COVID-19 and the orthopaedic surgeon: who gets redeployed?

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ABSTRACT
The COVID-19 pandemic has increased demand for physicians, leading to widespread redeployment of specialty physicians to care for patients with COVID-19. These redeployments highlight an important question: How do physicians balance competing obligations to their own health, their own patients, and society during a public health crisis? How can physicians, specifically subspecialists, navigate this tension? In this article, we analyse a clinical scenario in which an orthopaedic sports surgeon is redeployed to care for patients with COVID-19. This case raises questions about physicians’ obligations to their own patients compared with society at large, the relative value of specialty physicians during a global pandemic, and the ethical permisibility of compulsory redeployment. Using the orthopaedic surgery specialty as a model, we build a redeployment framework for surgical specialists that is both ethical and equitable. We argue that although orthopaedic surgeons have a moral obligation to participate in physician redeployment schemes, the scope of this obligation is limited and contingent on the following conditions: (1) the number of local COVID-19 cases is high; (2) obligations to their own patients or orthopaedic patients requiring urgent or emergency care have been fulfilled; (3) their value as physicians exceeds their value as specialists because of the pandemic climate; (4) voluntary redeployments are exhausted before compulsory redeployments are implemented; and (5) redeployment would not put the physicians at unreasonable risk of harm.

INTRODUCTION
A 64-year-old orthopaedic surgeon specialising in sports medicine is practising in a city that has recently become a ‘hot spot’ for COVID-19. The hospital that employs him is overwhelmed with patients with COVID-19. Vital resources, such as intensive care unit (ICU) beds, personal protective equipment (PPE) and skilled medical personnel, are becoming scarce. Elective procedures and non-urgent clinics have been cancelled. Physicians with the most applicable knowledge and skills, namely those practising internal medicine, emergency medicine, and anaesthesia and critical care medicine, have already been summoned to care for patients with COVID-19, but the hospital still needs more physicians.

The hospital has asked for physician volunteers to help treat patients with COVID-19 in the ICU, but response was inadequate. The orthopaedic surgeon is notified that he is being activated for redeployment to his hospital’s COVID-19 ICU. The surgeon refuses, saying, ‘I have been practicing only orthopaedic sports medicine for the last 35 years; it is not appropriate to redeploy me to the ICU. I have my own patients to worry about.’ He further states, ‘It is too high risk for me to take care of COVID-19 patients. I’m 64 years old, and I have asthma and diabetes. Plus, I have a family to think about—I’m the primary breadwinner for my family. What would happen to them if I got sick?’

The orthopaedic surgeon in this scenario must navigate the tension resulting from conflicting obligations. He has obligations to himself and his family, and he also has obligations to his patients and society in his role as a surgeon and physician. While balancing competing obligations is central to many clinical ethical dilemmas, this tension is accentuated in the pandemic context. What are a surgeon’s professional obligations during a pandemic? Note that these considerations are different from the more general ‘good citizen’ obligations that individuals must adopt during a pandemic, such as handwashing and using PPE in public places. In this article, we argue that although orthopaedic surgeons have a moral obligation to participate in physician redeployment plans, the scope of this obligation is limited and contingent on the following conditions:

1. The number of local COVID-19 cases is high.
2. Obligations to their own patients or orthopaedic patients requiring urgent or emergency care have been fulfilled.
3. Their value as physicians exceeds their value as specialists because of the pandemic climate.
4. Voluntary redeployments are exhausted before compulsory redeployments are implemented.
5. Redeployment would not put the physicians at a disproportionate risk of harm.

For this article, we will assume that all physicians agree with the ideal that we have a ‘duty to care’, because physicians have an ethical contract with society to render care given the specialised knowledge and skill sets we possess.1 We will also assume that redeployment plans will be implemented on hospital, hospital system, and local levels, rather than on a federal level or in a more centralised fashion.1

As of September 2021, the USA has had more than 40 million confirmed cases of COVID-19, it is challenging to define a group of reasonable underlying assumptions in this argument because the scientific evidence and our understanding of the COVID-19 pandemic continuously evolves. Rigorous ethics are built on reasonable, accurate, evidence-based assumptions, which underlie key arguments. As evidence changes, the assumptions underlying these arguments may change as well. It follows, therefore, that ‘carve-outs’, or special exceptions to our ethical conclusions, suffer from the same weakness and may be reshaped as new evidence emerges.
with more than 700,000 deaths. The pandemic has created great demand for one of medicine’s most important resources: physicians. Physicians in all specialties and at all training levels have been redeployed to treat patients with COVID-19 in hospitals across the country.7

Physician redeployment has historical precedent: iterations of this concept were used in 20th-century military efforts. For example, during World War II, the American Medical Association (AMA) was tasked with creating lists of civilian physicians who could be commissioned to the US Army to be redeployed as medical personnel both domestically and overseas.6 In this context, however, redeployments were made in accordance with a physician’s specialty. Similarly, the implementation of the ‘Doctor Draft’ in the 1950s, through which physicians were redeployed as military medical personnel in Korea and, later, in Vietnam, allowed the US Army to leverage the skills of the civilian physician population for the war efforts.7

The redeployment of physicians during the COVID-19 pandemic has two unique characteristics. First, it is not occurring within the context of war. Second, individual hospital systems or localities, rather than the federal government, are driving the redeployment. Perhaps the most comparable situation is the management of the civilian public health workforce during the 2003 SARS epidemic in Canada. During that epidemic, the Canadian federal government worked with local municipalities to redeploy public health workers to areas of acute need.9

The redeployment of physicians to care for patients with the greatest needs, rather than those whose needs fall within the physicians’ specialties, represents a paradigm shift from clinical ethics, which prioritises the individual physician–patient relationship, to public health ethics, which prioritises population-level healthcare decision-making to maximise the health of the public. Current, no framework exists to determine, in an equitable and just manner, which physicians are redeployed, and there is no precedent to indicate how subspecialised physicians will be used within this framework. The orthopaedic sports surgeon described above has been called to serve in the context of a pandemic; he must first understand the nature of his ethical obligations in the professional, societal and personal spheres before considering redeployment.

**ANALYSIS**

**Professional obligations: obligation to orthopaedic patients**

As specialty surgeons, orthopaedic surgeons alone have the knowledge and technical ability to care for patients with orthopaedic problems. First and foremost, their obligation is to orthopaedic patients because no other physicians can provide the services of an orthopaedic surgeon. These patients include those currently under their care and future patients. Even during a pandemic, orthopaedic surgeons are obligated, at a minimum, to care for acute, urgent and emergency orthopaedic conditions. It follows that orthopaedic surgeons, who have the expertise to treat these conditions, should continue to treat them.

An orthopaedic surgeon’s duty to their orthopaedic patients means that they must be ethically willing and able to take on these responsibilities. In contrast, surgeons in specialties that are over-represented in the orthopaedic workforce, such as sports medicine, hand surgery and plastic surgery, should continue to treat these orthopaedic patients. In such cases, we must remind ourselves that we do not have the obligation to perform trauma cases during the pandemic, even though it is not his usual practice. It does not follow, however, that the standard of care should be suspended to allow orthopaedic surgeons to practise outside their competency, even within the field of orthopaedic surgery. For example, although our sports medicine specialist may have residency training in the treatment of a patient with cauda equina syndrome requiring decompression, he has likely not performed this procedure in more than 30 years; therefore, an operative complication may be likely to occur. In such cases, we must remind ourselves that we continue to have an obligation to act in a patient’s best interest.

In a hospital where a more specialised surgeon is available, a spine surgeon should perform the procedure described. We would argue that ethical obligations during a pandemic permit surgeons to practise the full scope of their medical and surgical skills but not beyond them.

Furthermore, we must consider whether even well-indicated surgical intervention can always be justified during a pandemic. For many orthopaedic surgeons in the USA, this may be the first time they are practising in a relatively resource-scarce environment. It seems intuitive that in situations of clinical equipoise, we are obligated to choose the most resource-conserving treatment, even if it is not the patient’s preference. For example, a patient may present with an acute injury for which evidence shows equivalent outcomes with operative or non-operative treatment, such as an Achilles’ tendon rupture.10 In a normal context, the physician and the patient would share in the decision to determine whether surgery would be performed.11 However, during a pandemic, it is ethically permissible (and arguably, ethically preferable) to offer only non-operative intervention. In fact, an AMA guideline states that physicians should ‘choose the course of action that requires fewer resources when alternative courses of action offer similar likelihood of benefit and degree of anticipated benefit compared to anticipated harm for the individual patient but require different levels of resources.’12

The question becomes much more difficult to answer when the resource-intensive treatment provides greater objective clinical benefit to the patient, whether that be decreased pain, improved quality of life or decreased probability of future surgery. We should always aim to provide high-quality care, but in these situations, we are often weighing a small benefit to the patient against the resource needs of the greater population. Determining the minimal clinical benefit needed to justify a given surgical procedure would be difficult, but we would argue for a triage system based on the likelihood of future harm resulting from surgical delay. For example, the surgeon may opt to stabilise a minimally displaced, low-energy proximal tibia fracture because the harm from delaying surgery would likely include pain, limb shortening, rotational deformity and malunion, which would increase the probability of requiring future surgery.
Finally, we must consider whether it is ethically acceptable to change the standard of care when treating patients with COVID-19 with orthopaedic problems. Imagine the case of an elderly patient with COVID-19 who presents to the emergency department with an acetabular fracture after a fall. Would it be ethical to use percutaneous screws or even to put the patient in traction and treat non-operatively instead of performing an open reduction and internal fixation of the acetabulum, to decrease operative time and exposure of staff, even if, under normal circumstances, open reduction and internal fixation would be preferable? These decisions can be quite challenging and represent the core tension between ‘bedside’ clinical ethics and public health ethics.

In the above scenario, the orthopaedic surgeon recognises the importance of their obligations to orthopaedic patients (‘I have my own patients to worry about’). His strongest moral obligation is to the orthopaedic patients already under his care because, with these patients, the patient–physician relationship has been established, compelling the surgeon to meet the responsibilities of this relationship. These obligations must be met before initiating obligations to new, potential patients. Physicists are obligated to provide high-quality care that simultaneously meets the needs of a pandemic: conservation of scarce resources, reduction of disease exposure, and minimising complications.

The summation of these arguments, namely that orthopaedic surgeons must meet their obligations to orthopaedic patients before redeployment, allows us to define the scope of orthopaedic surgeons’ obligations to their orthopaedic patients and, by extension, the scope of redeployment obligations of orthopaedic surgeons during the COVID-19 pandemic. The second premise of our argument is that orthopaedic surgeons should be redeployed only when obligations to their own patients, or orthopaedic patients requiring urgent and emergency care, have been fulfilled.

Societal obligations: value of orthopaedic surgeons as specialists versus value as physicians

When considering a framework for redeploying physicians during a pandemic, we must ensure that all resources (in this case, physician knowledge and skills) are used to their full potential. As discussed above in the context of orthopaedic surgeons, all healthcare providers should be functioning to the limits of their training and certification. We would argue that orthopaedic surgeons, because of their specialised training, have major value to society in their particular field. Conversely, they have less value as primary care physicians, intensivists or anaesthesiologists because they lack expertise in these areas. The orthopaedic surgeon should be considered a scarce resource that is difficult to replenish quickly in the postpandemic healthcare landscape. Of approximately 1 million physicians in the USA, approximately 30,000 are orthopaedic surgeons. As a specialty, orthopaedic surgeons constitute only 3% of the physician population. Orthopaedic symptoms, such as joint and back pain, are some of the most common reasons patients present to physicians, and demand for orthopaedic services will only increase with the aging population. Training an orthopaedic surgeon requires substantially more time and societal resources than training a general physician. Given the major investment in training orthopaedic surgeons, the fact that orthopaedic surgeons constitute a small fraction of US physicians and the projected demand for the services of orthopaedic surgeons, attention must be paid to how this scarce resource should be used during the pandemic to ensure that orthopaedic care is available after the pandemic, meaning that if the scarce resource of surgical subspecialists is exhausted, or the specialists become ill with the virus, the post-pandemic supply of specialists would decrease, thus impacting the care of future orthopaedic patients.

One might argue that this reasoning could be applied just as easily to the specialists taking care of patients with COVID-19 in ICUs, such as intensivists, anaesthesiologists and pulmonologists. The key difference, however, is that these specialties can be augmented or supplemented with use of ‘physician extenders’ (eg, advanced practice providers) in a way that orthopaedic surgery cannot. For example, anaesthesiologists are increasingly being supplemented with certified registered nurse anaesthetists, and it is common for advanced practice providers to work as extenders in ICUs, even prior to the COVID-19 pandemic. In contrast, orthopaedic surgeons do not have physician extenders with equivalent procedural skills to replace or supplement them to the same extent as other specialties.

All physicians have a duty to care, regardless of their specialty. This obligation is codified in an AMA opinion, which states that physicians have an ‘ethical obligation to provide care in cases of medical emergency’. The COVID-19 pandemic may become so severe that orthopaedic surgeons are needed for redeployment. That is, their value to society as physicians may be greater than their value as specialists. All physicians have a basic foundation of medical knowledge that can be applied to the care of patients with COVID-19. Although care of patients with an infectious disease that affects the respiratory system can be considered practising at the edge of, or even outside, the clinical expertise of an orthopaedic surgeon, such surgeons can still contribute to the care of patients with COVID-19.

Orthopaedic surgeons who have the greatest value as physicians as opposed to specialists are those who have most recently completed medical school or obtained national medical licensing, meaning residents, fellows and junior attendings. These physicians are likely best suited for redeployment because of their recent training in the knowledge base that is required to care for patients with COVID-19. Given what we currently know about COVID-19, young physicians, including recent medical school graduates, seem least likely to become seriously ill if they do contract the virus during this pandemic. However, these young physicians may have the least ability within their institutions to refuse redeployment. Care must be taken to avoid shifting the burden of treatment of patients with COVID-19 onto this physician population for the sake of future orthopaedic patients, if not for the sake of equity and justice. These physicians will be responsible for meeting the demand for future orthopaedic services; therefore, they should also be considered a scarce resource that we must preserve for the postpandemic period.

If orthopaedic surgeons are needed for redeployment, they should be used to their fullest potential. Practically, this means they should be redeployed in a manner that maximises use of their specialised skills. For example, if orthopaedic providers are redeployed to the ICU, it should be for the purpose of using their procedural/technical skills or their knowledge of the musculoskeletal system. These skills might include bedside procedures, such as central line insertions, or for specialised prone positioning or patient transport, given their knowledge of optimal patient positioning and their understanding of concepts such as maintenance of cervical spine stability.

Subspecialised physicians are not being used to their full potential if they are, for example, redeployed to provide routine medical care for patients in unmonitored wards. Even if orthopaedic surgeons are able to provide this care, it does not take advantage of the surgeons’ capabilities. This type of redeployment would be a poor use of resources, in that it would not
provide maximal benefit to society during a pandemic, and it would fail to provide the greatest good for the greatest number of people, which is a cornerstone of the utilitarian philosophy that underlies public health ethics. However, it is permissible to have orthopaedic surgeons use their general medical skills in situations of dire need. If our sports surgeon is redeployed to the ICU, for example, it should be to a position that allows him to use his advanced technical skills. It is incumbent on those coordinating redeployments to recognise the ways in which physicians with specialised skill sets can be used beyond their ability to provide routine care.

The above argument provides the ethical underpinning for the third premise of our argument, which states that orthopaedic surgeons may be redeployed when their value as physicians exceeds their value as specialists in the current climate. Our orthopaedic sports medicine surgeon appears to have greater value as a physician than as a specialist at the present moment. Though he has not participated in ICU care in several decades, he has the basic knowledge required of all physicians, and his procedural expertise can be adapted to care for patients with COVID-19. Accordingly, he has a strong ethical imperative to be redeployed in this context.

Orthopaedic surgeons’ value as physicians, as opposed to their value as specialists, is also dependent on the current need for physicians to provide basic medical care. Therefore, they are more valuable as physicians in geographical areas that are COVID-19 hot spots. Stated differently, their relative value as physicians increases in areas that have a higher demand for physicians at the present moment. It follows, then, that their ethical obligation to redeploy in a COVID-19 hot spot is stronger than the obligation to redeploy in areas that have been relatively spared. Accordingly, our orthopaedic sports surgeon, who resides in an area with a high number of COVID-19 cases, has a strong ethical obligation to redeploy. This forms the basis for the first premise of our argument, which states that orthopaedic surgeons should be redeployed only in areas where the local number of COVID-19 cases is high.

Philosophical considerations: voluntary and compulsory redeployment

It is important to address the philosophical underpinnings of physician’s duties to patients and to society and how they relate to the question of redeployment. A central tenet of Western liberalism is the ethical principle of autonomy. Autonomy can be ‘conceived of as a second order capacity of persons to reflect critically upon their first order preferences, desires, wishes, and so forth and the capacity to accept or attempt to change these in their value as specialists in the current climate. Our orthopaedic sports medicine surgeon appears to have greater value as a physician than as a specialist at the present moment. Though he has not participated in ICU care in several decades, he has the basic knowledge required of all physicians, and his procedural expertise can be adapted to care for patients with COVID-19. Accordingly, he has a strong ethical imperative to be redeployed in this context.

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It is intuitive that it is always preferable for a person to perform a duty voluntarily, rather than on a non-voluntary or compulsory basis. This allows the individual to act autonomously to achieve a public good. However, in certain situations, compelling or coercing a small number of people to achieve certain ends may be in the public’s best interest. It is here that a philosophy focused on the consequences of a choice (consequentialism) and maximising the health of the public (the goal of public health ethics) must become more central to institutional policymaking for redeployment frameworks. These frameworks must balance the competing values of individual physician autonomy and the institutional responsibility to minimise harm. In public health emergencies, the relative value of physician autonomy may be diminished compared with that of the common good or the health of the public.

In our liberal society, where individual rights are accorded great respect, situations in which we curtail those rights must be minimised. We must treat persons with respect, as if they are ends in themselves, not merely as means to an end. This concept is further emphasised in principles of medical ethics, which stress respect for autonomy. In situations where individual liberties are curtailed, the infringements on this autonomy must be morally justified. Even those who argue that individual rights and autonomy have the strongest moral claims acknowledge that those claims are limited. The most compelling argument for limiting a person’s autonomy is to protect the rights and freedoms of others.

Accordingly, J S Mill suggested the ‘harm principle’, writing, ‘It is justified to restrict the liberty of person A in order to prevent A from causing harm to person B’ (pp 21–22). When applying this concept to the problem of a global spread of infectious disease, ‘person B does not represent a discrete person but rather society in general.’ ‘Causing harm’ is not necessarily limited to acts of commission; acts of omission may also cause harm. When considering ‘harm’, both the magnitude of the potential harm and the proportionality of the opposed infringement on individual autonomy must be considered. Finally, when possible, we must aim to create a redeployment framework that is the least restrictive alternative (ie, one that maximises the individual’s autonomy while preventing the harm).

Given this philosophical context, when discussing voluntary and compulsory duties during the COVID-19 pandemic, we frame this question as a tension between individual rights and the common good. Of the several historic precedents for infringing on individual rights for the common good, the most apt in this situation is that of military service. Like ‘frontline’ providers in this pandemic, military personnel may be called up to duty during a state of emergency, either on a voluntary basis or through use of a draft. In the case of a draft, many consider it ethically permissible to sacrifice the liberty and autonomy of a portion of the population in exchange for national security, which is a public good. This loss of autonomy may be mitigated by the fact that military service comes with substantial benefits. Military personnel are guaranteed functioning equipment, appropriate training, hazard pay, healthcare, education, and provisions for their family if they die or are seriously wounded in combat. In contrast, healthcare providers in the COVID-19 pandemic have lacked proper equipment and PPE and have not been trained appropriately to care for patients with COVID-19. Physicians across the country have had their salaries reduced. Many of these physicians have substantial student loan debt, and they are not guaranteed access to healthcare resources if they contract COVID-19. Finally, no provisions are in place to support dependents of healthcare workers who die of COVID-19, as many physicians have. Therefore, the analogy applies when considering voluntary versus mandatory service, but the factors that mitigate the loss of autonomy in the military (specifically, the benefits of service) do not apply to physicians during the COVID-19 pandemic.

In the clinical scenario described, the orthopaedic surgeon did not pursue his duty to care on a voluntary basis. His institution maximised the amount of physician autonomy by first attempting to recruit physicians for redeployment on a voluntary basis.
After this pool of physicians was exhausted, the need remained, at which point our orthopaedic surgeon was told that he would be redeployed. His redeployment would be on a compulsory basis or, at the very least, a strongly coercive basis. However, during public health emergencies in which the merit of individual autonomy is less than that of public health, it is ethically permissible to compel a physician to perform his duty to care. The above arguments comprise the basis of the fourth premise of our argument, which states that if orthopaedic surgeons are redeployed, voluntary redeployment must be exhausted before implementation of compulsory redeployment.

**Personal obligations: equity and justice in redeployment strategies**

Any physician redeployment framework must incorporate the principles of equity and justice. The burden associated with caring for patients with COVID-19 should not fall on a single group of physicians. The principle of equity dictates that the burden of exposure to COVID-19 should be distributed fairly, so that no one physician or group of physicians is disproportionately burdened. In practical application to a redeployment framework, this means that physicians from all specialties and at all levels of training and experience be redeployed in service of the COVID-19 response. Although ‘fair distribution’ may be difficult to achieve, it should be the goal. Some specialties in medicine do carry disproportionate risks of harm (such as exposure to infectious disease, in this case), but the goal of any equitable redeployment scheme should be to mitigate these risks.

The principle of justice dictates that a redeployment framework must attempt to protect the most vulnerable members of the workforce, including the elderly and those with medical comorbidities that increase their risk of contracting COVID-19 or would interfere with their ability to recover from the disease. In this context, however, we argue that vulnerability should be defined more broadly. It may also refer to those vulnerable to the social ramifications of becoming seriously ill or dying from COVID-19, such as caregivers of the very young or the elderly, or those whose income is the sole financial support of their household. A physician’s duty to care is not limitless. Rather, it is determined by the risk of harm to the physician, the assumed clinical benefit to the patient and the importance of any additional moral responsibilities the physician may have, such as parental or caregiver obligations.24

Our orthopaedic sports medicine physician is older. He has medical comorbidities that put him at risk for contracting COVID-19 and may make it difficult for him to recover from the disease. Additionally, he is the only income earner for his family, and his death or loss of income would cause major hardship for his family. An equitable and just redeployment framework must balance the distribution or dilution of exposure to patients with COVID-19 with the value of protecting our most vulnerable physicians in the redeployment pool. This point forms the basis for the fifth premise of our argument, which states that redeployment should not put the physician at unreasonable risk of harm.

**CONCLUSION**

The COVID-19 pandemic presents numerous ethical challenges to the US healthcare system. One such challenge is the implementation of physician redeployment frameworks that define the scope of obligations of physicians during the COVID-19 pandemic, allow physicians to fulfil their duties to their own patients, maximise physician autonomy, and are equitable and just. In this article, we argue that although orthopaedic surgeons have a moral obligation to participate in physician redeployment plans, the scope of this obligation is limited and contingent on the following conditions:

1. The physician is practicing in a COVID-19 ‘hot spot’.
2. Obligations to the physician’s own patients or orthopaedic patients requiring urgent or emergency care are fulfilled.
3. Their value as a physician exceeds their value as a specialist because of the pandemic climate.
4. Voluntary redeployments are exhausted before compulsory redeployments are implemented.
5. Redeployment would not put the physician at a dispropor-
tionate risk of harm.

Finally, this article addresses core obligations, or the mimi-
mums of the physician’s duty to care. Orthopaedic surgeons may choose to be more altruistic or more demanding of them-

self. Assuming the obligations to their orthopaedic patients are fulfilled, all orthopaedic providers should be free, and perhaps even encouraged, to contribute at a level beyond their obligations during a pandemic.

**REFERENCES**


