

Should Pediatric Patients Be Prioritized When Rationing Life-Saving Treatments During COVID-19 Pandemic

Ryan M. Antiel, MD, MSME,^a Farr A. Curlin, MD,^b Govind Persad, JD, PhD,^c Douglas B. White, MD, MAS,^d Cathy Zhang, BA,^e Aaron Glickman, MPA,^e Ezekiel J. Emanuel, MD, PhD,^e John D. Lantos, MD^f

Coronavirus disease 2019 can lead to respiratory failure. Some patients require extracorporeal membrane oxygenation support. During the current pandemic, health care resources in some cities have been overwhelmed, and doctors have faced complex decisions about resource allocation. We present a case in which a pediatric hospital caring for both children and adults seeks to establish guidelines for the use of extracorporeal membrane oxygenation if there are not enough resources to treat every patient. Experts in critical care, end-of-life care, bioethics, and health policy discuss if age should guide rationing decisions.

The coronavirus disease 2019 (COVID-19) pandemic has forced us to examine questions about the fair allocation of medical resources. This novel coronavirus can cause severe cardiorespiratory failure necessitating life-sustaining therapies, including mechanical ventilation and extracorporeal membrane oxygenation (ECMO). At the time of this writing, there have been 1889 patients with confirmed or suspected COVID-19 (1155 in North America) placed on ECMO.¹

Although the majority of patients admitted for COVID-19–related illnesses have been adults (median age of 49 years), children and adolescents with COVID-19 in the United States have also required admission to ICUs.² Overall, children who require ICU admission for COVID-19–related illnesses do much better than adult patients. The hospital mortality rate is 4.2% for children and adolescents, versus >50% for adults.³

Because most COVID-19–related ICU admissions have been for adult

patients, many PICUs have admitted adults when adult ICUs have been overwhelmed.⁴ This has resulted in unique medical and ethical challenges for pediatric intensivists. One such ethical challenge is whether our allocation guidelines for ECMO should prioritize younger patients. In a recent survey of US pediatric ECMO directors, most responded (68%) that that pediatric patients should get priority. But a substantial minority (32%) disagreed.⁵

THE CASE

During the current COVID-19 pandemic, a regional hospital system, which includes a free-standing children's hospital, assembled a working group of administrators, clinicians, and public health officials to establish guidelines for the allocation of ECMO support.

The hospital only had 8 ECMO devices and 2 trained ECMO teams. The experts were concerned that they might have more patients needing ECMO than they had devices or ECMO teams. The

abstract

^aDivision of Pediatric Surgery, Department of Surgery, School of Medicine, Washington University in St Louis, St Louis, Missouri; ^bTrent Center for Bioethics, Humanities and History of Medicine, School of Medicine, Duke University, Durham, North Carolina; ^cSturm College of Law, University of Denver, Denver, Colorado; ^dProgram on Ethics and Decision Making in Critical Illness, Clinical Research, Investigation, and Systems Modeling of Acute Illness Center, Department of Critical Care Medicine, School of Medicine, University of Pittsburgh, Pittsburgh, Pennsylvania; ^eDepartment of Medical Ethics and Health Policy, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania; and ^fDepartment of Pediatrics, Children's Mercy Hospital, Kansas City, Missouri

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Address correspondence to John D. Lantos, MD, Children's Mercy Hospital, 2401 Gillham Rd, Kansas City, MO 64108. E-mail: jlantos@cmh.edu

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working group wanted to establish guidelines for the fair allocation of ECMO in the event of a shortage.

One group member, a pediatric intensivist, argued that pediatric patients should be given priority over adult patients because they have more years to live. Others in the group objected to this proposal, arguing that discriminating on the basis of age fails to uphold the equal dignity of all patients. The policy options were sent to the ethics committee for their analysis.

RYAN M. ANTIEL, MD, MSME, AND FARR A. CURLIN, MD, COMMENT

We find ourselves in a situation in which the medical demand outweighs our current supply. What criteria should we use to guide the fair allocation of a scarce resource?

The first criterion is always prognosis. Patients should not get a scarce resource if they are likely to die even if they are treated with the resource. Thus, it is important that we start by asking if a particular patient is likely to benefit from the intervention. Even when using prognosis, however, we may end up in situations in which two or more patients with an identical prognosis both need the same scarce resource. What then?

One method is to select patients on the basis of social worth. This approach was used in 1962 by a committee (later known as the “god committee”) charged to develop an allocation system for dialysis at the Swedish Hospital in Seattle.⁶ The primary criterion for allocating dialysis was social worth. The committee’s attempts to judge who was worthy of saving proved to be highly subjective and discriminatory. People with families, for example, were judged more worthy of dialysis than people living alone. The Seattle approach was roundly criticized because it implicitly claimed that

some lives were worth more than others.

We must ration on the basis of what lives can be saved, not on whose life is worth saving. This commitment enacts the solidarity of clinicians with those who are sick, which reinforces public trust in the medical profession.

Another approach to rationing is to use a simple lottery. All patients who meet medical criteria have an equal chance of getting the scarce resource. This option avoids all biases, including those based on age, disability, or other nonmedical factors. This approach affirms that all patients share a radically equal and intrinsic dignity simply by being human.⁷

Lotteries have their own problems, however. One still must make judgments about who is likely to benefit from an intervention. Is benefit measured simply as an immediate response to therapy, survival to hospital discharge, or some predetermined length of survival? Each would implicitly incorporate some values or biases, and each would result in resources being allocated differently from the others.

Using the patient’s age is controversial. On one hand, taking age into consideration seems to problematically suggest that young people’s lives are worth more than old people’s lives; it seems to recapitulate the problem of judging social worth. On the other hand, taking age into consideration recognizes a common intuition that pediatric patients have more to lose from death than do, say, 80-year-olds.

Such moral intuitions would support prioritizing a healthy 12-year-old over a healthy 92-year-old, not because of their worth or utility but because of the arc of their lives. The 12-year-old has simply lived through fewer life cycles (childhood, young adulthood, middle age, and old age) than the nonagenarian.

Age can be seen as a proxy for the magnitude of loss threatened. There is no invidious discrimination involved. Again, we do not prioritize the young because of their worth or utility but rather because of what ethicist Gilbert Meilaender terms “generativity”: “the virtue that makes us ready, even eager, to produce those who will replace us and to sacrifice ourselves on their behalf.”⁸ We should not grasp for more life indefinitely but instead should seek to cultivate a gratitude for the gift of life and a willingness to let the next generation take our place.

These considerations lead to a 3-part rationing approach. First, we must consider prognosis and whether a patient will benefit from ECMO. We need to consider the severity of their current illness as well as whether the patient has significant comorbidities for which we would expect the patient to not survive even until hospital discharge. Second, after assessing the likelihood that a particular patient may or may not benefit from ECMO, age ought to be considered as a tie breaker. Younger patients have more to lose when the arc of their life is threatened to be cut short, and thus they have a greater claim to treatment on the basis of need.

Finally, when two patients who both stand to benefit from ECMO are roughly the same age, we can resort to a random lottery.

We should keep in mind that if a patient is ill enough to need ECMO, the prognosis is poor for young and old alike. Perhaps in this situation, the ethically important questions lie elsewhere. First, a policy of rationing that considers age as a criterion can only be morally tolerable if we have other means of caring for the elderly besides ECMO and mechanical ventilation. The institutions of hospice and palliative medicine provide a helpful alternative when

technology can no longer restore the patient to health.

Furthermore, as Paul Ramsey argues in *The Patient as Person: Explorations in Medical Ethics*, before we even get to questions about who will live and who will die, we must first address fundamental questions about why we as a society prioritize exotic medical treatments when the most vulnerable among us do not have access to basic care.⁹ The current pandemic has again exposed significant health disparities and misallocations of resources that have always been latent in our society.

Bernard Williams wrote that “moral conflicts are neither systemically avoidable, nor all soluble without remainder.”¹⁰ We acknowledge no scheme is without shortcomings or without a moral remainder. Leading a moral life in a pandemic cannot be reduced to a moral calculus but by its nature is a practice in which dispositions and discernment are cultivated as we once again learn what it means to care even when we cannot cure. Thus, we must seek ways to support the physicians and nurses who can experience significant moral distress while caring for these patients, especially if they must make resource allocation decisions.

GOVIND PERSAD, JD, PHD, AND DOUGLAS B. WHITE, MD, MAS, COMMENT

With appropriate precautions, it is legal and ethical to prioritize pediatric patients as 1 part of an allocation system for scarce, life-saving medical resources.

Ethical Justification for Prioritizing Young Patients

The ethical justification for prioritizing pediatric patients is not grounded in value judgments about older individuals’ social worth or quality of life. Rather, it is aimed at avoiding the distinctively bad outcome of dying before one has had

the opportunity to live through life’s stages. Living for only 15 years before having one’s life cut short by COVID-19 is an enormously worse outcome than dying of COVID-19 at age 75. On one view, this allocation criterion gives priority to the worst off, in the sense that the young have had the least opportunity to live through life’s stages. On another view, this allocation criterion is egalitarian, in the sense that it seeks to diminish disparities in individuals’ opportunities to live through stages of life.¹¹ This approach is consistent with recognizing the equal dignity of all patients regardless of age.

It is important to distinguish a priority for pediatric patients, which we believe is ethically sound, from a more general priority for any patient with a longer life expectancy. The problem with the more general argument is that it runs the risk of disadvantaging people who have already been disadvantaged by their life circumstances. People living in poverty, for example, have a lower life expectancy than people living in affluence. That does not mean we should prioritize the affluent, although they are likely to live longer.

In the presented case (and in most cases), pediatric priority will reduce the odds that someone will die before living through life’s stages while also saving more years of life. But these considerations can come apart in ways that reveal the importance of priority to the worst off (ie, pediatric patients) even when more years of life would not be saved. Consider a 12-year-old with cancer and a 90-year-old with cancer, both of whom are expected to die within 5 years. Although their life expectancies are similar, the pediatric patient is substantially worse off in that she has had the least opportunity to live through life’s stages. When saving more years of life aligns with prioritizing the worst off, this can obviate ethical concerns we might otherwise have about considering

long-term life expectancy. Unlike the shorter life expectancy often associated with poverty or disability, the shorter life expectancy associated with older age does not stem from disadvantage or social injustice. Rather, it is a consequence of past advantage, the desirable outcome of already having experienced many years of life.

Giving pediatric patients some priority in access to treatment appeals not only to the value of equality of opportunity to live a complete life but also to the value of reducing disparities. The life-shortening effect of social inequality means that people from groups who are subject to various forms of disadvantage and social injustice are less likely to live a long life. They are, today, overrepresented in younger age groups and underrepresented in older groups. For example, 38% of all Hispanic individuals and 31% of all Black individuals in the United States are <22 years of age compared with 23% of all white individuals.¹²

Recognizing that it can be ethical to consider age as part of a multiprinciple allocation system does not entail accepting that it would be ethical to only consider age. Other values, such as a patient’s prognosis for hospital survival and near-term survival, essential worker status, or disadvantages they have experienced, all matter too. These considerations might outweigh pediatric priority.

Numerous US states have adopted as part of their crisis standards of care (CSCs) a multiprinciple allocation framework that gives some priority to the young, either as a tie breaker or as 1 factor that is part of a point system.¹³ A reserve system, which gives priority to pediatric patients for some but not all available ventilators, is another way of incorporating pediatric priority into a multiprinciple approach.¹⁴

Legal Permissibility of Including Age in Allocation Framework

Considering age is not only ethically defensible but, contrary to some misunderstandings, legal. In constitutional law, age-based criteria need only to have a rational basis. Rational basis scrutiny only requires that a law or policy that considers a given characteristic (such as age or wealth) do so in a way that is rationally connected to the law's goals. This allows ample room for decision-makers to consider age.¹⁵ This contrasts with the legal scrutiny given to policies based on race or sex. They are subject to the more exacting legal standards of intermediate or strict scrutiny which require that the law in question use the characteristic in a way that is precisely tailored to its objectives. For instance, under current Supreme Court precedent, universities with race-based affirmative action programs must show that their use of race is strictly necessary to achieve objectives that are themselves crucial to higher education goals, whereas universities only need a rational basis for employing affirmative action programs based on a family's geographic location, wealth, or income.¹⁶

The law regards age differently from other identity characteristics in part because it recognizes that age inevitably changes over time.¹⁵ Although the Age Discrimination Act of 1975 goes beyond constitutional law in regulating the use of age, the statute differs sharply from race or sex discrimination statutes.¹⁷ In particular, it (unlike race, sex, disability, or religious discrimination statutes) exempts from review age criteria explicitly enacted in federal, state, or local law or ordinance.¹⁸ If a state or locality passed a law or ordinance explicitly authorizing the use of age in CSCs, that law would be exempt from Age Discrimination Act review. It also permits the use of age as a proxy for other factors that are

part of the normal operation or for statutory objectives of a program (which might include extending lives or narrowing health disparities) when age is more practical to measure directly.¹⁹ And the Age Discrimination Act explicitly presumes that programs giving children special priority are legal unless such priority excludes others from participation.²⁰

Age Discrimination Act claims have to proceed through mediation and other steps before entering the court system. Thus, the Age Discrimination Act has generated little case law.²¹ Nonetheless, federal agencies have interpreted the Age Discrimination Act to permit the use of age as one among several factors in multiprinciple organ allocation policies, such as kidney allocation policies that allocate older kidneys to older patients.^{22,23} The US Department of Health and Human Services currently interprets the Age Discrimination Act to prohibit "a policy that automatically disallows heart transplants to all individuals aged 65 or older" (assuming that the policy was not explicitly adopted in federal, state, or local law and is therefore exempt) but recognizes that "it would be permissible for the transplant center to consider age as one factor in assessing the allocation of transplants."²⁴ Most recently, the US Department of Health and Human Services reviewed Pennsylvania's CSC after a complaint was filed and permitted the framework's use of "stage of life" in a multiprinciple framework to stand.²⁵

Public Attitudes About Prioritizing the Young

In light of the ethical and legal permissibility of incorporating life-cycle considerations into triage during a pandemic, it is also relevant to consider public attitudes. In a multiyear structured, deliberative democratic engagement with Maryland residents, a substantial

majority of participants supported the use life-cycle considerations in ventilator allocation frameworks during a pandemic.²⁶ Similarly, a large study of public opinions on allocating scarce organs for transplant revealed support for prioritizing young patients.²⁷

Pediatric prioritization aligns with the World Health Organization's suggestion that allocation "should rely on broad life stages, rather than ranking individuals based on differences of only a few years." Carl Coleman has similarly suggested that "giving a bump up in priority to broad categories like 'adolescents' and 'young adults' may pose less of a risk of fostering biases against the elderly than a sliding scale approach in which each additional year of life is treated as a negative."²⁸

CATHY ZHANG, BA; AARON GLICKMAN, MPA; AND EZEKIEL J. EMANUEL, MD, PHD, COMMENT

Frameworks for allocating scarce medical resources require multiple principles. Any individual principle is insufficient on its own because it ignores some morally relevant factors.

Any individual allocation principle is flawed and therefore insufficient. For example, allocation on the basis of first come, first served is morally flawed because it usually benefits the wealthy, well-connected, and people who by chance become ill earlier. This principle should be excluded from allocation frameworks.^{29,30}

Similarly, many in medicine believe that allocation of scarce resources should favor the patients who are sickest.³¹ Like first come, first served, the sickest-first principle is flawed. It ignores prognosis, favors treatment when only minor improvements are possible, and focuses on how sick someone is at a current time at the expense of people who are likely to become just as sick in the future.³²⁻³⁴

We propose a multiprinciple framework for allocating resources, previously described as the complete lives system.³⁵ By this approach, the prioritization of youngest patients proposed by the pediatric intensivist is insufficient by itself, but such prioritization could be incorporated into an ethically defensible multiprinciple framework.³⁶

For scarce life-saving medical interventions, priority should go to patients who could die but are much more likely to live with the intervention rather than those who are likely to die even with the intervention or likely to live regardless of receiving it. Although there are technical problems in assigning patients to groups, we will assume that it is possible on clinical grounds and reasonably accurate. If there are more patients likely to benefit than there are available ECMO machines to treat them all, the complete lives system should be used for allocation.

The aim of the complete lives system is to allow more people to live complete lives by prioritizing younger patients. However, there are legitimate deficiencies to youngest-first allocation. The complete lives system therefore uses a modified youngest-first approach and incorporates 4 other considerations: prognosis, saving the most lives, lottery (ie, equity), and prospective instrumental value during a public health crisis.

Priority to the Worst Off: Modified Youngest-First Approach

A widely accepted ethical principle is that the worst off should receive allocation priority. In medicine, a natural way of thinking about the worst off is as those people who will have a premature death and will therefore not be able to live a complete life.^{37,38} The complete lives system thus distinguishes people on the basis of not having something everyone thinks is

valuable, a long, complete life. This is a subtle but important distinction from other forms of youngest-first allocation.

Unlike race or sex, age is morally relevant because all people age. Every elderly person has been young. Not prioritizing young people denies them the ability to become old. Therefore, to give life-saving resources to the young does not discriminate against the old on the basis of ageist stereotypes or value of life judgments. It merely recognizes that we all value a complete life.

In the complete lives system, the value of life lived so far is also considered. The death of a 22-year-old, who has developed an identity and attachment to their future through personal and professional projects, built relationships, and received investment from the community, is more tragic than that of a 2-year-old old.³⁹ This is a widespread moral intuition.⁴⁰ Accordingly, the complete lives system prioritizes adolescents and young adults over infants. This modified youngest-first approach differs from a strict youngest-first approach that would prioritize the 2-year-old over the 22-year-old.

Maximizing Total Benefits: Prognosis, Saving the Most Lives, and Extending Life-Years

In addition to saving more life-years, there is value in each individual life saved. Therefore, survival prognosis is a morally relevant consideration. Considering prognosis allows for maximization of benefits by saving the most lives. In cases in which patients have similar prognoses with treatment, the number of life-years can be a consideration.

Prognosis and life-year considerations raise objections from disability advocates who worry that considerations of life-years will lead to discrimination against people with disabilities whose life expectancies may be shorter than those of people

without disabilities. These objections and concerns are valid. Patients may not be excluded solely on the basis of having a disability. Nor should long-term life expectancy and quality of life judgments be considered in triage decisions. Because those factors are difficult to predict individually, they are easily subject to bias and abuse and are therefore flawed.⁴¹

However, these concerns can be addressed without ignoring either short-term prognosis or age.⁴¹ Short-term life expectancy is generally predictable, and ignoring it will produce immoral outcomes, such as giving equal priority to previously healthy patients and to patients with advanced terminal illnesses. The relevant time range considered for short-term prognosis will need to be determined by a working group; 1 option is to consider 5-year prognosis, as is done for liver transplant allocation.⁴²

Maximizing Benefits During Public Health Emergencies: Instrumental Value

In the context of COVID-19, special considerations apply in the complete lives system. Essential health care workers and participants in clinical research should be prioritized. These patients are not privileged because of inherent moral worth. Rather, prioritizing them is consistent with values of maximizing benefits. Saving additional health care workers will allow for more lives to be saved in the future. Prioritizing research participants will yield useful clinical insights that can, in turn, save lives and efficiently allocate resources, thereby reducing scarcity.

Treating People Equally and Respecting Dignity

There may be edge cases in which two patients similar in all morally relevant ways may require ECMO machines, but supply is limited. In these circumstances, the equality of persons can be upheld with a random

lottery. Although allocation by lottery is, on its own, insufficient because it ignores other relevant principles, such as prognosis, it can ethically be used as a tie breaker. Furthermore, there is no ethical basis for giving patients with COVID-19 priority over patients without COVID-19.

Allocation decisions should be made by an independent ethics body, not frontline health care workers. This will relieve physicians of the emotional burden of triage. Most importantly, it will promote consistent, equitable decisions.

In summary, the pediatric intensivist's proposal for a youngest-first allocation framework based on saving more life-years is ethically defensible. The claims that it discriminates on the basis of age and does not respect the dignity of all patients are not persuasive. Life-years must be considered, and it is possible to do so while respecting the dignity of all patients. Considering life-years maximizes opportunities for all patients to live complete lives. The correct approach is to consider age and incorporate it into an allocation algorithm that also includes the other ethical imperatives noted above.

JOHN D. LANTOS, MD, COMMENTS

Decisions about allocating scarce life-saving resources are brutal. All the choices are bad. But some are worse than others. And some are illegal. We must not discriminate on the basis of social worth, race, disability, sex, wealth, or fame. That sort of fairness will be difficult to achieve, but it is essential. We must scrutinize policies to make certain that they do not implicitly incorporate considerations that would systematically lead to such discrimination (considerations like a first-come, first-served allocation plan). But, as all 3 commenters show, broad consideration of age is different, both ethically and legally. We were all young once. If we are lucky, we will

all grow old. We all deserve to live a full life and to experience all of life's stages. Thus, prioritizing younger patients for scarce resources is not just ethically permissible; it is the epitome of fairness.

ABBREVIATIONS

COVID-19: coronavirus disease 2019

CSC: crisis standard of care

ECMO: extracorporeal membrane oxygenation

REFERENCES

1. Extracorporeal Life Support Organization. ECMO in COVID-19. Available at: <https://www.else.org/Registry/FullCOVID19RegistryDashboard.aspx>. Accessed July 14, 2020
2. Shekerdemian LS, Mahmood NR, Wolfe KK, et al; International COVID-19 PICU Collaborative. Characteristics and outcomes of children with coronavirus disease 2019 (COVID-19) infection admitted to US and Canadian pediatric intensive care units [published online ahead of print May 11, 2020]. *JAMA Pediatr*. doi:10.1001/jamapediatrics.2020.1948
3. Bhatraju PK, Ghassemieh BJ, Nichols M, et al. Covid-19 in critically ill patients in the Seattle region - case series. *N Engl J Med*. 2020;382(21):2012–2022
4. Remy KE, Verhoef PA, Malone JR, et al. Caring for critically ill adults with coronavirus disease 2019 in a PICU: recommendations by dual trained intensivists. *Pediatr Crit Care Med*. 2020;21(7):607–619
5. MacGregor RM, Antiel RM, Najaf T, et al. Extracorporeal membrane oxygenation for pediatric patients with coronavirus disease 2019-related illness [published online ahead of print May 15, 2020]. *Pediatr Crit Care Med*. doi:10.1097/PCC.0000000000002432
6. Jonsen AR. The god squad and the origins of transplantation ethics and policy. *J Law Med Ethics*. 2007;35(2):238–240

7. Sulmasy DP. Dignity and Bioethics: History, Theory, and Selected Applications. In: Pellegrino ED, ed. *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics*. Washington, DC: The President's Council on Bioethics; 2008:469–501
8. Meilaender G. *Should We Live Forever? The Ethical Ambiguities of Aging*. Grand Rapids, MI: Eerdmans Publishing Co; 2013
9. Ramsey P. *The Patient as Person: Explorations in Medical Ethics*, 2nd ed. New Haven, CT: Yale University Press; 2002
10. Williams B. Ethical Consistency. In: *Problems of the Self: Philosophical Papers 1956–1972*. Cambridge, United Kingdom: Cambridge University Press; 1973:166–186
11. US Department of Health and Human Services. Ethical principles of pediatric organ allocation. 2014. Available at: <https://optn.transplant.hrsa.gov/resources/ethics/ethical-principles-of-pediatric-organ-allocation/>. Accessed July 14, 2020
12. Schaeffer K. The most common age among whites in U.S. is 58 – more than double that of racial and ethnic minorities. 2019. Available at: <https://www.pewresearch.org/fact-tank/2019/07/30/most-common-age-among-us-racial-ethnic-groups>. Accessed June 15, 2020
13. White DB, Lo B. A framework for rationing ventilators and critical care beds during the COVID-19 pandemic. *JAMA*. 2020;323(18):1773–1774
14. Pathak PA, Sónmez T, Unver MU, Yenmez MB. Leaving no ethical value behind: triage protocol design for pandemic rationing. 2020. Available at: <https://www.nber.org/papers/w26951>. Accessed July 14, 2020
15. *Kimel v Florida Board of Regents*, 528 US 62, 83 (2000)
16. *Students for Fair Admissions v Harvard*, 397 F Supp 3d 126, 190 (D Mass 2020)
17. *NAACP v Wilmington Medical Center, Inc*, 491 F Supp 290, 316–317 (D Del 1980)
18. Age Discrimination Act of 1975, 42 USC §6103(b)(2) (1975)

19. Exceptions to the rules against age discrimination, 45 CFR §90.14 (2007)
20. Remedial and affirmative action by recipients, 45 CFR §90.49 (1979) (amended 2005)
21. What specific responsibilities do agencies and recipients have to ensure compliance with the Act? 45 CFR §90.43 (1979) (amended 2005)
22. Formica RN Jr., Friedewald JJ, Aeder M. Changing the kidney allocation system: a 20-year history. *Curr Transpl Rep.* 2016;3:39–44
23. Persad G. Evaluating the legality of age-based criteria in health care: from nondiscrimination and discretion to distributive justice. *Boston Coll Law Rev.* 2019;60(3):889–949
24. US Department of Health and Human Services. Section 1557: frequently asked questions. 2017. Available at: <https://www.hhs.gov/civil-rights/for-individuals/section-1557/1557faqs/index.html>. Accessed July 14, 2020
25. US Department of Health and Human Services. OCR resolves civil rights complaint against Pennsylvania after it revises its pandemic health care triaging policies to protect against disability discrimination. 2020. Available at: <https://www.hhs.gov/about/news/2020/04/16/ocr-resolves-civil-rights-complaint-against-pennsylvania-after-it-revises-its-pandemic-health-care.html>. Accessed July 14, 2020
26. Biddison ELD, Gwon HS, Schoch-Spana M, et al. Scarce resource allocation during disasters: a mixed-method community engagement study. *Chest.* 2018;153(1):187–195
27. Neuberger J, Adams D, MacMaster P, Maidment A, Speed M. Assessing priorities for allocation of donor liver grafts: survey of public and clinicians. *BMJ.* 1998;317(7152):172–175
28. Coleman CH. Allocating vaccines and antiviral medications during an influenza pandemic. *Seton Hall Law Rev.* 2009;39(4):1111–1123
29. Billittier AJ IV. Who goes first? *J Public Health Manag Pract.* 2005;11(4):267–268
30. Daniels N. Fair process in patient selection for antiretroviral treatment in WHO's goal of 3 by 5. *Lancet.* 2005;366(9480):169–171
31. McKlerie D. Justice between the young and the old. *Philos Public Aff.* 2001;30(2):152–177
32. Kamm FM. *Morality, Mortality: Volume 1: Death and Whom to Save From It.* New York, NY: Oxford University Press; 1993
33. Brock DW. The Misplaced Role of Urgency in Allocation of Persistently Scarce Life-Saving Organs. In: Gutmann T, Daar AS, Land W, Sells RA, eds. *Ethical, Legal, and Social Issues in Organ Transplantation.* Lengerich, Germany: Pabst Science Publishers; 2004:41–48
34. Elhauge E. Allocating health care morally. *Calif Law Rev.* 1994;82(6):1449–1544
35. Persad G, Wertheimer A, Emanuel EJ. Principles for allocation of scarce medical interventions. *Lancet.* 2009;373(9661):423–431
36. Howard DH. Hope versus efficiency in organ allocation. *Transplantation.* 2001;72(6):1169–1173
37. Ventilator Document Workgroup, Ethics Subcommittee of the Advisory Committee to the Director, Centers for Disease Control and Prevention. *Ethical Considerations for Decision Making Regarding Allocation of Mechanical Ventilators During a Severe Influenza Pandemic or Other Public Health Emergency.* Atlanta, GA: Centers for Disease Control and Prevention; 2011
38. Christian MD, Sprung CL, King MA, et al; Task Force for Mass Critical Care. Triage: care of the critically ill and injured during pandemics and disasters: CHEST consensus statement. *Chest.* 2014;146(4 suppl):e61S–e74S
39. Richardson J. *Age Weighting and Discounting: What Are the Ethical Issues?* West Heidelberg, Australia: Centre for Health Program Evaluation; 1999
40. Tsuchiya A, Dolan P, Shaw R. Measuring people's preferences regarding ageism in health: some methodological issues and some fresh evidence. *Soc Sci Med.* 2003;57(4):687–696
41. Mello MM, Persad G, White DB. Respecting disability rights - toward improved crisis standards of care [published online ahead of print May 19, 2020]. *N Engl J Med.* doi:10.1056/NEJMp2011997
42. Schaubel DE, Guidinger MK, Biggins SW, et al. Survival benefit-based deceased-donor liver allocation. *Am J Transplant.* 2009;9(4, pt 2):970–981

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Should Pediatric Patients Be Prioritized When Rationing Life-Saving Treatments During COVID-19 Pandemic

Ryan M. Antiel, Farr A. Curlin, Govind Persad, Douglas B. White, Cathy Zhang, Aaron Glickman, Ezekiel J. Emanuel and John D. Lantos

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