
The Prioritization of Life-Saving Resources in a Pandemic Surge Crisis

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ABSTRACT: The COVID-19 pandemic has engendered a national discussion regarding scarce life-saving medical resources. These discussions often turn on allocation, reconfiguration, and reallocation of resources during the surge crisis of a declared emergency. Protocols to address these issues are being widely promulgated. From the standpoint of biomedical ethics, the principal concerns in these discussions should center on duty, justification, legality, and underlying moral standards. In this article the author explores general concepts of prioritization and crisis standards of care, physician duties and the conflict of those duties, the problematic nature of reallocation, and legitimate responses to the extreme absolute scarcity of surge crisis.

Triage as Resource Allocation

In 1846, British Naval Surgeon John Wilson proposed “for the sake of the wounded” a sorting of battle wounds as slight, which may be put off, serious, which call for immediate attention, and fatal, for which nothing can be done (Wilson, 1846, pp. 24-25). In the mid-twentieth century, with the looming threat of nuclear war, the concepts of triage found their way into the planning for medical response to a disaster affecting the civilian population. As noted in *JAMA*:

The simultaneous infliction of injuries of all degrees on a large population must be anticipated in the event of either natural or nuclear disasters. When facilities for treatment are limited, the greatest possible number of lives can be saved only by making sure that these facilities are not exhausted by injudicious use on either the trivial or the hopeless cases (Ziperman, 1956).

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It is highly significant to note that the concept of triage, though population-based in scope, remains individualized in practice. Each patient in need of care receives an individual assessment based on their particular medical presentation. And it is equally important to note that excepting the relatively rare condition of absolute scarcity, the operative ethic of triage generally works to the good of the individual patient—and that triage-based exclusions also work to that good.¹ Either the patient is not in immediate danger and restorative care may be deferred until optimal, the patient is in imminent danger and restorative care is urgently performed, or the patient is beyond hope and restorative care is futile and not administered. When triage operates to the good of the individual patient, the sum of those individual goods will work to the good of the greater society. In this way the basic nature of triage can be taken as fundamentally virtuous or deontological, and not utilitarian.

Triage is a narrow form of resource micro-allocation for conditions of scarcity and is applied by a designated authority following a designated protocol (Iserson & Moscop, 2007, pp. 275-276). Soundly based triage or resource allocation is held as ethical by the American Medical Association (AMA) and the World Medical Association (WMA), the National Catholic Bioethics Center (NCBC Ethicists, 2020), and the Christian Medical and Dental Associations (Christian Medical and Dental Associations, 2019, pp. 13-14).

Concepts of Prioritization

Triage, from the French “sorting,” in health care is a prioritization process for micro-allocation of scarce resources in the treatment of individual patients. It is typically performed by a triage officer according to a defined algorithm. Triage generally has a conceptual goal, such as most lives saved or returning the most warriors to the battlefield (Iserson & Moscop, 2007).

Triage in modern medicine functions along a continuum broadly characterized by the supply of and demand for resources. In everyday practice, triage applies to conditions of mild relative scarcity seen in emergency room wait times and availability of operating rooms for elective cases. Periods of brief acute absolute scarcity may occur for blood products or surgical services in a multicasualty trauma incident. But excepting the realm of organ transplantation, sustained or extreme absolute scarcity is rare outside situations of disaster. A pandemic, as a geographically and temporally dispersed disaster, evolves through progressively increasing supply/demand imbalance, and may at its worst create the need for prioritization of life-saving resources.

When a pandemic produces a demand for care that exceeds resources, prioritization processes include allocation, reconfiguration, and reallocation.

Allocation is the assignment of a scarce medical resource at the time of initial presentation of need, and rests on principles of triage. The National Academy of Medicine states that “a triage program aims to rapidly screen, evaluate, and sort patients based on their medical status and likely outcome” (Institute of Medicine, 2010, p. 17).²

¹ Here I use the term absolute scarcity to describe a situation in which there are not enough resources to meet the needs of all who are not beyond hope and who need immediate care.

² In 2015, the Institute of Medicine was reconstituted as the National Academy of Medicine.

Reconfiguration is the “adaptation of available patient care spaces, staff, and supplies as part of the response to a surge in demand for services” (Institute of Medicine, 2010, p. 78). It may include the substitution or adaptation of equipment from designed uses to other purposes in order to meet critical needs.

Reallocation is a population-centered process during surge crisis by which scarce life-saving resources may be nonconsensually removed from patients to whom they previously have been allocated with the intent that those life-saving resources will then be assigned to other individuals who are felt to have a more favorable prognosis or a higher potential of benefit (Institute of Medicine, 2009, pp. 34-35).

Crisis Standards of Care

The National Academy of Medicine describes a medical surge as an imbalance between health care resource availability and demand, which triggers activation of a facility emergency operations plan (Institute of Medicine, 2013, p. 2). During a pandemic, the surge is systematically pervasive and accompanied by a formal governmental declaration (Ibid., p. 14). Under these circumstances a surge may gradually develop in what the National Academy of Medicine describes as a continuum of constrained capacity, from *conventional* to *contingency* to *crisis*, with progressively increasing disruption of resource availability and provision of care (Institute of Medicine, 2010, p. 13).

Each stage in the continuum requires health care provision at a characteristic standard of care. Under *conventional* surge conditions the increased demand results in full utilization of available resources, but with delivery of usual care. With *contingency* surge conditions, facilities, staffing and supplies must be extended, adapted, and conserved but the care delivered is functionally equivalent to usual care. In *crisis* surge conditions, facilities, staffing, and supplies are insufficient to meet demand, and crisis standards of care are adopted. The National Academy of Medicine notes that at this point of overwhelming demand the duty to care and the duty to steward resources come into conflict (Institute of Medicine, 2012, pp. 1-73–1-74). In surge crisis, population benefit and individual patient benefit become competing foci of care (Institute of Medicine, 2013, p. 1). It is under these conditions that formal triage and allocation become appropriate.

Physicians should be careful to recognize that the institution of triage as a form of allocating life-saving resources during the absolute scarcity of a pandemic is appropriate only when there is a formal governmentally declared state of emergency instituting crisis standards of care, accompanied by the local exhaustion of contingency attempts to adapt available resources and infrastructure, with no expectation of timely importation of resources, and no feasible option to transfer patients (Institute of Medicine, 2010).

The Duty to Care

The concept of duty arises from a moral obligation owed by one to another. As Frazier writes, having a duty “is to be subject to a binding, normative requirement” (Frazier, 2000). Ross found duty to be either *prima facie* (that which potentially ought to be done given the particular facts and circumstances, perhaps as one of multiple possible obligations) or *absolute* (that which actually ought to be done given the full

measure of the facts, circumstances, and competing duties, and as a unique obligation) (Ross, 1930).

According to Ross, a promise can exist as one of several *prima facie* duties in a given situation. However, Ross held the making of a promise to be a *special obligation*, wherein one intentionally accepts an explicit obligation or creates an implicit expectation (Ross, 1930). This intentional representation to another elevates the hierarchical nature of the obligation, though not absolutely. The rightness of keeping the obligation of a promise is a function of its representation and not its consequences. “Promise-keeping,” Ross wrote, “has a bindingness independent of productiveness of maximum good (Ross, 1930, p. 40). The breaking of a promise induces harm both of an obviously specific and a more subtly general nature. When a promise is broken it undermines general confidence in promise-keeping as a relational tool of society.

The duty of the treating physician to the patient is foundational to the practice of medicine, and, alongside the dignity of the human person, is a pillar on which all else rests. The duty to care is the obligation that the physician will act solely in the best interests of the individual patient, and its actuating promise is the foundation of the trust-based bond that is the physician-patient relationship.

From ancient times, promise-making has provided a moral footing for the duty of the physician in the practice of medicine. The Hippocratic Oath, in both its positive and negative affirmations, reflects a rules-based application of Pythagoreanism (Edelstein, 1967). The Hippocratic duty to care states, “Whatever houses I may visit, I will come for the benefit of the sick, remaining free of all intentional injustice....” (Edelstein, 1967).

The duty to care is more expressly outlined in the *World Medical Association Declaration of Geneva*:

THE HEALTH AND WELL-BEING OF MY PATIENT will be my first consideration;
I WILL RESPECT the autonomy and dignity of my patient;
I WILL MAINTAIN the utmost respect for human life;
I WILL NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient... (World Medical Association, 2017).

Here the duty of the treating physician to the patient’s health and well-being is preeminent and allows “no consideration of age, disease or disability, ...or any other factor.” The American Medical Association also holds the duty to care as preeminent, stating that, “A physician shall, while caring for a patient, regard responsibility to the patient as paramount” (American Medical Association, 2017).

Physicians taking the Hippocratic Oath or pledging the Declaration of Geneva make promises to society and to those persons who will become their patients, explicitly entering a social contract. But that social contract also exists for all physicians. In accepting a societally granted license to practice medicine, the physician agrees to be bound by the duty to care as generally understood (and usually legally codified) by that society.

In addition to its generality, the duty to care particularly exists as an individual moral obligation. Pellegrino found the actionable essence of the physician-patient relationship to be an individualized making, accepting, and keeping of a promise:

Each profession fulfills the promise inherent in its act of profession by a specific action which identifies with that profession. . . . This culmination in a right and good healing action is what constitutes medicine qua medicine. . . . The patient expects the end of medicine to be an action which is right and good for him (Pellegrino & Thomasma, 1981).

As a preeminent special duty, the duty to care carries a moral obligation of performance—that is, in seeking the health and well-being of the individual patient as the preeminent concern of the treating physician, there are things that must be done and things that must not be done. The *World Medical Association (WMA) International Code of Medical Ethics* reaches this point in stating that, “A physician shall owe his/her patients complete loyalty and all the scientific resources available to him/her” (World Medical Association, 2006).

The Duty to Steward Resources

Medical associations generally recognize the duty of physicians to steward resources for the good of the greater community. For the American Medical Association, this duty sounds in promotion of the health of the general population. In *Code of Medical Ethics Policy 11.1.2 Physician Stewardship of Health Care Resources*, the AMA states that:

Physicians’ primary ethical obligation is to promote the well-being of individual patients. Physicians also have a long-recognized obligation to patients in general to promote public health and access to care. This obligation requires physicians to be prudent stewards of the shared societal resources with which they are entrusted. (American Medical Association, 2017, p. 183).

However, the World Medical Association holds that the duty to steward resources sounds in principles of social justice:

...Justice has become an important factor in medical decision-making. It entails a more social approach to the distribution of resources, one that considers the needs of other patients. According to this approach, physicians are responsible not just for their own patients, but, to a certain extent, for others as well (Williams & World Medical Association, 2015, p. 72).

Whether sounding in concepts of greater good or social justice, the duty to steward resources casts the physician as morally responsible to the society as a whole. In either case, the duty to steward resources may come into acute conflict with the duty to care when the treating physician must care for the patient in the extreme absolute scarcity of pandemic surge crisis.

The Conflict of Duties

The duty to steward resources is interpreted by the American Medical Association in its *Code of Medical Ethics Policy 11.1.3 Allocating Limited Health Care Resources* as

one of both micro-allocation at the level of care of the individual patient and macro-allocation at the level of development of just policy. The AMA notes that the primary ethical obligation of the physician remains to the individual patient when the duty to care and the duty to steward resources conflict:

Physicians' primary ethical obligation is to promote the well-being of their patients. Policies for allocating scarce health care resources can impede their ability to fulfill that obligation, whether those policies address situations of chronically limited resources, such as ICU (intensive care unit) beds, medications, or solid organs for transplantation, or "triage" situations in times of scarcity, such as access to ventilators during an influenza pandemic.

As professionals dedicated to protecting the interests of their patients, physicians thus have a responsibility to contribute their expertise to developing allocation policies that are fair and safeguard the welfare of patients (American Medical Association, 2017).

Note the specific reference to ICU bed allocation and ventilator triage in pandemics. Here the AMA recognizes a clear hierarchy of duty for the treating physician, placing the duty to care above that of the duty to steward scarce resources. This is clearly directive to the present COVID-19 pandemic.

The World Medical Association adopts a 'greatest number of lives saved' ethic as controlling in a situation of extreme absolute scarcity, subordinating the duty to care of the treating physician to the duty to steward resources:

The physician must act according to the needs of patients and the resources available. He/she should attempt to set an order of priorities for treatment that will save the greatest number of lives and restrict morbidity to a minimum.

In selecting the patients who may be saved, the physician should consider only their medical status and predicted response to the treatment, and should exclude any other consideration based on non-medical criteria (World Medical Association, 2017).

It is of note that neither the Hippocratic Oath nor the Declaration of Geneva contains a promise to steward resources or to seek the greatest good to be found for the population. Such a duty, although *prima facie*, is not a promise-based special obligation. In general, neither the physician nor the society has represented to the individual patient that the duty to steward resources is a duty superior to the duty to care.

The notion that a physician caring for an individual patient could subordinate the best interests of that patient to the best interests of the population and could subordinate the duty to care to the duty to steward resources is morally problematic at its foundation. Such actions betray the promise made by the physician to the patient at the initiation of their trust-based relationship.

Absent a social contract that clearly subordinates the best interests of the individual patient to the best interests of the population in provision of health care, such subordination would only have some claim to moral standing if the physician had made an initial promise to the patient something like this—"I will act for your benefit, holding your health and well-being as my first consideration, and avoiding intentional injustice, UNLESS the needs of the greater society come into conflict with your best interests,

at which time I may choose to sacrifice your best interests to the best interests of the population in order to achieve the greatest good.” In our current societal framework, the patient should have the opportunity to reject that proposition and choose another physician who holds a different hierarchy of duties.

The general approach to resolving these conflicting duties in a pandemic is to establish a system of point-of-care triage and to separate the treating physician from triage allocation. Such separation allows the treating physician to delegate the conflicting duty to steward resources to a party that has no explicit duty to care for the individual patient. In its *Statement on Medical Ethics in the Event of Disasters*, the World Medical Association recognizes that triage should be the role of an authority other than the treating physicians:

A system of triage may be necessary to determine treatment priorities. Despite triage often leading to some of the most seriously injured receiving only symptom control such as analgesia, such systems are ethical provided they adhere to normative standards. Demonstrating care and compassion despite the need to allocate limited resources is an essential aspect of triage.

Ideally, triage should be entrusted to authorized, experienced physicians or to physician teams, assisted by a competent staff. Since cases may evolve and thus change category, it is essential that the official in charge of the triage regularly assesses the situation (World Medical Association, 2017).

Both the AMA and the WMA recognize that in conditions of extreme absolute scarcity the treating physician should either accept the decision of the triage authority or seek to appeal the decision and modify the protocol. For the AMA this finds in the superior duty of physicians to respect the law (American Medical Association, 2017, p. 1). For the WMA this finds in a situational hierarchical placement of the duty to steward resources *in extremis* above the duty to care (World Medical Association, 2017).

For treating physicians, the most ethically congruent synthesis of the hierarchical duties that exist in conditions of extreme absolute scarcity is to make a treatment decision in the best interests of the individual patient, to advocate for the patient in the course of resource allocation, to accept the decision of the triage authority, and to appeal the decision or seek to modify the protocol if the triage result is felt unjust.

Ventilator Triage

The question of ventilator triage in response to a pandemic is relatively new. In the 1968-1969 Hong Kong influenza A H3N2 epidemic, even the most severe cases of viral pneumonia were usually treated with high flow oxygen and amantadine, but not mechanical ventilation (Burk, Schaffner, & Koenig, 1971). The SARS coronavirus (SARS-CoV) epidemic of 2003 was of limited scope, causing only 8000 cases worldwide (World Health Organization, 2020). Twenty to thirty per cent of those patients required mechanical ventilation, and about 700 died (Phua & Govert, 2008). Although not a mass casualty event, SARS did provoke discussion of ventilator triage should such an illness present on a larger scale (Ibid.).

In 2005 the Ontario Health Plan for an Influenza Pandemic directed the development of a protocol designed to provide guidance for making triage decisions for admission to the ICU and allocation of mechanical ventilation during a surge crisis in an influenza pandemic.³ This protocol included hard-stop categorical exclusion criteria, physiologic scoring with the Sequential Organ Failure Assessment (SOFA) score, and a “minimum qualifications for survival” reassessment at 48 and 120 hours with patients who deteriorate or fail to improve being discharged to palliative care. The stated goal was maximizing benefits for the largest number of patients (Christian, et al., 2006).

In 2007, the New York State Task Force on Life and the Law and the New York State Department of Health released draft non-binding ventilator allocation guidelines for adults.⁴ The stated purpose of this guideline was to maximize the number of survivors based on short-term survival of the acute illness (New York State Task Force on Life and the Law & New York State Department of Health, 2015).

Ventilator triage discussions were further expanded during and after the Influenza A H1N1 pandemic of 2009, though ventilator triage was not needed during that episode (Ethics Subcommittee of the Advisory Committee to the Director, Centers for Disease Control and Prevention, 2011).

From 2009 through 2013 the National Academy of Medicine addressed ventilator triage as part of a larger effort to support the development of crisis standards of care. The New York guideline was revised and expanded in 2015.

Five days before the March 11, 2020, declaration of the outbreak of COVID-19 as a pandemic by the Director-General of the World Health Organization (World Health Organization, 2020), the Italian College of Anesthesia, Analgesia, Resuscitation and Intensive Care (SIAARTI) promulgated a triage guideline for admission to intensive care units.⁵ This guideline was to be implemented after “all possible efforts have been made to increase the availability of resources (in particular, Intensive Care beds) and after any possibility of transfer” (*Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva*, March 6, 2020). The guideline specifically endorsed the possible use of age criteria and the reservation of ICU resources from some patients in order to make those resources later available to those with a higher likelihood of survival and years of life saved.

In March 2020 provisions of a model hospital policy for allocation of ICU admission and ventilation prepared by the University of Pittsburgh were endorsed by the Commonwealth of Pennsylvania as the recommended allocation framework for all Pennsylvania hospitals during the COVID-19 pandemic (Department of Critical Care Medicine, University of Pittsburgh, 2020).⁶ These provisions were incorporated into the Interim Pennsylvania Crisis Standards of Care for Pandemic Guidelines (Bureau of Emergency Preparedness and Response, Pennsylvania Department of Health, March 22, 2020).⁷

³ Hereinafter the Ontario protocol.

⁴ Hereinafter the New York guideline.

⁵ Hereinafter the Italian guideline.

⁶ Hereinafter the Pittsburgh policy.

⁷ Hereinafter the Pennsylvania guideline.

The authors based this policy on doing the greatest good for the greatest number. Its operating principles were to save the most lives (based on the SOFA score), and to save the most life-years (by providing scoring penalties for comorbid conditions thought to limit long-term survival), with allowable prioritization for health care workers and persons of younger life-stage.

On March 28, 2020, the Office for Civil Rights (OCR) at the U.S Department of Health and Human Services (HHS) issued a Bulletin to ensure nondiscrimination by covered entities when making decisions about treatment during the COVID-19 emergency. The OCR stated that:

Persons with disabilities should not be denied medical care on the basis of stereotypes, assessments of quality of life, or judgments about a person's relative "worth" based on the presence or absence of disabilities or age. Decisions by covered entities concerning whether an individual is a candidate for treatment should be based on an individualized assessment of the patient and his or her circumstances, based on the best available objective medical evidence (Office for Civil Rights, U.S Department of Health and Human Services, March 28, 2020).

In discussing the Bulletin, OCR Director Roger Severino stated that, "Our civil rights laws protect the equal dignity of every human life from ruthless utilitarianism. HHS is committed to leaving no one behind during an emergency..." (Office for Civil Rights, U.S Department of Health and Human Services, 2020).

On April 3, 2020, Disability Rights Pennsylvania (DRP) and other disability rights advocates filed a complaint with the OCR alleging that the Pennsylvania guideline violated federal law, including Title II of the Americans with Disabilities Act, Section 504 of the Rehabilitation Act and Section 1557 of the Patient Protection and Affordable Care Act (Darr, 2020). This complaint highlighted the fact that the Pennsylvania guideline based its ICU and ventilator triage allocation in part on the facial presence of a comorbid condition without an individual assessment of how that condition might impact prognosis. Likewise, the complaint alleged that the use of long-term survival as a triage principle rather than survival of the immediate illness was inherently discriminatory.

Shortly thereafter, the University of Pittsburgh promulgated an amended Pittsburgh policy, reconfiguring penalties for comorbid conditions, disavowing categorical exclusion criteria, shifting prognostic emphasis from long-term to near-term survival, emphasizing individualized assessments, and committing to the avoidance of denial of care based on stereotypes, assessments of quality of life, and judgment of the worth of persons (Department of Critical Care Medicine, University of Pittsburgh, 2020). Similar changes were incorporated into Version 2 of the Interim Pennsylvania Crisis Standards of Care for Pandemic Guidelines (Bureau of Emergency Preparedness and Response, Pennsylvania Department of Health, April 10, 2020). Both the Pittsburgh policy and the Pennsylvania guideline continued to use life-years saved (or "life-cycle considerations") as a triage principle, to apply penalties for poor near-term prognosis (death likely within 5 years) due to conditions unrelated to the acute illness, and to provide for nonconsensual withdrawal and reallocation of ICU and ventilator care from patients with "substantial clinical deterioration" (manifested by declining SOFA scores or per overall clinical judgment).

On April 15, 2020, DRP filed a supplement to its previous complaint alleging that use of life-years saved as a triage principle was inherently discriminatory, that penalties for comorbid conditions remained couched in prognostic criteria, that decreased life expectancy unrelated to survival of the acute illness was still considered, and that reallocation timelines failed to provide reasonable accommodation for persons with disabilities (Radecic, 2020). On April 16, 2020, the OCR announced resolution of the civil rights complaint against the Pennsylvania Department of Health based on the changes made to the Pennsylvania guideline, effectively negating the concerns remaining in the supplemental DRP complaint (Office of Civil Rights, U. S. Department of Health & Human Services, April 16, 2020).

It is of note that the guidelines, protocols, and policies developed for ICU and ventilator allocation to date are all expressly utilitarian in asserted justification and are directed at a population-based end. As a foundational principle, the utilitarian approach diminishes the function of triage as a maximizer of the good of the individual patient in the situation of extreme absolute scarcity of resources. The subordination of the best interests of the individual person to interests of the population, though perhaps more apparent than real in the initial allocation of scarce resources, is drawn into sharp and actual relief by the practice of reallocation.

The Problematic Nature of Reallocation

Reallocation is a population-centered process during surge crisis by which scarce life-saving resources may be non-consensually removed from patients to whom they previously have been allocated with the intent that those life-saving resources will then be assigned to other individuals who are felt to have a more favorable prognosis or a higher potential of benefit. It is understood that the person from whom the resource is removed may have a high risk of death (Institute of Medicine, 2009, pp. 34-35).

In a 2011 review of ethical considerations in ventilator triage, the Advisory Committee to the Director of the Centers for Disease Control and Prevention reviewed non-consensual reallocation on a lives-saved basis:

To achieve the public health goal of minimizing the number of preventable deaths during a severe pandemic emergency, states and hospitals need to address the issue of removing from ventilators patients with respiratory failure whose prognosis has significantly worsened in order to provide access to patients with a better prognosis. ... Patients who are removed from mechanical ventilation and their families or surrogates, like patients with respiratory failure who are not placed on mechanical ventilation, should be notified this will occur, given a chance to say good-byes and complete religious rituals, and provided compassionate palliative care (Ethics Subcommittee of the Advisory Committee to the Director, Centers for Disease Control and Prevention, 2011, p. 21).

Reallocation is an integral part of a number of ventilator triage protocols. As noted above, the Ontario protocol has an explicit “minimum qualifications for survival” reallocation process. The New York guideline calls for the patient and family to be informed that initial allocation of the ventilator is a trial of therapy and that it may be removed at

a later time. The guideline recommends reevaluation of patients allocated a ventilator at 48 and 120 hours of therapy to determine whether treatment will continue, depending on “the severity of the patient’s health condition and the extent of the patient’s medical deterioration. In order for a patient to continue with ventilator therapy, s/he must demonstrate an improvement in overall health status at each official clinical assessment” (New York State Task Force on Life and the Law & New York State Department of Health, 2015). Under these circumstances the triage officer or committee removes the ventilator for reallocation. Consent of the patient or family is not required.

The Italian guideline endorses the daily reassessment of each patient and “therapeutic desistance” from ICU to palliative care for those who do not improve or who deteriorate. Such decisions could be made without discussion with the family members if necessary (*Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva*, March 6, 2020).

The Pittsburgh policy likewise incorporates reallocation based on periodic assessment for improvement, stating that “patients showing improvement will continue to receive critical care services until the next assessment. Patients showing substantial clinical deterioration that portends a very low chance for survival will have critical care discontinued” (Department of Critical Care Medicine, University of Pittsburgh, 2020).

Reallocation is Unproven

Reallocation is problematic on several points. First, its incorporation into the protocols for initial allocation accords it the status of an operative tool rather than an unproven measure of last resort. It is of great importance to note that very little empirical data exist on the actual effects of reallocation. However, such evidence as we have is disturbing.

In 2009, several of the authors of the Ontario protocol conducted a study in which they analyzed cohorts of patients admitted to two academic medical/surgical ICUs during an 8-week period of peak occupancy, with a total of 234 patients, applying the protocol retrospectively. The investigators found that for those patients who would have been denied ICU/ventilator care at admission per the allocation protocol, 25% survived to hospital discharge. Of those who would have been removed from the ventilator at the 48-hour mark by the reallocation protocol, 45% survived to hospital discharge. And of those who would have been removed from the ventilator at the 120-hour mark, 72% survived to hospital discharge. The intermediate priority patients who would have received the reallocated ventilators had a 62% survival to discharge. The authors concluded that triage allocation tools seemed effective for initial allocation, but that reallocation could perhaps appear to be more effective if 50% two-year survival was used as the arbiter instead of survival to hospital discharge (Christian, et al., 2009).

Despite its small numbers, this is not a reassuring study for those who are considering endorsement of reallocation. Unlike initial allocation, which deprives solely the hopeless patient of restorative care, the patients of reallocation have not been declared hopeless—rather, they are only sicker than the next patient. This devalues the life of the

reallocation patient and accords them a lesser claim to life simply because they have had delayed improvement, typically at the 5-day mark.

Reallocation Subordinates the Duty to Care

A second concern is that reallocation subordinates the duty to care. Such relegation is apparent, though not actual, in initial triage allocation as that process produces a result to the good of the individual patient—providing needed care urgently and avoiding futile care. But for reallocation, the subordination of the duty to care is very real.

According to data from the United Kingdom, among 5761 patients with COVID-19 admitted to critical care and receiving advanced respiratory support by endotracheal tube or tracheostomy, there was a 47.6% survival to discharge from the ICU.⁸ Among these very ill patients, even those in the age group with the highest ICU mortality (> 80 years) had a 17.5% ICU survival. Survivors had a 19-day median ICU length of stay, and nonsurvivors 10 days (Intensive Care National Audit and Research Centre, May 29, 2020). Considering such data, a triage agent imposing a forced withdrawal of care at 120 hours (5 days) for lack of improvement raises serious questions as to the propriety and legitimacy of subordinating the duty to care of the treating physician.

Reallocation is Not Ethically Justifiable

Reallocation stands on very tenuous ground for ethical justification. It is a utilitarian tool used upon very ill but not hopeless patients. It purports to produce a greater good in extreme shortage. However, this simply begs the question.

Those who propose ventilator reallocation as a last resort indicate that it would be operative when all other options for care have been exhausted. But such a situation would require the complete utilization of all full function ventilators, and the complete utilization of all limited function transport ventilators, repurposed anesthesia machines, adapted continuous flow ventilators, and all options for bag-assisted ventilation. The latter resource is constrained by staffing. If a facility reaches a point at which it has no staff available for rotating performance of bag-assisted ventilation, then the facility has completely collapsed. In such a case, it is not realistic to think that reallocation of a ventilator could address the situation.

The only defensible position remaining is to assert that reallocation should not be used as a last resort measure, but rather as an optimizing measure prioritized over the reconfiguration of other available resources. To propose nonconsensual removal of life-support from a patient for purposes of reallocation when other options are not exhausted is not ethically justifiable.

Reallocation May be A Criminal Act

There are substantive concerns that nonconsensual reallocation may be a criminal act. In reallocation, a triage officer directs nonconsensual removal of life-support from a patient who has not been certified as terminally and irreversibly ill with no reasonable

8 Data as of as of May 29, 2020.

hope of recovery. This patient, though severely ill, is not known to be dying with any degree of moral certainty. Here removal of life-support cannot be construed as allowing an inevitable natural dying process to complete. Rather, it is a causal act that is followed by a death that may not have otherwise occurred.

Noting the potential for criminal liability, the New York Task Force on Life and the Law concluded that existing statutes pertaining to care in a crisis would provide only qualified civil immunity, and that no New York statute provided criminal immunity (New York State Task Force on Life and the Law & New York State Department of Health, 2015, p. 219). Discussions regarding immunity have consistently noted that both civil and criminal liability may distinctly attach to disaster related care. Several members of the IOM Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations recognized this distinction, writing in the *NEJM* that “providers do not seek exclusions from all liability for their actions in emergencies. However... skilled practitioners are entitled to reasonable protections for noncriminal acts of ordinary negligence, based on an appropriate standard of care in crisis situations” (Gostin, et al., 2010, p. 1379).

A recent *JAMA* review drew a contrast between allocation and reallocation as to potential criminal liability:

A clinician is unlikely to incur criminal liability for failing to provide a scarce ventilator to a patient who requires ventilator support, so long as the decision is made pursuant to triage protocols. The criminal law generally penalizes actions, not refusals to act. Moreover, a physician cannot be punished for failing to provide a ventilator that does not exist, as will be true if the supply of ventilators is insufficient.

By contrast, a clinician who intentionally withdraws a ventilator from a nonconsenting patient could conceivably be charged with criminal homicide. If the clinician knows that removing the ventilator will result in the death of the patient, the applicable charge would be murder. If the clinician knows there is a substantial risk the patient will die, and the patient does die, the applicable charge would be manslaughter. It does not matter whether the patient would have died soon regardless. Action that shortens a life, even if just by hours, can be prosecuted as a homicide, with charges potentially filed against any individual who participated in or directed the ventilator removal and against the hospital (Cohen, Crespo, & White, 2020).

The solution proposed by the *JAMA* authors was to seek passage of statutes specifically providing civil and criminal immunity for triage ventilator allocation and reallocation acts taken in accordance with state approved protocols (Ibid.).

This is the same paradigm followed by proponents of physician assisted suicide—for an act that is criminal in law but purported as a moral good, establish a state-approved protocol and then declare the act to be legal or provide criminal immunity for its performance.

The point is simply this—forcible taking of care from a sick person, particularly one who is not sick unto death, so that it may be given unto another, however well-intentioned, flouts conventions of morality and law. The better approach is to solve the problem another way.

Reconfiguration as a Solution

The reconfiguration of available resources may include the use of space for non-designated purposes, the extension of staff responsibilities and workloads, and the substitution or adaptation of equipment from designed uses to other purposes in order to meet critical needs. As noted by the reports of the Institute of Medicine, the adaptation of space, personnel, and equipment during the contingency phase of a disaster surge may be sufficient to avoid the need for crisis standards of care. These reports clearly note that a move to crisis standards of care with triage of life-saving resources should only follow a maximal effort at contingency adaptation, and that the point of exhaustion of contingency adaptation is the “resource triage threshold” (Institute of Medicine, 2009, p. 4-14; Institute of Medicine, 2010, p. 13; Institute of Medicine 2013, pp. 29-30). This pre-triage maximization principle was also recognized in particular as to ventilators in the initial iterations of the New York guideline (Powell, Christ, & Birkhead, 2008).

Ventilators as devices that deliver pressurized oxygen and air to a patient range in functional capacity and monitoring features, and are classified by the U.S. Food and Drug Administration according to those capabilities as hospital, transport, and home-use devices (Bird, Heidel, McGinness, Sasanuma, & Tan, 2007). The use of portable ventilators to provide intensive care in austere circumstances is well described, though logistically complex (Venticinque & Grathwohl, 2008).

On March 22, 2020, nine days after the Presidential declaration of a national emergency concerning the COVID-19 outbreak, the FDA issued guidance allowing “limited modifications to the indications, claims, functionality, or to the hardware, software, or materials of FDA-cleared devices used to support patients with respiratory failure or respiratory insufficiency,” to remain in effect for the duration of the public health emergency related to COVID-19 (Food and Drug Administration, U.S. Department of Health and Human Services, 2020). This guidance specifically pertained to the use of powered emergency ventilators and anesthesia gas machines, the use of home or transport ventilators in health care facilities, and the use of devices indicated for sleep apnea to treat patients with respiratory insufficiency, calling attention to design and environmental modifications needed to minimize aerosolization with these latter devices. On March 24, 2020, the FDA granted an Emergency Use Authorization during the Covid-19 emergency for the modification of many ventilating devices, including the repurposing of positive airway pressure devices (CPAP & BiPap) such as those used for non-invasive ventilatory support or treatment of sleep apnea (Halpern, Tan, & Society of Critical Care Medicine, 2020). Additionally, on March 31, 2020, an open letter from the Assistant Secretary for Health of HHS and the U. S. Surgeon General stressed adaptation and conversion of anesthesia machines and other respiratory devices for use as mechanical support for those in respiratory failure from COVID-19 in order to avoid “last resort” scenarios (Giroir & Adams, March 31, 2020). The federal guidance made no mention of ventilator reallocation.

The Society of Critical Care Medicine (SCCM) estimates that by adding ventilators in the Strategic National Stockpile and repurposed anesthesia machines to the

current U. S. hospital inventory of full function ventilators, about 200,000 machines are available (Halpern, Tan, & Society of Critical Care Medicine, 2020). The number of transport ventilators and available CPAP/BiPAP devices is unknown, but their use would significantly expand ventilator inventory. On April 14, 2020, the White House announced the Dynamic Ventilator Reserve as an online inventory of hospital ventilators and ancillaries, managed by the American Hospital Association in cooperation with the Federal Emergency Management Agency, to allow rapid redeployment of geographically dispersed excess ventilator capacity into areas of acute scarcity (American Hospital Association, 2020).

The point here is not to provide a scientific review or an operational guide for these practices. Rather, it is to emphasize that in a pandemic surge, the option to reconfigure ventilator resources other than the fully functional hospital ventilators employed in usual care exists and should be maximized before transitioning to crisis standards of care and the triage allocation of life-saving resources. Likewise, the geographically dispersed hospital ventilator inventory now will be increasingly available for rapid redeployment. Such reconfiguration efforts are likely to be operationally difficult, but they may well forestall the absolute scarcity that forces a triage officer to allow a potentially salvageable patient to die.

Rather than endorsing reallocation, a better policy approach would be to endorse the maximized utilization of reconfigured and redeployed resources prior to institution of the triage provisions of crisis standards of care. And rather than reallocation, substitution of a reconfigured resource for one previously allocated, when necessary to save the life of another patient, could be permitted even if such reconfiguration resulted in suboptimal benefit of care or increased risk to the patient, so long as the reconfiguration is done without intent that the patient will die or knowledge of substantial risk that the patient will die as a result of the substitution.

Conclusion

Pandemic surge crisis, with extreme absolute scarcity of life-saving resources, calls for careful examination of the challenges presented. The need for prioritization, with attendant conflicting duties, presents treating physicians with a dilemma. Its solution lies in steadfast loyalty to the patient and to the moral principles that underlie the practice of medicine. Solutions that sacrifice those loyalties and principles to a utilitarian ethos must be rejected, no matter what the prevailing wisdom may hold. Reallocation of life-saving resources is particularly problematic, and alternate solutions should be sought in reconfiguration strategies.

References

- Abelson , R., & Thomas, K. (2020, February 7). *Inundated With Flu Patients, U.S. Hospitals Brace for Coronavirus*. Retrieved from The New York Times: <https://www.nytimes.com/2020/02/07/health/hospitals-coronavirus.html>.
- American Hospital Association. (2020, April 14). *Special Bulletin: Public-private Effort Launched to Help Distribute Existing Ventilators to High-need Areas of the U.S.* Retrieved from American Hospital Association:

<https://www.aha.org/special-bulletin/2020-04-14-special-bulletin-public-private-effort-launched-help-distribute>.

American Medical Association. (2017). American Medical Association Principles of Medical Ethics. In American Medical Association, *Code of Medical Ethics* (pp. 1-2). Chicago, IL: The American Medical Association.

American Medical Association. (2017). *Code of Medical Ethics*. Chicago, IL: American Medical Association.

Bird, S., Heidel, T., McGinness, M., Sasanuma, K., & Tan, J. (2007). *Avian Influenza Pre-Pandemic Procurement: Recommendations for the U.S. Federal Government*. Massachusetts Institute of Technology, Engineering Systems Division. Cambridge, MA: Massachusetts Institute of Technology. Retrieved from <https://dspace.mit.edu/bitstream/handle/1721.1/102880/esd-wp-2007-03.pdf?sequence=1&isAllowed=y>

Bureau of Emergency Preparedness and Response, Pennsylvania Department of Health. (April 10, 2020). *Interim Pennsylvania Crisis Standards of Care for Pandemic Guidelines, Version 2*. Harrisburg, PA: Pennsylvania Department of Health. Retrieved from <https://www.health.pa.gov/topics/Documents/Diseases%20and%20Conditions/COVID-19%20Interim%20Crisis%20Standards%20of%20Care.pdf>.

Bureau of Emergency Preparedness and Response, Pennsylvania Department of Health. (March 22, 2020). *Interim Pennsylvania Crisis Standards of Care for Pandemic Guidelines*. Harrisburg, PA: Pennsylvania Department of Health.

Burk, R. F., Schaffner, W., & Koenig, M. G. (1971). Severe Influenza Virus Pneumonia in the Pandemic of 1968-1969. *Archives of Internal Medicine*, 127(6), 1122-1128.

Christian Medical and Dental Associations. (2019). *CMDA Position Statements*. Retrieved from CMDA: <https://cmda.org/wp-content/uploads/2020/02/CMDA-Position-Statementsworeferences19.pdf>

Christian, M. D., Hamielec, C., Lazar, N. M., Wax, R. S., Griffith, L., Herridge, M. S., ... Cook, D. S. (2009). A Retrospective Cohort Pilot Study to Evaluate a Triage Tool for Use in a Pandemic. *Critical Care*, 13(5), R170.

Christian, M. D., Hawryluck, L., Wax, R. S., Cook, T., Lazar, N. M., Herridge, M. S., . . . Burkle, F. M. (2006). Development of a Triage Protocol for Critical Care During an Influenza Pandemic. *CMAJ*, 175(11), 1377-1381.

Cohen, I. G., Crespo, A. M., & White, D. B. (2020). Potential Legal Liability for Withdrawing or Withholding Ventilators During COVID-19. *JAMA*, 323 (19), 1901-1902.

Darr, K. (2020, April 3). *04.03.2020-DRP-OCR-Complaint-with-Exhibit-A-1*. Retrieved from Disability Rights Pennsylvania: <https://www.disabilityrightspa.org/wp-content/uploads/2020/04/s04.03.2020-DRP-OCR-Complaint-with-Exhibit-A-1.pdf>.

Department of Critical Care Medicine, University of Pittsburgh. (March 23, 2020). *A Model Hospital Policy for Allocating Scarce Critical Care Resources*. Retrieved from Department of Critical Care Medicine, University of Pittsburgh: <https://ccm.pitt.edu/?q=content/model-hospital-policy-allocating-scarce-critical-care-resources-available-online-now>.

Department of Critical Care Medicine, University of Pittsburgh. (2020, April 15). *A Model Hospital Policy for Allocating Scarce Critical Care Resources*. Retrieved from Department of Critical Care Medicine, University of Pittsburgh: <https://ccm.pitt.edu/?q=content/model-hospital-policy-allocating-scarce-critical-care-resources-available-online-now>.

Edelstein, L. (1967). *Ancient Medicine: Selected Papers of Ludwig Edelstein*. (O. Temkin, & C. L. Temkin, Eds.) Baltimore; London: The Johns Hopkins University Press.

Ethics Subcommittee of the Advisory Committee to the Director, Centers for Disease Control and Prevention. (2011). *Ethical Considerations for Decision Making Regarding Allocation of Mechanical Ventilators during a Severe Influenza Pandemic or Other Public Health Emergency*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Food and Drug Administration, U.S. Department of Health and Human Services. (2020, March). *Enforcement Policy for Ventilators and Accessories and Other Respiratory Devices During the Coronavirus Disease*

2019 (COVID-19) Public Health Emergency. Retrieved from U. S. Food and Drug Administration: <https://www.fda.gov/media/136318/download>.

Frazier, R. L. (2000). Duty. In Routledge, Concise Routledge Encyclopedia of Philosophy (pp. 222-223). London; New York: Routledge.

Giroir, B. P., & Adams, J. (March 31, 2020). *Optimizing Ventilator Use During the COVID-19 Pandemic*. U.S. Public Health Service Commissioned Corps.

Gostin, L. O., Hanfling, D., Hodge, J. G., Courtney, B., Hick, J. L., & Petersen, C. A. (2010, September 30). Standard of care—in sickness and in health and in emergencies [Letter to the editor]. (2010) *N Engl. J. Med.* 363(14), 1378-1379. Retrieved from <https://www.nejm.org/doi/full/10.1056/NEJMc1007700>.

Halpern, N. A., Tan, K. S., & Society of Critical Care Medicine. (2020, May 12). *United States Resource Availability for COVID-19, Version 3*. Retrieved from Society of Critical Care Medicine: <https://sccm.org/getattachment/Blog/March-2020/United-States-Resource-Availability-for-COVID-19/United-States-Resource-Availability-for-COVID-19.pdf?lang=en-US>.

Institute of Medicine. (2009). *Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations*. Washington, DC: The National Academies Press.

Institute of Medicine. (2010). *Crisis Standards of Care: Summary of a Workshop Series*. Washington, DC: The National Academies Press.

Institute of Medicine. (2012). *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response—Volume 1: Introduction and CSC Framework*. Washington, DC: The National Academies Press.

Institute of Medicine. (2013). *Crisis Standards of Care: Toolkit for Indicators and Triggers*. Washington, DC: The National Academies Press.

Intensive Care National Audit and Research Centre. (May 29, 2020). *ICNARC Report on COVID-19 in Critical Care*. London: Intensive Care National Audit and Research Centre.

Iserson, K. V., & Moscop, J. C. (2007). Triage in Medicine, Part I: Concept, History, and Types. *Annals of Emergency Medicine*, 49, 275-281.

NCBC Ethicists. (2020, March 25). *Points to Consider: Triage in the Perspective of Catholic Bioethics*. Retrieved from National Catholic Bioethics Center: <https://ncbcstore.org/ncbc-resources-for-covid19/triage-in-the-perspective-of-catholic-bioethics>.

New York State Task Force on Life and the Law & New York State Department of Health. (2015). *Ventilator Allocation Guidelines*. New York State Department of Health. Retrieved from https://www.health.ny.gov/regulations/task_force/reports_publications/docs/ventilator_guidelines.pdf.

Office for Civil Rights, U.S. Department of Health and Human Services. (2020, March 28). *OCR Issues Bulletin on Civil Rights Laws and HIPAA Flexibilities That Apply During the COVID-19 Emergency*. Retrieved from U.S. Department of Health and Human Services News: <https://www.hhs.gov/about/news/2020/03/28/ocr-issues-bulletin-on-civil-rights-laws-and-hipaa-flexibilities-that-apply-during-the-covid-19-emergency.html?language=es>.

Office for Civil Rights, U.S. Department of Health and Human Services. (March 28, 2020). *BULLETIN: Civil Rights, HIPAA, and the Coronavirus Disease 2019 (COVID-19)*. U.S. Department of Health and Human Services.

Office for Civil Rights, U. S. Department of Health & Human Services. (April 16, 2020). *OCR Resolves Civil Rights Complaint Against Pennsylvania After it Revises its Pandemic Health Care Triage Policies to Protect Against Disability Discrimination*. Washington, DC: U. S. Department of Health & Human Services. Retrieved from <https://www.hhs.gov/about/news/2020/04/16/ocr-resolves-civil-rights-complaint-against-pennsylvania-after-it-revises-its-pandemic-health-care.html>.

Pellegrino, E. D., & Thomasma, D. C. (1981). *A Philosophical Basis of Medical Practice*. New York: Oxford University Press.

Phua, G.-C., & Govert, J. (2008). *Mechanical Ventilation in an Airborne Epidemic*. *Clinics in Chest Medicine*, 29, 323-328.

Powell, T., Christ, K. C., & Birkhead, G. S. (2008). Allocation of Ventilators in a Public Health Disaster. *Disaster Medicine and Public Health Preparedness*, 2(1), 20-26.

Radecic, P. J. (2020, April 15). *Second Supplemental to Complaint of Disability Rights Pennsylvania Concerning Pennsylvania's Interim Crisis Standards of Care for Pandemic Guidelines*. Retrieved from Disability Rights Pennsylvania: <https://www.disabilityrightspa.org/wp-content/uploads/2020/04/1DRP-Second-Supplement-to-OCR-Complaint-4-15-2020.pdf>.

Ross, W. D. (1930). *The Right and the Good*. Oxford: Oxford University Press.

Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva. (March 6, 2020). *Raccomandazioni Di Etica Clinica Per L'ammissione A Trattamenti Intensivi E Per La Loro Sospensione*. Rome, Italy.

Venticinque, S. G., & Grathwohl, K. W. (2008). Critical Care in the Austere Environment: Providing Exceptional Care in Unusual Places. *Critical Care Medicine*, 36(7(Suppl.)), S284-S292.

Williams, J. R., & World Medical Association. (2015). *World Medical Association Medical Ethics Manual* (3rd ed.). sine loco: The World Medical Association, Inc.

Wilson, J. (1846). *Outlines of Naval Surgery*. Edinburgh: Maclachlan, Stewart, and Co.

World Health Organization. (2020). SARS (*Severe Acute Respiratory Syndrome*). Retrieved from WHO International Travel and Health: <https://www.who.int/ith/diseases/sars/en/>.

World Health Organization. (2020, March 11). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. Retrieved from World Health Organization Director-General Speeches: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19-----11-march-2020>.

World Medical Association. (2006, October). *World Medical Association International Code of Medical Ethics 2006*. Retrieved from World Medical Association Current Policies: <https://www.wma.net/policies-post/wma-international-code-of-medical-ethics/international-code-of-medical-ethics-2006/>.

World Medical Association. (2017, October). *WMA Declaration of Geneva*. Retrieved from World Medical Association Current Policies: <https://www.wma.net/policies-post/wma-declaration-of-geneva/>.

World Medical Association. (2017, October). *WMA Statement on Medical Ethics in the Event of Disasters*. Retrieved from WMA Current Policies: <https://www.wma.net/policies-post/wma-statement-on-medical-ethics-in-the-event-of-disasters/>.

Ziperman, H. H. (1956). Sorting—The Key to Management of Victims of Disaster. *JAMA*, 162(16), 1438-1441.