

However, it is essential to remember what is under consideration. For vaccination to be entailed by an HCWs duty of care, it is not sufficient for vaccination to be generally beneficial. Instead, it must satisfy the efficacy conditions of proportionality. Specifically, it must:

3) Meaningfully prevent transmission to patients and the public, and

4) Meaningfully protect HCWs from infection, thereby protecting healthcare capacity. Moreover, it must satisfy the conditions of intrusiveness. That is, all else being equal, there must exist no alternative method for satisfying this duty which is equal or greater in efficacy and which is meaningfully less intrusive. Alternatively, there must not exist an alternative intervention that strikes a more favourable balance between effectiveness and intrusiveness.

When considering the first condition, that of preventing transmission, there is reasons to

think that vaccines are not the most efficacious. Two factors that limit their efficacy are the time required to build immunity post-vaccination and the potential decline in protection over time. Building immunity after vaccination doesn't happen immediately. It typically takes about two weeks after the final dose of the vaccine for the body to develop robust immunity (Tavilani et al. 2021). For vaccines that require two doses, such as the Pfizer-BioNTech and Moderna vaccines, this leaves a significant window of sub-optimal protection. During this period, any benefits such as decreased transmission or protection from infection are considerably reduced.

Over time, the level of protection declines significantly. For instance, a study measuring the ability of vaccination to stop transmission from vaccinated individuals noted that "the reductions in transmission of the delta variant declined over time after the second vaccination, reaching levels that were similar to those in unvaccinated persons by 12 weeks" (Eyre et al. 2022). This study adds to a growing body of evidence that suggests that the protective benefits of vaccines are limited at best (Franco-Paredes 2022; Stokel-Walker 2022; Kollewe 2022). Moreover, these issues may become worse as the emergence of new variants challenges the efficacy of existing vaccines (Hayawi et al. 2021).

In contrast to vaccination, PPE works instantly and does not decline in efficacy. Rather than protecting merely against the variant of Covid-19 that was circulating at the time of vaccine development, PPE offers a broad range and ongoing protection against new variants as well as existing viruses such as SARS, MERS, and rhinovirus (Offeddu et al. 2017; Seto et al. 2003; Leung et al. 2020). Furthermore, PPE is also highly efficacious. When investigating the efficacy of PPE at reducing transmission for HCWs, most studies have focused on the ability of PPE to protect HCWs working with Covid-19 positive patients. Of course, PPE worn by an HCW to patients in the event that the HCW is asymptomatic. Still, what evidence we do have provides strong evidence that PPE worn by an infected individual is highly effective at stopping transmission (Ngonghala et al. 2021). For instance, in a study of masks worn by infected individuals, "the viral RNA was detected only on the inner part (the part that was in contact with the face) of the masks. None of the masks was positive for the RNA on the outer part (the part that was in contact with the external environment)" (Mello et al. 2022, 4/11). Finally, another study demonstrated a 99.9% reduction in transmission from infected patients wearing a mask (Mizukoshi et al. 2021).

PPE's ability to protect HCWs provides support to the idea that it prevents transmission between HCWs and patients. However, it is especially relevant to whether using PPE can satisfy the second aspect of the duty of care – the duty for HCWs to take reasonable steps to protect themselves so as to protect healthcare capacity. Here the evidence is even stronger. In one study "116 doctors and 304 nurses deployed to Wuhan for 6-8 weeks from 24 January to 7 April 2020" were provided with and trained in the proper use of PPE (Torjesen 2020). Despite all the HCWs have direct contact with Covid-19 patients, not a single HCW developed symptoms of infection and all tested negative for Covid-19 infection or its antibodies. A second study of 49 HCWs also produced no seropositive tests for Covid-19 and concluded that "the study provides evidence that appropriate PPE is sufficient to prevent infection among health care workers" (Suzuki et al. 2021, 122). Of course, these studies are of relatively small cohorts and not all studies demonstrate perfect protection. Still, other work has shown that merely a mask and face-shield provides 95% protection for HCWs and that this efficacy can be increased by other nonpharmaceutical interventions (NPIs) such as patient masking, improved ventilation, and additional PPE (Mizukoshi et al. 2021; Cheng et al. 2021).

Compared to proper usage of PPE, two doses of the Pfizer/BioNTech vaccine only matched the efficacy of just a mask and face-shield with an initial reported efficacy of 95%. Moreover, this efficacy steadily dropped with each variant until it hit 64-88% efficacy for the Delta Variant (Francis et al. 2022; Rudan, Adeloye, and Sheikh 2022). At the time of writing, efficacy for the Omicron and subsequent variants is still under investigation. While still impressive, results for other vaccines have shown them to be less effective than the Pfizer/BioNTech. Two doses of the Moderna or Oxford/AstraZeneca vaccines were around 94% and 70% respectively and the efficacy dropped to 39-95%, 60-92% with subsequent variants. In contrast one dose of the J&J (Janssen) vaccine (considered full vaccination) was 66.9% effective against the initial strain of Covid-19 but the efficacy increased to around 78% against the Delta variant (Rudan, Adeloye, and Sheikh 2022).

A vaccine that is 95% effective is a monumental achievement. Furthermore, there is little question that vaccination on the part of an HCW is a morally praiseworthy action as it provides an additional level of protection for both them and their patients. Nevertheless, it is clear that proper use of PPE is sufficient to fulfill both aspects of the duty of care. It is highly effective at reducing transmission, thereby protecting patients who are in the hospital for non-Covid-19 related reasons. It is similarly effective at protecting HCWs from infection, thereby ensuring that HCWs will be able to continue to provide care. When compared with vaccination, PPE provides equal or better protection and is less intrusive. PPE does not breach the biological boundary of the individual, thus it is less intrusive on the bodily autonomy of the HCW. It also does not involve an irreversible commitment. Workers are free to adjust their compliance with PPE use depending on the evolving risk scenarios, without worrying about the long-term consequences of the vaccine.

While the test of intrusiveness is primarily comparative, the test of proportionality is largely independent. That is, there supposedly exists some threshold of efficacy above which we can say that the HCW has taken reasonable steps to fulfill their duty of care. Thus, just because PPE appears equal or greater in efficacy to vaccination, some may argue that it alone is insufficient. Consider a situation where vaccination was 45% effective, PPE was 60% effective, and combined the interventions were 80% effective. In this case it seems clear that both interventions would be necessary as the combined efficacy of both is considerably higher than any individual intervention

This approach to risk managements is often referred to as overlapping protections (S. Hansson 2013). On this strategy, the gaps in each intervention are compensated for by the layering of protections. If the mask lets the virus through, the vaccine should hopefully prevent infection. In turn, the mask reduces the probability of the vaccine having to do so. Even though PPE has been demonstrated as highly effective in the case of Covid-19, some may argue that the duty of care requires HCWs to employ overlapping protections, thereby requiring them to undertake both interventions.

Establishing the threshold of sufficiency is extremely nuanced and is not a project I undertake here. Nevertheless, I argue that in the case of Covid-19, there are several reasons why use of PPE is sufficient to satisfy the duty of care and why an additional layer of protection cannot be considered necessary. First, as seen above, PPE is highly effective. Not only does it appear to provide equal or greater protection than the peak protection available from vaccines, but it is effective instantly and this protection does not fade over time. While vaccines may add a layer of protection, undertaking an intervention that is 95-99.9% efficacious can hardly be said to be negligent.

Second, there are other NPIs available to other parties to increase the efficacy of PPE. Masking on the part of patients greatly reduces the risk to HCWs. Similarly, interventions such as improving ventilation, reducing crowding, and increasing hospital capacity all increase the efficacy of PPE by reducing the amount viral load circulating in the environment (Mizukoshi et al. 2021; Cheng et al. 2021). Third, these other NPIs are outside of the HCWs control. A significant contributor to any shortcomings of PPE is the lack of compliance by other parties. As was discussed in chapter three, it is inappropriate to increase the demands on HCWs due to the failings of others. In Murphy's terms, the demand that HCWs be vaccinated to compensate for these shortcomings is overdemanding. A strong case can be made that PPE is sufficient on its own to fulfill the duty of care, even under the conditions of less than full compliance that existed during the pandemic. Under conditions of full compliance PPE would be even more effective. As it is both proportionate and less intrusive than vaccination, it is sufficient for fulfilling the duty of care.

One may wonder if the case for PPE and other NPIs is so strong, why should any HCW be vaccinated. If PPE is as effective as claimed, can we even consider vaccination to be morally praiseworthy or a superogeratory action? Thankfully, these concerns are unfounded. Vaccination provides benefits that PPE cannot. Specifically, it reduces the severity and duration of symptoms of those infected (H.C. Maltezou, Panagopoulos, et al. 2021). As such HCWs are able to return to serving their patients more quickly. This benefit of less severe infection is not provided by PPE. However, it does not elevate vaccination to the status of an action required by the duty of care.

Under conditions of full compliance, there would be sufficient healthcare capacity to compensate for sick employees. Even before the Covid-19 pandemic, there was concern over the

severity of the shortage of nurses and other HCWs in Canada (Silas 2022). The pandemic exacerbated this issue. Overtime worked by Canadian Nurses increased an average of 78% from 5.8 hours of overtime in May of 2019 to 10.3 hours in May of 2020 (Carrière et al. 2020). If we consider a full workload for nurses to be 40 hours a week, the pandemic raised this workload to 126% of a full workload. While these numbers may vary between months and positions, similar increases in workload are clearly unsustainable over the prolonged crisis that is a pandemic. With everyone running at 126% capacity, there is hardly the slack in the system necessary for HCWs to take sick days. However, the root of this capacity issue cannot be blamed on the HCWs nor is it their responsibility to solve through vaccination.

Of course, issues of resource allocation are inherently issues of justice and it may be unjust to build capacity to the point that HCW capacity is being significantly underutilized outside of the pandemic context. Due to their specialized skills and their role in society, it is reasonable to expect HCWs to take on additional workload during a pandemic. However, it is not reasonable to run the healthcare system with so little spare capacity that HCWs are pushed to the brink or burnt out by the lack of capacity, even in times of crisis. Recommendations concerning specific capacity targets are well beyond the scope of this paper. Still, it seems that whatever targets are established for healthcare capacity, they should be closer to requiring HCWs to work 105-110% of a full workload during a pandemic rather than the 126% required during Covid-19. In doing so, the healthcare system ensures it has enough capacity for HCWs to miss work due to illness. While employees have a personal interest in avoiding infection and not missing work, the healthcare system has a duty to ensure that the standard of care is upheld for patients even when employees become sick. As such, vaccination for altruistic motives can be considered a praiseworthy action, but it cannot be considered required by the duty of care. It is essential to note that each of the arguments presented above rest on empirical grounds. PPE is sufficient to fulfill the duty of care because it has been demonstrated to provide sufficient protection against Covid-19. If a new variant emerges that renders vaccination considerably more effective than PPE or that renders the efficacy of both low enough to justify the overlapping protections, then vaccination may rightly become regarded as a necessary duty of HCWs. Still, we are not at this stage with Covid-19. As discussed above, there is a grey area in which a less effective intervention may still be considered proportionate due to its lower level of intrusiveness. Nevertheless, the fact remains that PPE's efficacy and lower levels of intrusiveness place it well outside of this grey area. While being vaccinated is a morally praiseworthy action, under the conditions experienced during the Covid-19 pandemic, it cannot be considered necessary to fulfill an HCWs duty of care.

One final objection is that PPE is itself not entirely unintrusive. Use of PPE such as masks has been linked to increased discomfort, skin conditions, difficulties in communication, and other issues (Gelardi et al. 2020; Raju et al. 2022; Marler and Ditton 2021). Moreover, intrusiveness is in some respects a subjective measure. For some HCWs, the daily discomfort of mask wearing may be more intrusive than taking five minutes to be vaccinated. As such, some may object to PPE usage on the grounds of these side effects.

These critics have a point. PPE usage is not without costs. But what is essential to remember is that the duty of care is a multiply realizable duty. As discussed in chapter one, the duty of care does not entail a duty to be vaccinated. Similarly, it does not entail a duty to use PPE. Instead, what it does entail is that HCWs take reasonable steps to protect themselves and their patients from infection. If there are alternatives to PPE that are comparably favorable in terms of proportionality and intrusiveness, there are no reasons why these interventions would not be acceptable in place of PPE use. Vaccination may be one such intervention. If vaccination in the absence of PPE can meet this threshold than it may be reasonable to allow HCWs to choose between PPE and vaccination. However, this is an empirical question and is not one I seek to answer here.

4.5 – Conclusion

While vaccination can be an effective tool for infection control, it must pass the tests of proportionality and intrusiveness. Ensuring these principles are included in discussions through the use of the broad intervention ladder draws attention to both the benefits and harms of vaccines as well as whether there exist alternative interventions with a more favourable balance of costs and benefits. For the Covid-19 pandemic, it is clear that such alternatives exist. PPE is highly effective at reducing transmission and protecting HCWs. Moreover, PPE provides instant protection and its efficacy does not dwindle over time. Although the Swiss cheese approach of combining different measures like PPE and vaccination may offer enhanced protection, the demands on HCWs should not increase due to the failures of others.

Chapter 5 – Conclusion

The Covid-19 pandemic has placed an extraordinary strain on the Canadian healthcare system. In response to this strain, HCWs have a duty of care that can be understood as composed of four duties: beneficence, non-maleficence, autonomy, and justice. Beneficence, the moral obligation to benefit others, suggests that HCWs should act to protect themselves and patients, conserve resources, and maintain healthcare capacity. Non-maleficence, the principle of avoiding harm, also supports HCWs' taking actions that prevent disease transmission. Autonomy, the right to self-rule, is a contentious issue in this debate as it involves balancing the rights of HCWs and patients, which are often in conflict with one another. While HCWs have the right to decide what enters their body, this right is not absolute. Moreover, as HCWs have greater control and autonomy than patients, the autonomy rights of patients outweigh those of HCWs. Justice, in the context of the pandemic, amplifies the responsibilities of beneficence, non-maleficence, and autonomy due to the uneven distribution of the burdens of Covid-19. Theories of distributive justice, such as luck egalitarianism, suggest that HCWs should act to avoid compounding the disproportionate impacts of Covid-19 on those who are most vulnerable.

While these four duties provide distinct foundations for the duty of care, they find common ground in the actions entailed for HCWs. Specifically, as they pertain to Covid-19, these four duties each support the duties of infection control. These are:

- 1. The duty to prevent transmission to patients and the public, and
- 2. The duty to protect HCWs from infection, thereby protecting healthcare capacity.

Vaccines seem an obvious action for fulfilling these duties. Following Pierik's arguments, Governments are sometimes justified in mandating actions for fulfilling duties. In particular, he argues that in the case of childhood vaccination, governments have a duty to act in the best interest of the child and to protect the public good of herd immunity.

The argument made for mandated childhood vaccinations can be juxtaposed to the case of mandating Covid-19 vaccines for HCWs, albeit with clear dissimilarities. The case of HCWs involves competent individuals capable of making informed decisions, in contrast to childhood vaccination, where the government substitutes for the decision-making capacity of the child. However, looking beyond these apparent differences, a parallel can be drawn between these scenarios. Instead of viewing the mandate as imposing a decision on HCWs, it can be interpreted as the government acting in the best interest of the patient. Governmental paternalism is justified in both cases due to the patient's inability to make an informed choice in their best interest. Moreover, while herd immunity may be impossible in the case of Covid-19, it could be argued that the government has a responsibility to approximate herd immunity within healthcare institutions. Thus, one might think that the most pragmatic approach is to mandate vaccination for all HCWs, thus safeguarding patient care and reducing transmission within healthcare institutions.

However, the duties of infection control do not entail a duty to be vaccinated. If alternative interventions exist for achieving the same ends, then it is not clear that it is justified to require vaccination for HCWs. Furthermore, it is essential to note that the duties of HCWs' are carried out in a context where other parties to the healthcare interaction have similar duties of care. The supposed justifications for mandating vaccines are rooted in the ability of vaccination to protect HCWs, patients, and healthcare capacity. However, a significant portion of why these need protection is due to the failures of other parties to fulfill their duties. As such, I have argued that HCWs should not be forced to be vaccinated as a method for picking up the slack created by these failures.

Despite being the most vulnerable, patients have duties to protect healthcare capacity by adhering to public health guidelines, using personal protective equipment, and taking steps to protect themselves and others. However, many have fallen short of these duties, putting additional strain on HCWs and the healthcare system. Healthcare institutions and governments have significant responsibilities to protect HCWs and patients, ensure care capacity, and provide essential resources. However, Canadian healthcare institutions and governments have failed in these duties during the pandemic, leading to resource shortages, HCWs burnout, and delayed preventive measures. The public also has duties, including observing public health protocols, taking steps to protect themselves and others, and avoiding risky behavior. Additionally, in a democracy, the public has the responsibility to shape healthcare policies and funding. However, the Canadian public has often endorsed governments that have cut healthcare funding, resulting in dwindling resources and support for HCWs.

Once the failures of these parties are made clear, the demand for HCWs to be vaccinated is revealed as overdemanding. While the empirical conditions of Covid-19 do increase the demands of the HCWs duty of care, the failures of other parties do not. Instead, an HCW's contribution should correspond to what would be ideal under full compliance from all parties. The compliance condition ensures that the obligations of HCWs are reasonable and within each participant's capacity, preventing overdemandingness. Applying this theory to the Covid-19 situation implies that HCWs should not be expected to compensate for the deficiencies left by other parties. By anchoring the duty of care to what would be sufficient under full compliance, it becomes clear that while crisis such as a pandemic do not produce special obligations. Rather, they raise they increase the lengths to which HCWs must go to fulfill their duty of care. Similarly, crisis will not lead to the deprioritization of patients, as the duty of care is fixed by what would be sufficient under full compliance.

Still, even if vaccine HCWs should not be expected to pick up the slack, there remains the question of whether HCWs have a duty to be vaccinated and whether governments and institutions are justified in imposing mandates. When determining what actions can be imposed on HCWs, the principles of "proportionality" and "intrusiveness" are key. Proportionality balances the intrusion on personal freedoms against the public health benefits of an intervention, while intrusiveness urges the selection of the least liberty-infringing option when multiple interventions exist.

One framework for balancing these principles is the intervention ladder. The more intrusive the intervention, the higher the rung on the ladder, thus requiring a stronger justification. However, while the ladder provides a valuable tool for considering proportionality, intrusiveness, and justifications for interventions, its focus on individual behavior change may limit potential policy considerations in public health. By broadening the intervention ladder to consider not only individual actions but also systemic factors and the roles of other stakeholders, we ensure we are properly considering the context and the range of options available for fulfilling the HCW's duty of care.

The broad ladder makes clear that mandates should be the last resort as there are many less intrusive alternatives and equally proportionate alternatives. The fundamental premise for a vaccine mandate is that vaccination must be entailed by an HCW's duty of care. However, the obligation of HCWs is not vaccination per se, but a duty of care that could be fulfilled by other means, such as proper use of PPE or improved hospital ventilation (Cheng et al. 2021). Due to the high efficacy of PPE these alternatives can sufficiently fulfill both aspects of HCWs' duty of care - protecting patients and themselves. While the effectiveness of vaccines is evident, their position within the duty of care of HCWs remains a complex consideration of benefits, harms, and alternatives. As there exists sufficient alternatives for fulfilling the duty of care, vaccines cannot be considered a necessary action. As such, vaccine mandates lack ethical justification.

References

Adams, Francis. 1886. *The genuine works of Hippocrates*. Vol. 1. W. Wood.

- Adler, Matthew D, and Nils Holtug. 2019. "Prioritarianism: A response to critics." *Politics, Philosophy & Economics* 18 (2): 101-144.
- Ahmad, Khansa, Sebhat Erqou, Nishant Shah, Umair Nazir, Alan R Morrison, Gaurav Choudhary, and Wen-Chih Wu. 2020. "Association of poor housing conditions with COVID-19 incidence and mortality across US counties." *PloS one* 15 (11): e0241327.
- Ariste, Ruolz, Ali Béjaoui, and Anyck Dauphin. 2019. "Critical analysis of nurses' labour market effectiveness in canada: The hidden aspects of the shortage." *The International Journal* of Health Planning and Management 34 (4): 1144-1154.
- Aziz, Saba. 2021. "Doctors outraged as Ontario, Quebec deny COVID-19 vaccine mandates for health workers." Global News. Accessed December 13. <u>https://globalnews.ca/news/8348623/covid-vaccine-mandate-health-workers-ontarioquebec/</u>.
- Bandyopadhyay, Soham, Ronnie E Baticulon, Murtaza Kadhum, Muath Alser, Daniel K Ojuka, Yara Badereddin, Archith Kamath, Sai Arathi Parepalli, Grace Brown, and Sara Iharchane.
 2020. "Infection and mortality of healthcare workers worldwide from COVID-19: a systematic review." *BMJ global health* 5 (12): e003097.
- Bardosh, Kevin, Alex De Figueiredo, Rachel Gur-Arie, Euzebiusz Jamrozik, James Doidge, Trudo Lemmens, Salmaan Keshavjee, Janice E Graham, and Stefan Baral. 2022. "The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good." *BMJ Global Health* 7 (5): e008684.
- Barri, Elnaz Yousefzadeh, Steven Farber, Anna Kramer, Hadi Jahanshahi, Jeff Allen, and Eda
 Beyazit. 2021. "Can transit investments in low-income neighbourhoods increase transit use? Exploring the nexus of income, car-ownership, and transit accessibility in Toronto."
 Transportation Research Part D: Transport and Environment 95: 102849.
- BCCDC. 2023. "Vaccines in BC." Accessed January 8,2023. <u>http://www.bccdc.ca/health-professionals/clinical-resources/vaccines-in-bc</u>.
- Beauchamp, Tom L., and James F. Childress. 2013. *Principles of biomedical ethics*. 7th ed. New York: Oxford University Press.
- Beauchamp, Tom L., and Oliver Rauprich. 2016. "Principlism." In *Encyclopedia of Global Bioethics*, edited by Henk ten Have, 2282-2293. Cham: Springer International Publishing.
- Bellefontaine, Michille. 2021. "Vaccination uptake triples after Alberta announces its version of a vaccine passport." 2021. <u>https://www.cbc.ca/news/canada/edmonton/alberta-vaccinations-triple-1.6180529</u>.
- Berkhout, Suze G, Kathleen A Sheehan, and Susan E Abbey. 2021. "Individual-and institutionallevel concerns of health care workers in canada during the COVID-19 pandemic: a qualitative analysis." JAMA Network Open 4 (7): e2118425-e2118425.
- Birchley, Giles. 2012. "A clear case for conscience in healthcare practice." *Journal of medical ethics* 38 (1): 13-17.

- Block, Sheila, and Grace-Edward Galabuzi. 2011. "Canada's colour coded labour market." *Canadian centre for policy alternatives*: 1-20.
- Bloom, Nick, and Research National Bureau of Economic. 2013. *Does working from home work? : evidence from a Chinese experiment*. Cambridge, Mass.: National Bureau of Economic Research. <u>http://papers.nber.org/papers/w18871</u>

http://ezproxy.eui.eu/login?url=http://papers.nber.org/papers/.

- Booth, William, and Karla Adam. 2021. "Ventilators were embraced as pandemic lifesavers. Now, some covid patients wrongly fear the machines will kill them.", 2021. <u>https://www.washingtonpost.com/world/europe/ventilators-killing-covid-patients/2021/03/15/7115e4e8-7611-11eb-9489-8f7dacd51e75_story.html</u>.
- Bovaird, Tony. 2007. "Beyond engagement and participation: User and community coproduction of public services." *Public administration review* 67 (5): 846-860.
- Bradfield, Owen M, and Alberto Giubilini. 2021. "Spoonful of honey or a gallon of vinegar? A conditional COVID-19 vaccination policy for front-line healthcare workers." *Journal of medical ethics* 47 (7): 467-472.
- Brophy, James T, Margaret M Keith, Michael Hurley, and Jane E McArthur. 2021. "Sacrificed: Ontario healthcare workers in the time of COVID-19." *NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy* 30 (4): 267-281.
- Brudney, James J. 2020. "Forsaken heroes: COVID-19 and frontline essential workers." *Fordham Urb. LJ* 48: 1.
- Canada, Government of. 2022. "Canada Emergency Response Benefit (CERB): Closed." Accessed February 12, 2023. <u>https://www.canada.ca/en/services/benefits/ei/cerb-</u> <u>application.html</u>.
- Carli, Linda L. 2020. "Women, Gender equality and COVID-19." *Gender in Management: An International Journal* 35 (7/8): 647-655. <u>https://doi.org/10.1108/GM-07-2020-0236</u>. https://doi.org/10.1108/GM-07-2020-0236.
- Carrière, Gisèle, Jungwee Park, Zechuan Deng, and Dafna Kohen. 2020. Overtime work among professional nurses during the COVID-19 pandemic. Statistics Canada= Statistique Canada.
- Casal, Paula. 2007. "Why sufficiency is not enough." *Ethics* 117 (2): 296-326.
- Cassell, Eric J. 1977. "The function of medicine." *Hastings Center Report*: 16-19.
- CBC News. "Premier Jason Kenney implored to seek military backup as Alberta health-care system crumbles." <u>https://www.cbc.ca/news/canada/edmonton/kenney-military-alberta-health-care-1.6181646</u>.
- ---. 2021. "Quebec confirms 1st death related to rare AstraZeneca-linked blood clots, emphasizes benefits outweigh risks." 2021. https://www.cbc.ca/news/canada/montreal/az-vaccine-death-quebec-1.6003957.
- Cheng, Yafang, Nan Ma, Christian Witt, Steffen Rapp, Philipp S Wild, Meinrat O Andreae, Ulrich Pöschl, and Hang Su. 2021. "Face masks effectively limit the probability of SARS-CoV-2 transmission." *Science* 372 (6549): 1439-1443.
- Clemans-Cope, Lisa, Cynthia D Perry, Genevieve M Kenney, Jennifer E Pelletier, and Matthew S Pantell. 2008. "Access to and use of paid sick leave among low-income families with children." *Pediatrics* 122 (2): e480-486.

- Cooper, Ben, Stephanie Evans, Yalda Jafari, Thi Mui Pham, Cherry Lim, Mark Pritchard, Diane Pople, Victoria Hall, James Stimson, and David Eyre. 2021. "The burden and dynamics of hospital-acquired SARS-CoV-2 in England."
- Cortes-Penfield, Nicolas. 2014. "Mandatory influenza vaccination for health care workers as the new standard of care: a matter of patient safety and nonmaleficent practice." *American journal of public health* 104 (11): 2060-2065.
- Croda, Enrica, and Shoshana Grossbard. 2021. "Women pay the price of COVID-19 more than men." *Review of Economics of the Household* 19: 1-9.
- Cukier, Abigail. 2021. Fracturing political commitment to implement vaccine mandates. Can Med Assoc.
- Dang, Hai-Anh H, and Cuong Viet Nguyen. 2021. "Gender inequality during the COVID-19 pandemic: Income, expenditure, savings, and job loss." *World Development* 140: 105296.
- Dawson, Angus J. 2016. "Snakes and ladders: state interventions and the place of liberty in public health policy." *Journal of Medical Ethics* 42 (8): 510-513.
- Dworkin, Gerald. 1988. *The theory and practice of autonomy.Cambridge studies in philosophy*. Cambridge :: Cambridge University Press.
- Dworkin, Ronald. 2018. "What is equality? Part 2: Equality of resources." In *The notion of equality*, 143-205. Routledge.
- Dzieciolowska, Stefania MSc, Denis MSc Hamel, Souleymane MSc Gadio, Maude MSc Dionne, Dominique MSc Gagnon, Lucie D. E. C. Robitaille, Erin M. S. N. Cook, Isabelle M. S. N. Caron, Amina MSc Talib, Leighanne M. D. Parkes, Ève PhD Dubé, and Yves M. D. Longtin. 2021. "Covid-19 vaccine acceptance, hesitancy, and refusal among Canadian healthcare workers: A multicenter survey." *AJIC: American Journal of Infection Control* 49 (9): 1152-1157. <u>https://doi.org/10.1016/j.ajic.2021.04.079</u>.
- Elkrief, Arielle, Antoine Desilets, Neha Papneja, Lena Cvetkovic, Catherine Groleau, Yahia
 Abdelali Lakehal, Layla Shbat, Corentin Richard, Julie Malo, and Wiam Belkaid. 2020.
 "High mortality among hospital-acquired COVID-19 infection in patients with cancer: a multicentre observational cohort study." *European Journal of Cancer* 139: 181-187.
- Emanuel, Ezekiel J, Matthew Guido, and Patricia Hong. 2021. "Vaxxed or axed: To protect patients, every health care worker must be vaccinated." Accessed January 8, 2023. <u>https://www.statnews.com/2021/07/14/vaxxed-or-axed-protect-patients-health-care-vaccine-mandate/</u>.

Evans, H Martyn. 2007. "Do patients have duties?" *Journal of medical ethics* 33 (12): 689-694.

- Evans, John H. 2000. "A sociological account of the growth of principlism." *Hastings Center Report* 30 (5): 31-39.
- Eyre, David W, Donald Taylor, Mark Purver, David Chapman, Tom Fowler, Koen B Pouwels, A Sarah Walker, and Tim EA Peto. 2022. "Effect of Covid-19 vaccination on transmission of alpha and delta variants." *New England Journal of Medicine*.
- Fafard, Patrick, Adèle Cassola, Margaret MacAulay, and Michèle Palkovits. 2021. "25 the Politics and Policy of canada's covid-19 resPonse." *Coronavirus Politics*: 459.
- Ferguson, Rob. 2023. "Ontario was 'largely unprepared' for COVID-19, and the risk of another pandemic is growing, top doctor says." 2023.

https://www.thestar.com/politics/provincial/ontario-was-largely-unprepared-for-covid-

<u>19-and-the-risk-of-another-pandemic-is-growing/article</u> c7016467-5010-5803-b4a3e65efe76695e.html?

- Flagg, LD, and LA Campbell. 2021. "COVID-19 in communities of color: Structural racism and social determinants of health." *OJIN Online J Issues Nurs*.
- Flanigan, Jessica. 2017. "Seat Belt Mandates and Paternalism." *Journal of Moral Philosophy: An International Journal of Moral, Political and Legal Philosophy* 14 (3): 291-314. <u>https://proxy.library.mcgill.ca/login?url=https://www.proquest.com/scholarly-journals/seat-belt-mandates-paternalism/docview/1945683119/se-2?accountid=12339</u>
- https://mcgill.on.worldcat.org/atoztitles/link?sid=ProQ:&issn=17404681&volume=14&issue=3 & & title=Seat+Belt+Mandates+and+Paternalism&spage=291&date=2017&atitle=Seat+Belt +Mandates+and+Paternalism&au=Flanigan%2C+Jessica&id=&isbn=.
- Flood, Colleen M, Vanessa MacDonnell, Bryan Thomas, and Kumanan Wilson. 2020. Reconciling civil liberties and public health in the response to COVID-19. Canadian Science Publishing 1840 Woodward Drive, Suite 1, Ottawa, ON K2C 0P7.
- Fortin, Nicole M, Brian Bell, and Michael Böhm. 2017. "Top earnings inequality and the gender pay gap: Canada, Sweden, and the United Kingdom." *Labour Economics* 47: 107-123.
- Francis, Andre Ian, Saudah Ghany, Tia Gilkes, and Srikanth Umakanthan. 2022. "Review of COVID-19 vaccine subtypes, efficacy and geographical distributions." *Postgraduate medical journal* 98 (1159): 389-394.
- Franco-Paredes, Carlos. 2022. "Transmissibility of SARS-CoV-2 among fully vaccinated individuals." *The Lancet Infectious Diseases* 22 (1): 16. <u>https://doi.org/https://doi.org/10.1016/S1473-3099(21)00768-4</u>. <u>https://www.sciencedirect.com/science/article/pii/S1473309921007684</u>.
- Frew, Nicholas. 2021. "Alberta reported more COVID-19 cases in September than any month prior, data shows." 2021. <u>https://www.cbc.ca/news/canada/edmonton/alberta-covid-19-cases-september-data-1.6197781</u>.
- Friesen, Phoebe, Lisa Kearns, Barbara Redman, and Arthur L Caplan. 2017. "Rethinking the Belmont report?" *The American Journal of Bioethics* 17 (7): 15-21.
- Galanis, Petros, Irene Vraka, Despoina Fragkou, Angeliki Bilali, and Daphne Kaitelidou. 2021. "Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis." *Journal of advanced nursing* 77 (8): 3286-3302.
- Gelardi, Matteo, Valeria Fiore, Rossana Giancaspro, Emanuel La Gatta, Francesca Fortunato, Onofrio Resta, Giovanna Elisiana Carpagnano, Carla Santomasi, Michela Dimitri, and Maria Pia Foschino Barbaro. 2020. "Surgical mask and N95 in healthcare workers of Covid-19 departments: clinical and social aspects." *Acta Bio Medica: Atenei Parmensis* 91 (4).
- Gemelas, Jordan, Jenna Davison, Case Keltner, and Samantha Ing. 2021. "Inequities in employment by race, ethnicity, and sector during COVID-19." *Journal of racial and ethnic health disparities*: 1-6.
- Gerlach, Neil Allen. 2016. "From outbreak to pandemic narrative: Reading newspaper coverage of the 2014 Ebola epidemic." *Canadian Journal of Communication* 41 (4): 611-630.
- Glantz, Leonard. 2007. "Should smokers be refused surgery?" BMJ 334 (7583): 21-21.
- Golden, Lonnie. 2001. "Flexible work schedules: Which workers get them?" *American Behavioral Scientist* 44 (7): 1157-1178.

- Gur-Arie, Rachel, Euzebiusz Jamrozik, and Patricia Kingori. 2021. "No Jab, No Job? Ethical Issues in Mandatory COVID-19 Vaccination of Healthcare Personnel." *BMJ Global Health* 6 (2): e004877. <u>https://doi.org/10.1136/bmjgh-2020-004877</u>. https://gh.bmj.com/content/bmjgh/6/2/e004877.full.pdf.
- Hall, Victoria Jane, Sarah Foulkes, Ayoub Saei, Nick Andrews, Blanche Oguti, Andre Charlett, Edgar Wellington, Julia Stowe, Natalie Gillson, and Ana Atti. 2021. "COVID-19 vaccine coverage in health-care workers in England and effectiveness of BNT162b2 mRNA vaccine against infection (SIREN): a prospective, multicentre, cohort study." *The Lancet* 397 (10286): 1725-1735.
- Hansson, Bo. 2009. "Job-related training and benefits for individuals: A review of evidence and explanations."
- Hansson, S. 2013. The ethics of risk: Ethical analysis in an uncertain world. Springer.
- Harris, Ross J, Jennifer A Hall, Asad Zaidi, Nick J Andrews, J Kevin Dunbar, and Gavin Dabrera.
 2021. "Effect of vaccination on household transmission of SARS-CoV-2 in England." New England Journal of Medicine 385 (8): 759-760.
- Hassan, Emad M, and Hussam N Mahmoud. 2021. "Impact of multiple waves of COVID-19 on healthcare networks in the United States." *PLoS One* 16 (3): e0247463.
- Hayawi, Kadhim, Sakib Shahriar, Mohamed Adel Serhani, Hany Alashwal, and Mohammad M Masud. 2021. "Vaccine versus variants (3Vs): are the COVID-19 vaccines effective against the variants? A systematic review." *Vaccines* 9 (11): 1305.
- Heidenreich, Phil. 2021a. "Alberta woman dies of complications after receiving AstraZeneca COVID-19 vaccine." Accessed March 4. <u>https://globalnews.ca/news/7835081/albertawoman-death-astrazeneca-covid-vaccine/</u>.
- ---. 2021b. "COVID-19: Doctors' group concerned about Calgary Stampede, major corporate partner won't take part." 2021b. <u>https://globalnews.ca/news/7923415/covid-19-calgary-stampede-doctors-coronavirus/</u>.
- Hick, John L, Dan Hanfling, Matthew K Wynia, and Andrew T Pavia. 2020. "Duty to plan: health care, crisis standards of care, and novel coronavirus SARS-CoV-2." *Nam Perspectives* 2020.
- Huang, Jidong, Frank J Chaloupka, and Geoffrey T Fong. 2014. "Cigarette graphic warning labels and smoking prevalence in Canada: a critical examination and reformulation of the FDA regulatory impact analysis." *Tobacco Control* 23 (suppl 1): i7-i12. <u>https://doi.org/10.1136/tobaccocontrol-2013-051170</u>.
- <u>https://tobaccocontrol.bmj.com/content/tobaccocontrol/23/suppl_1/i7.full.pdf</u>. Humphries, Brittany, Martha Radice, and Sophie Lauzier. 2017. "Comparing "insider" and
- "outsider" news coverage of the 2014 Ebola outbreak." *Canadian Journal of Public Health* 108: 381-387.
- Jalili, Mohammad, Mahtab Niroomand, Fahimeh Hadavand, Kataun Zeinali, and Akbar Fotouhi. 2021. "Burnout among healthcare professionals during COVID-19 pandemic: a crosssectional study." *International archives of occupational and environmental health* 94: 1345-1352.
- Jeske, Diane. 1998. "Families, friends, and special obligations." *Canadian journal of philosophy* 28 (4): 527-555.

- Jöbges, Susanne, Rasita Vinay, Valerie A Luyckx, and Nikola Biller-Andorno. 2020. "Recommendations on COVID-19 triage: international comparison and ethical analysis." *Bioethics* 34 (9): 948-959.
- Jones, Nick K, Lucy Rivett, Shaun Seaman, Richard J Samworth, Ben Warne, Chris Workman, Mark Ferris, Jo Wright, Natalie Quinnell, and Ashley Shaw. 2021. "Single-dose BNT162b2 vaccine protects against asymptomatic SARS-CoV-2 infection." *Elife* 10: e68808.
- Jotterand, Fabrice, Antonio Amodio, and Bernice S. Elger. 2016. "Patient education as empowerment and self-rebiasing." *Medicine, Health Care and Philosophy* 19 (4): 553-561. <u>https://doi.org/10.1007/s11019-016-9702-9</u>. <u>https://doi.org/10.1007/s11019-016-9702-9</u>.
- Kampa, Marilena, and Elias Castanas. 2008. "Human health effects of air pollution." *Environmental pollution* 151 (2): 362-367.
- Kirby, M D. 1983. "Informed consent: what does it mean?" *Journal of Medical Ethics* 9 (2): 69-75. <u>https://doi.org/10.1136/jme.9.2.69</u>. <u>https://jme.bmj.com/content/medethics/9/2/69.full.pdf</u>.
- Kollewe, Julia 2022. "Vaccine to stop Covid transmission should now be top priority, says leading UK scientist " *The Guardian*, 2022. <u>https://www.theguardian.com/business/2022/may/07/vaccine-to-stop-covid-</u> transmission-should-now-be-top-priority-says-leading-uk-scientist.
- Komadina, Sarah. 2021. "COVID-19: Rural Alberta restaurant defies public health orders." *Global News*, 2021. <u>https://globalnews.ca/news/7751041/whistle-stop-cafe-alberta-covid-19/</u>.
- Krieger, James. 2010. "Home is where the triggers are: increasing asthma control by improving the home environment." *Pediatric allergy, immunology, and pulmonology* 23 (2): 139-145.
- Lachman, Vicki D. 2014. "Conscientious objection in nursing: definition and criteria for acceptance." *Medsurg Nursing* 23 (3): 196.
- Lamb, Christina. 2016. "Conscientious objection: understanding the right of conscience in health and healthcare practice." *The New Bioethics* 22 (1): 33-44.
- Landivar, Liana Christin, Leah Ruppanner, William J Scarborough, and Caitlyn Collins. 2020. "Early signs indicate that COVID-19 is exacerbating gender inequality in the labor force." *Socius* 6: 2378023120947997.
- Langton, David J, Stephen C Bourke, Benedicte A Lie, Gabrielle Reiff, Shonali Natu, Rebecca Darlay, John Burn, and Carlos Echevarria. 2021. "The influence of HLA genotype on the severity of COVID-19 infection." *Hla* 98 (1): 14-22.
- Latkin, Carl A, Lauren Dayton, Grace Yi, Brian Colon, and Xiangrong Kong. 2021. "Mask usage, social distancing, racial, and gender correlates of COVID-19 vaccine intentions among adults in the US." *PloS one* 16 (2): e0246970.
- Lau, Rachel. 2021. "COVID-19 vaccine passports officially in effect in Quebec." 2021. <u>https://montreal.ctvnews.ca/covid-19-vaccine-passports-officially-in-effect-in-quebec-1.5569166</u>.
- Lawrence, Jeff. 2019. "Thousands of public jobs to be eliminated by 2023, Alberta government tells unions." 2019. <u>https://edmonton.ctvnews.ca/thousands-of-public-jobs-to-be-eliminated-by-2023-alberta-government-tells-unions-1.4708633</u>.

- Leah, Hendry, and Benjamin Shingler. 2022. "The pandemic exposed flaws in Quebec's health system. Front-line workers say it's time to fix them." <u>https://www.cbc.ca/news/canada/montreal/quebec-healthcare-future-pandemic-1.6348081.</u>
- Leal, Jenine, Heidi M O'Grady, Logan Armstrong, Devika Dixit, Zoha Khawaja, Kate Snedeker, Jennifer Ellison, Joyce Erebor, Peter Jamieson, and Amanda Weiss. 2023. "Patient and ward related risk factors in a multi-ward nosocomial outbreak of COVID-19: Outbreak investigation and matched case–control study." *Antimicrobial Resistance & Infection Control* 12 (1): 21.
- Lee, Kelley, and Julianne Piper. 2021. "Reviving the Role of GPHIN in Global Epidemic Intelligence." *STRESS TESTED*: 177.
- Leung, Nancy HL, Daniel KW Chu, Eunice YC Shiu, Kwok-Hung Chan, James J McDevitt, Benien JP Hau, Hui-Ling Yen, Yuguo Li, Dennis KM Ip, and JS Peiris. 2020. "Respiratory virus shedding in exhaled breath and efficacy of face masks." *Nature medicine* 26 (5): 676-680.
- Lindsay, Beth. 2021. "B.C. announces new COVID-19 vaccine card required for wide range of public activities." 2021. <u>https://www.cbc.ca/news/canada/british-columbia/covid19-vaccine-update-bc-1.6149947</u>.
- Liu, Michael, Colleen J Maxwell, Pat Armstrong, Michael Schwandt, Andrea Moser, Margaret J McGregor, Susan E Bronskill, and Irfan A Dhalla. 2020. "COVID-19 in long-term care homes in Ontario and British Columbia." *Cmaj* 192 (47): E1540-E1546.
- Loh, Erwin, Sarah Michael, Rob Beetson, and Annie Schmidt. 2022. "Case for mandatory COVID-19 vaccinations for workers in health and aged care settings: a guide for leaders." *BMJ leader* 6 (2).
- Lopez, Violeta, Judith Anderson, Sancia West, and Michelle Cleary. 2022. "Does the COVID-19 Pandemic Further Impact Nursing Shortages?" *Issues in Mental Health Nursing* 43 (3): 293-295. <u>https://doi.org/10.1080/01612840.2021.1977875</u>. https://doi.org/10.1080/01612840.2021.1977875.
- Lux, Maureen. 1998. "Perfect subjects: race, tuberculosis, and the Qu'Appelle BCG Vaccine Trial." *Canadian Bulletin of Medical History* 15 (2): 277-295.
- Malone, Kelly Geraldine, and Alanna Smith. 2021. "Canada's top doctors say Alberta's COVID-19 plan could have ripple effects across the country." 2021. <u>https://globalnews.ca/news/8073981/canada-top-doctors-alberta-covid-19-plan-rippleeffect/</u>.
- Maltezou, HC, TV Giannouchos, A Pavli, P Tsonou, X Dedoukou, M Tseroni, K Papadima, D Hatzigeorgiou, NV Sipsas, and K Souliotis. 2021. "Costs associated with COVID-19 in healthcare personnel in Greece: a cost-of-illness analysis." *Journal of Hospital Infection* 114: 126-133.
- Maltezou, Helena C, Periklis Panagopoulos, Flora Sourri, Theodoros V Giannouchos, Vasilios Raftopoulos, Maria N Gamaletsou, Amalia Karapanou, Dimitra-Maria Koukou, Athanasia Koutsidou, and Emmanuela Peskelidou. 2021. "COVID-19 vaccination significantly reduces morbidity and absenteeism among healthcare personnel: A prospective multicenter study." *Vaccine* 39 (48): 7021-7027.

- Maltezou, Helena C, and Athanassios Tsakris. 2011. "Vaccination of health-care workers against influenza: our obligation to protect patients." *Influenza and other respiratory viruses* 5 (6): 382-388.
- Marler, Hollyanna, and Annabel Ditton. 2021. ""I'm smiling back at you": Exploring the impact of mask wearing on communication in healthcare." *International journal of language & communication disorders* 56 (1): 205-214.
- Martin-Fumadó, Carles, Laura Aragonès, Montserrat Esquerda Areste, and Josep Arimany-Manso. 2021. "Medico-legal, ethical and deontological considerations of vaccination against COVID-19 in healthcare professionals." *Medicina Clínica (English Edition)* 157 (2): 79-84.
- McConnell, Doug. 2020. "Balancing the duty to treat with the duty to family in the context of the COVID-19 pandemic." *Journal of Medical Ethics* 46 (6): 360-363. <u>https://doi.org/10.1136/medethics-2020-106250</u>. <u>https://jme.bmj.com/content/medethics/46/6/360.full.pdf</u>.
- McConnell, Doug, and Robert F Card. 2019. "Public reason in justifications of conscientious objection in health care." *Bioethics* 33 (5): 625-632.
- McGilton, Katherine S, Alexandra Krassikova, Veronique Boscart, Souraya Sidani, Andrea Iaboni, Shirin Vellani, and Astrid Escrig-Pinol. 2021. "Nurse practitioners rising to the challenge during the coronavirus disease 2019 pandemic in long-term care homes." *The Gerontologist* 61 (4): 615-623.
- McGrath, J, CG McAloon, SJ More, S Garrett, C Reidy, U Geary, N Noonan, and C Bergin. 2022. "Risk factors for SARS-CoV-2 infection in healthcare workers following an identified nosocomial COVID-19 exposure during waves 1–3 of the pandemic in Ireland." *Epidemiology & Infection* 150: e186.
- Mello, Vinicius M, Cristiane M Eller, Andreza L Salvio, Felipe F Nascimento, Camila M Figueiredo, Emanuelle SRF Silva, Paulo SF Sousa, Pamela F Costa, Anne AP Paiva, and Maria AMM Mares-Guias. 2022. "Effectiveness of face masks in blocking the transmission of SARS-CoV-2: A preliminary evaluation of masks used by SARS-CoV-2infected individuals." *PLoS One* 17 (2): e0264389.
- Mertz, Emily. 2021. "COVID-19: Kenney outlines Alberta's reopening plan for summer." 2021. <u>https://globalnews.ca/news/7893117/covid-19-kenney-outlines-albertas-reopening-plan-for-summer/</u>.
- Mill, John Stuart, and Thomas De Quincey. 1885. "On liberty."
- Mizukoshi, Atsushi, Chikako Nakama, Jiro Okumura, and Kenichi Azuma. 2021. "Assessing the risk of COVID-19 from multiple pathways of exposure to SARS-CoV-2: Modeling in health-care settings and effectiveness of nonpharmaceutical interventions." *Environment international* 147: 106338.

Murphy, Liam B. 1993. "The demands of beneficence." *Philosophy & Public Affairs*: 267-292.

- Navin, Mark. 2018. "Prioritizing religion in vaccine exemption policies." *Religious exemptions. Oxford University Press, New York.*
- Naylor, David, Sheela Basrur, Michel G. Bergeron, Robert C. Brunham, David Butler-Jones, Gerald Dafoe, Mary Ferguson-Paré, Frank Lussing, Allison McGeer, Kaaren R. Neufeld, and Frank Plummer. 2003. Learning from SARS: renewal of public health in Canada: a

report of the National Advisory Committee on SARS and Public Health. National Advisory Committee.

- Ngonghala, Calistus N, James R Knitter, Lucas Marinacci, Matthew H Bonds, and Abba B Gumel. 2021. "Assessing the impact of widespread respirator use in curtailing COVID-19 transmission in the USA." *Royal Society open science* 8 (9): 210699.
- Nguyen, Nam Hoang, Fatheema B Subhan, Kienan Williams, and Catherine B Chan. 2020. "Barriers and mitigating strategies to healthcare access in indigenous communities of Canada: a narrative review." Healthcare.
- Nielsen, Lasse. 2022. "Pandemic prioritarianism." *Journal of medical ethics* 48 (4): 236-239. Nuffield Council on Bioethics. 2007. *Public Health: Ethical Issues.*

https://www.nuffieldbioethics.org/assets/pdfs/Public-health-ethical-issues.pdf.

- Offeddu, Vittoria, Chee Fu Yung, Mabel Sheau Fong Low, and Clarence C Tam. 2017. "Effectiveness of masks and respirators against respiratory infections in healthcare workers: a systematic review and meta-analysis." *Clinical Infectious Diseases* 65 (11): 1934-1942.
- Olmo, Neide Regina Simoes, Paulo Hilário do Nascimento Saldiva, Alfésio Luís Ferreira Braga, Chin An Lin, Ubiratan de Paula Santos, and Luiz Alberto Amador Pereira. 2011. "A review of low-level air pollution and adverse effects on human health: implications for epidemiological studies and public policy." *Clinics* 66: 681-690.
- Ontario Hospital Association. 2022. "OHA Statement Regarding the Continuation of Hospital Vaccination Policies."

https://www.oha.com/Bulletins/Hospital%20Vaccination%20Policies%20-%20Feb%202022.pdf.

- Osama, Tasnime, Mohammad S Razai, and Azeem Majeed. 2021. Covid-19 vaccine passports: access, equity, and ethics. British Medical Journal Publishing Group.
- Parker, William F. 2022. "Caring for the unvaccinated." *Annals of the American Thoracic Society* 19 (2): 153-156.
- Pawlik, Timothy M, Ian N Olver, Courtney D Storm, and Maria Alma Rodriguez. 2009. "Can physicians refuse treatment to patients who smoke?" *Journal of oncology practice* 5 (5): 250.
- Peters, Matthew J, Lucy C Morgan, and Laurence Gluch. 2004. "Smoking cessation and elective surgery: the cleanest cut." *Medical Journal of Australia* 180 (7): 317.
- Pierik, Roland. 2018. "Mandatory vaccination: an unqualified defence." *Journal of Applied Philosophy* 35 (2): 381-398.
- Powers, Lucas, and Adam Carter. 2021. "Ontario's COVID-19 vaccine passport plan unveiled, won't apply to retail." 2021. <u>https://www.cbc.ca/news/canada/toronto/ontario-covid-vaccine-passport-certificate-proof-1.6160728</u>.
- Pūras, Dainius, Judith Bueno de Mesquita, Luisa Cabal, Allan Maleche, and Benjamin Mason Meier. 2020. "The right to health must guide responses to COVID-19." *The Lancet* 395 (10241): 1888-1890.
- Qureshi, Sadeem Munawar, Sue Bookey-Bassett, Nancy Purdy, Michael A Greig, Helen Kelly, and W Patrick Neumann. 2022. "Modelling the impacts of COVID-19 on nurse workload and quality of care using process simulation." *Plos one* 17 (10): e0275890.

- Raju, Sahana P, Mukta Sachdev, Niti Khunger, and Nina Madnani. 2022. "Mask Acne in Skin of Color: A Significant Dermatological Condition Amidst the COVID-19 Pandemic." *The Journal of Clinical and Aesthetic Dermatology* 15 (4): 44.
- Red Cross. 2022. "Red Cross Declares First-ever Blood Crisis amid Omicron Surge." <u>https://www.redcross.org/about-us/news-and-events/press-release/2022/blood-donors-needed-now-as-omicron-intensifies.html</u>.
- Reiger, Sarah. 2021a. "Alberta asks Ottawa for help to airlift COVID-19 patients out of the province." 2021a. <u>https://www.cbc.ca/news/canada/calgary/alberta-asks-ottawa-for-covid-19-help-1.6184484</u>.
- ---. 2021b. "Public health experts concerned by Alberta premier's claim that pandemic is over." *CBC News*, 2021b. <u>https://www.cbc.ca/news/canada/calgary/premier-kenney-after-the-pandemic-1.6108920</u>.
- Riedel, Priya-Lena, Alexander Kreh, Vanessa Kulcar, Angela Lieber, and Barbara Juen. 2022. "A scoping review of moral stressors, moral distress and moral injury in healthcare workers during COVID-19." *International Journal of Environmental Research and Public Health* 19 (3): 1666.
- Rieger, Sarah. 2021a. "Alberta asks Ottawa for help to airlift COVID-19 patients out of the province." CBC News. Accessed January 8, 2023. <u>https://www.cbc.ca/news/canada/calgary/alberta-asks-ottawa-for-covid-19-help-1.6184484.</u>
- ---. 2021b. "Calgary pastor says church will continue to break COVID-19 rules, days after health order issued." *CBC News*, 2021b. <u>https://www.cbc.ca/news/canada/calgary/calgary-church-covid-1.5868030</u>.
- Rimedio, Antonio, Gabriel Ion Galante, and Mario Picozzi. "Mandatory COVID-19 Vaccination for Healthcare Professionals: Ethical Perspectives." *Mandatory COVID-19 Vaccination for Healthcare Professionals: Ethical Perspectives* 1: 9.
- ---. 2022. "Mandatory COVID-19 vaccination for healthcare professionals: ethical perspectives." *Medicina e Morale* 71 (1).
- Robertson, Grant. 2020. "'Without early warning you can't have early response': How Canada's world-class pandemic alert system failed." *The Globe and Mail*, 2020. <u>https://www.theglobeandmail.com/canada/article-without-early-warning-you-cant-have-early-response-how-canadas/</u>.
- Rudan, Igor, Davies Adeloye, and Aziz Sheikh. 2022. "COVID-19: vaccines, efficacy and effects on variants." *Current opinion in pulmonary medicine* 28 (3): 180-191.
- Saad, Toni C. 2018. "The history of autonomy in medicine from antiquity to principlism." *Medicine, health care and philosophy* 21: 125-137.
- Sakalidis, Vanessa S, Sharon L Perrella, Stuart A Prosser, and Donna T Geddes. 2022. "Breastfeeding in a COVID-19 world." *Current Opinion in Clinical Nutrition and Metabolic Care* 25 (3): 188-194.
- Savoia, Elena, Rachael Piltch-Loeb, Beth Goldberg, Cynthia Miller-Idriss, Brian Hughes, Alberto Montrond, Juliette Kayyem, and Marcia A Testa. 2021. "Predictors of COVID-19 vaccine hesitancy: socio-demographics, co-morbidity, and past experience of racial discrimination." *Vaccines* 9 (7): 767.

- Schuklenk, Udo. 2020. "What healthcare professionals owe us: why their duty to treat during a pandemic is contingent on personal protective equipment (PPE)." *Journal of medical ethics* 46 (7): 432-435.
- Schuman, Olivia, Joelle Robertson-Preidler, and Trevor M Bibler. 2022. "COVID-19 vaccination status should not be used in triage tie-breaking." *Journal of Medical Ethics* 48 (10): 776-778.
- Schwartzberg, Jordan L, Jeremy Levenson, and Jacob M Appel. 2022. "Is there a right to a fully vaccinated care team?" *Clinical Ethics*: 14777509221077391.
- Sen-Crowe, Brendon, Mason Sutherland, Mark McKenney, and Adel Elkbuli. 2021. "A closer look into global hospital beds capacity and resource shortages during the COVID-19 pandemic." *Journal of Surgical Research* 260: 56-63.
- Seto, WH, D Tsang, RWH Yung, TY Ching, TK Ng, M Ho, LM Ho, and JSM Peiris. 2003.
 "Effectiveness of precautions against droplets and contact in prevention of nosocomial transmission of severe acute respiratory syndrome (SARS)." *The lancet* 361 (9368): 1519-1520.
- Sharareh, Nasser, and Andrea S Wallace. 2022. "Applying a health access framework to understand and address food insecurity." Healthcare.
- Sharifi, Mehrdad, Ali Akbar Asadi-Pooya, and Razieh Sadat Mousavi-Roknabadi. 2021. "Burnout among healthcare providers of COVID-19; a systematic review of epidemiology and recommendations." *Archives of academic emergency medicine* 9 (1).
- Shaw, David. 2022. "Vaccination status and intensive care unit triage: Is it fair to give unvaccinated Covid-19 patients equal priority?" *Bioethics* 36 (8): 883-890.
- Shiu, Matthew. 1993. "Refusing to treat smokers is unethical and a dangerous precedent." *BMJ: British Medical Journal* 306 (6884): 1048.
- Shoukat, Affan, Chad R Wells, Joanne M Langley, Burton H Singer, Alison P Galvani, and Seyed M Moghadas. 2020. "Projecting demand for critical care beds during COVID-19 outbreaks in Canada." *Cmaj* 192 (19): E489-E496.
- Sidu, Inha, and Virginia Wright. 2021. "Open for good? Alberta enters Stage 3 of reopening on Canada Day." 2021. <u>https://calgary.ctvnews.ca/open-for-good-alberta-enters-stage-3-of-reopening-on-canada-day-1.5491447</u>.
- Silas, Linda. 2022. Canada's nursing shortage at a glance. <u>https://nursesunions.ca/wp-content/uploads/2022/07/nurses_shortage_media_ref_guide_comp</u>.
- Simonds, AK, and DK Sokol. 2009. "Lives on the line? Ethics and practicalities of duty of care in pandemics and disasters." *European Respiratory Journal* 34 (2): 303-309.
- Sokol, Daniel K. 2006. "Virulent epidemics and scope of healthcare workers' duty of care." *Emerging infectious diseases* 12 (8): 1238.
- Søvold, Lene E., John A. Naslund, Antonis A. Kousoulis, Shekhar Saxena, M. Walid Qoronfleh, Christoffel Grobler, and Lars Münter. 2021. "Prioritizing the Mental Health and Well-Being of Healthcare Workers: An Urgent Global Public Health Priority." *Frontiers in Public Health* 9 (514). <u>https://doi.org/10.3389/fpubh.2021.679397</u>. <u>https://www.frontiersin.org/article/10.3389/fpubh.2021.679397</u>.
- Statistics Canada. 2022a. "COVID-19 vaccination coverage by ethnicity: Insight from the Canadian Community Health Survey (CCHS)." <u>https://www.canada.ca/en/public-</u>

health/services/immunization-vaccines/vaccination-coverage/covid-19-vaccinationcoverage-ethnicity-insight-canadian-community-health-survey.html.

- ---. 2022b. "Sociodemographic disparities in COVID-19 vaccine uptake and vaccination intent in Canada." <u>https://www150.statcan.gc.ca/n1/pub/82-003-x/2022012/article/00004-eng.htm</u>.
- Stewart, Ashleigh 2022. "Canada headed for nursing shortage 'beyond anything we've ever experienced': experts." 2022. <u>https://globalnews.ca/news/8487144/canada-covid-nursing-shortage-alarm/</u>.
- Stokel-Walker, Chris. 2022. "What do we know about covid vaccines and preventing transmission?" *bmj* 376.
- Sud, Amit, Michael E Jones, John Broggio, Chey Loveday, Bethany Torr, Alice Garrett, David L
 Nicol, Shaman Jhanji, Stephen A Boyce, and Firza Gronthoud. 2020. "Collateral damage:
 the impact on outcomes from cancer surgery of the COVID-19 pandemic." *Annals of Oncology* 31 (8): 1065-1074.
- Suzuki, Tetsuya, Kayoko Hayakawa, Akira Ainai, Naoko Iwata-Yoshikawa, Kaori Sano, Noriyo Nagata, Tadaki Suzuki, Yuji Wakimoto, Yutaro Akiyama, and Yusuke Miyazato. 2021.
 "Effectiveness of personal protective equipment in preventing severe acute respiratory syndrome coronavirus 2 infection among healthcare workers." *Journal of Infection and Chemotherapy* 27 (1): 120-122.
- Syed, Iffath U. 2022. "Canada's Fight Against COVID-19: Constitutionalism, Laws, and the Global Pandemic." *Impacts of the Covid-19 Pandemic: International Laws, Policies, and Civil Liberties*: 339-357.
- Tavilani, Alireza, Ebrahim Abbasi, Farhad Kian Ara, Ali Darini, and Zahra Asefy. 2021. "COVID-19 vaccines: Current evidence and considerations." *Metabolism open* 12: 100124.
- Torjesen, Ingrid. 2020. Covid-19: appropriate PPE prevents infections in doctors in frontline roles, study shows. British Medical Journal Publishing Group.
- Underwood, MJ, and JS Bailey. 1993. "Coronary bypass surgery should not be offered to smokers." *BMJ: British Medical Journal* 306 (6884): 1047.
- United States. National Commission for the Protection of Human Subjects of, Biomedical, and Research Behavioral. 1978. *The Belmont report : ethical principles and guidelines for the protection of human subjects of research.DHEW publication ; no. (OS) 78-0012-78-0014*. [Bethesda]

Washington: The Commission ;

- For sale by the Supt. of Docs., U.S. Govt. Print. Off.
- Vigo, Daniel, Scott Patten, Kathleen Pajer, Michael Krausz, Steven Taylor, Brian Rush, Giuseppe Raviola, Shekhar Saxena, Graham Thornicroft, and Lakshmi N Yatham. 2020. Mental health of communities during the COVID-19 pandemic. Sage Publications Sage CA: Los Angeles, CA.
- Vogel, Lauren, and Diana Duong. 2021. "How many Canadian health workers remain unvaccinated?" *Canadian Medical Association Journal* 193 (32): E1259-E1260. <u>https://doi.org/10.1503/cmaj.1095956</u>.

https://www.cmaj.ca/content/cmaj/193/32/E1259.full.pdf.

Wilson, Kerrisa. 2021. "Ontario reports 463 new COVID-19 cases as 7-day rolling average continues to decline ", 2021. <u>https://www.cp24.com/news/ontario-reports-463-new-</u>

covid-19-cases-as-7-day-rolling-average-continues-to-decline-1.5595741?cache=agylcuxajqn%3FcontactForm%3Dtrue.

- Wong, Jullia. 2021. "Criticism fired at province for not releasing data to support changing Alberta's COVID-19 protocols." 2021. <u>https://globalnews.ca/news/8127195/criticism-fired-at-province-for-not-releasing-data-to-support-changing-albertas-covid-19-protocols/</u>.
- World Health Organiziation. 2020. "Tobacco: Health benefits of smoking cessation." <u>https://www.who.int/news-room/questions-and-answers/item/tobacco-health-benefits-of-smoking-cessation.</u>
- ---, 2021, "Health and Care Worker Deaths during COVID-19," <u>https://www.who.int/news/item/20-10-2021-health-and-care-worker-deaths-during-covid-19</u>.
- Yassi, Annalee, Stephen Barker, Karen Lockhart, Deanne Taylor, Devin Harris, Harsh Hundal, Jennifer M Grant, Arnold Ikedichi Okpani, Sue Pollock, and Stacy Sprague. 2022. "COVID-19 infection and vaccination rates in healthcare workers in British Columbia, Canada: A Longitudinal Urban versus Rural Analysis of the Impact of the Vaccine Mandate." *MedRxiv*.
- Yu, Alice, Sophia Prasad, Adebisi Akande, Andreea Murariu, Serena Yuan, Sylvia
 Kathirkamanathan, Myles Ma, and Sarah Ladha. 2020. "COVID-19 in Canada: A selfassessment and review of preparedness and response." *Journal of global health* 10 (2).