

# A consequentialist argument for considering age in triage decisions during the coronavirus pandemic

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## Abstract

Most ethics guidelines for distributing scarce medical resources during the coronavirus pandemic seek to save the most lives and the most life-years. A patient's prognosis is determined using a SOFA or MSOFA score to measure likelihood of survival to discharge, as well as a consideration of relevant comorbidities and their effects on likelihood of survival up to one or five years. Although some guidelines use age as a tiebreaker when two patients' prognoses are identical, others refuse to consider age for fear of discriminating against the elderly. In this paper, I argue that age is directly relevant for maximizing health benefits, so current ethics guidelines are wrongly excluding or deemphasizing life-stage in their triage algorithms. Research on COVID-19 has shown that age is a risk factor in adverse outcomes, independent of comorbidities. And limiting a consideration of life-years to only one or five years past discharge does not maximize health benefits. Therefore, based on their own stated values, triage algorithms for coronavirus patients ought to include life-stage as a primary consideration, along with the SOFA score and comorbidities, rather than excluding it or using it merely as a tiebreaker. This is not discriminatory because patients ought to have equal opportunity to experience life-stages. The equitable enforcement of that right justifies unequal treatment based on age in cases when there is a scarcity of life-saving resources. A consideration of life-stage would thus allow healthcare workers to responsibly steward public resources in order to maximize lives and life-years saved.

## KEYWORDS

allocation of scarce medical resources, consequentialism, coronavirus, COVID-19, life-cycle principle, triage, utilitarianism

## 1 | INTRODUCTION

Most states have had to move quickly in developing ethical principles to guide hospitals in the allocation of scarce medical resources during the coronavirus pandemic. Along with the questions of how to distribute personal protective equipment (PPE) to providers and how to reassign providers, both within a state and between states, the main focus has been on what to do when intensive care unit (ICU) space, staff, and equipment (especially ventilators) cannot

address the needs of all COVID-19 patients, even after surge and mitigation strategies have been exhausted. When an emergency has been declared and crisis standards of care have been activated, what process should be used to decide who gets the most aggressive interventions?

One point of disagreement among states is whether to include a patient's life-stage as a factor in triage decisions and, if so, how to do it in a nondiscriminatory manner. In this paper, I argue that age should be used as a primary principle when allocating life-saving

resources during the coronavirus pandemic in order to save the most lives and the most life-years. Neither the indirect consideration of age nor using age as a tiebreaker goes far enough. For consequentialist reasons, age is as relevant for determining likely health outcomes as organ failure and comorbidities, so states should include a patient's life-stage in their triage algorithms.

## 2 | BASIC PRINCIPLES OF ALLOCATION

There is no one, simple moral theory that drives public policy decisions around healthcare. Such decisions are informed by an amalgam of ethical values that sometimes conflict. When resources are sufficient, we tend to focus on duties to individual patients, including respecting their autonomy and promoting their well-being (non-maleficence and beneficence),<sup>1</sup> and on giving all people equal access to the care they need. Although the duty of care persists during public health emergencies, the primary goal changes. Providers have a duty to steward public resources responsibly and in accordance with distributive justice. In times of scarcity, they ought to maximize overall benefits to the community, which may involve prioritizing some patients over others.<sup>2</sup>

There are common themes that run through the different allocation principles and procedures that have been proposed by states and others in response to the coronavirus pandemic. Most of the guidelines assume that maximizing benefits means saving the most lives (short-term benefits, understood as surviving to hospital discharge) and saving the most life-years (long-term benefits, understood as surviving longer after treatment). Although this is reminiscent of utilitarianism, the key difference is the first principle. If a hospital had to choose between saving five people who would likely live five more years each and one person who would likely live thirty more years, the five people are prioritized. This is based on the idea that the value of a particular life is intrinsically good. One's unique perspective on the world is important, not only the aggregation of experiences that people have. So, there is a loss from each of the five deaths that is not outweighed by the longer duration of one life.

Different criteria are used to determine short-term prospects for surviving the treatment and long-term prospects post-discharge.

With regard to adult triage, once an adult patient is admitted to the ICU, the likelihood of survival is measured differently by

different groups, although there are commonalities. For this paper, I focus on four representative standards:<sup>3</sup>

- Daugherty Biddison (2019) determines the prospects for survival by measuring the likelihood of organ dysfunction using the Sequential Organ Failure Assessment (SOFA) and considering comorbid conditions, such as severe congestive heart failure or severe chronic lung disease.
- The University of Pittsburgh's Department of Critical Care Medicine (2020a/b) also measures the degree of organ dysfunction using SOFA and considers comorbid conditions.
- The New York State Department of Health (2015) is focused only on "the short-term likelihood of survival of the acute medical episode and is not focused on whether a patient may survive a given

<sup>3</sup>The four guidelines that I discuss in the paper are cited parenthetically in the text using the author-date system, with the following abbreviated citations:

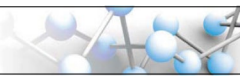
- **Daugherty Biddison (2019)**: Daugherty Biddison, E. L., Faden, R., Gwon, H. S., Mareiniss, D. P., Regenberg, A. C., Schoch-Spana, M., ... Toner, E. S. (2019). Too many patients ... A framework to guide statewide allocation of scarce mechanical ventilation during disasters. *CHEST*, 155(4), 848–854.
- **New York 2015**: New York State Department of Health, Task Force on Life and the Law. (2015). *Ventilator allocation guidelines*, Nov. Retrieved from [https://www.health.ny.gov/regulations/task\\_force/reports\\_publications/docs/ventilator\\_guidelines.pdf](https://www.health.ny.gov/regulations/task_force/reports_publications/docs/ventilator_guidelines.pdf)
- **Pittsburgh 2020a**: University of Pittsburgh, Department of Critical Care Medicine. (2020). *Allocation of scarce critical care resources during a public health emergency*, Mar 23. Retrieved from [https://ccm.pitt.edu/sites/default/files/Model%20hospital%20policy%20for%20allocation%20of%20critical%20care\\_2020-03-23%20web.pdf](https://ccm.pitt.edu/sites/default/files/Model%20hospital%20policy%20for%20allocation%20of%20critical%20care_2020-03-23%20web.pdf)
- **Pittsburgh 2020b**: University of Pittsburgh, Department of Critical Care Medicine. (2020). *Allocation of scarce critical care resources during a public health emergency*, Apr 15. Retrieved from [https://ccm.pitt.edu/sites/default/files/UnivPittsburgh\\_ModelHospitalResourcePolicy\\_2020\\_04\\_15.pdf](https://ccm.pitt.edu/sites/default/files/UnivPittsburgh_ModelHospitalResourcePolicy_2020_04_15.pdf)
- **Washington 2020a**: Washington State Department of Health and the Northwest Healthcare Response Network. (2020). *Scarce resource management & crisis standards of care*, Mar 16. Retrieved from [https://nwhrn.org/wp-content/uploads/2020/03/Scarce\\_Resource\\_Management\\_and\\_Crisis\\_Standards\\_of\\_Care\\_Overview\\_and\\_Materials-2020-3-16.pdf](https://nwhrn.org/wp-content/uploads/2020/03/Scarce_Resource_Management_and_Crisis_Standards_of_Care_Overview_and_Materials-2020-3-16.pdf)
- **Washington 2020b**: Washington State Department of Health and the Northwest Healthcare Response Network. (2020). *Scarce resource management & crisis standards of care*, Apr 10. Retrieved from [https://nwhrn.org/wp-content/uploads/2018/10/Scarce\\_Resource\\_Management\\_and\\_Crisis\\_Standards\\_of\\_Care\\_Overview\\_and\\_Materials-2020-04-10.pdf](https://nwhrn.org/wp-content/uploads/2018/10/Scarce_Resource_Management_and_Crisis_Standards_of_Care_Overview_and_Materials-2020-04-10.pdf)

States and organizations have been changing their allocation standards. Where there is no difference between Pittsburgh 2020a (3/23/20) and Pittsburgh 2020b (4/15/20), I cite it as Pittsburgh 2020a/b. Where there is no difference between Washington 2020a (3/16/20) and Washington 2020b (4/10/20), I cite it as Washington 2020a/b. The Washington (2020a/b) guidelines do not have consecutively numbered pages, and some pages of some sections are renumbered within the document. Page references include the page number of the PDF followed by the number actually listed on the page.

I do not consider federal standards because the Centers for Disease Control and Prevention (CDC) leaves specific allocation decisions to the states. The CDC provides only "ethical considerations": "This document is not meant to serve as detailed guidance about allocation decisions. Rather it is intended to serve as a conceptual framework to assist the planning process" (Centers for Disease Control and Prevention, Ventilator Document Workgroup, Ethics Subcommittee of the Advisory Committee to the Director. (2011). *Ethical considerations for decision making regarding allocation of mechanical ventilators during a severe influenza pandemic or other public health emergency*, Jul 1. Retrieved from [https://www.cdc.gov/os/integrity/phethics/docs/Vent\\_Document\\_Final\\_Version.pdf](https://www.cdc.gov/os/integrity/phethics/docs/Vent_Document_Final_Version.pdf), 3).

<sup>1</sup>Beauchamp, T. L., & Childress, J. F. (2019). *Principles of biomedical ethics* (8th ed.). Oxford, U.K.: Oxford University Press.

<sup>2</sup>Childress, J. F., Faden, R. R., Gaare, R. D., Gostin, L. O., Kahn, J., Bonnie, R. J., ... Nieburg, P. (2002). Public health ethics: Mapping the terrain. *Journal of Law, Medicine and Ethics*, 30(2), 170–178; Gostin, L. (2006). Public health strategies for pandemic influenza: Ethics and the law. *JAMA*, 295(14), 1700–1704.



illness or disease in the long-term (e.g., years later)” (236). It also uses SOFA to determine a patient’s mortality risk.<sup>4</sup>

- The Washington State Department of Health (2020a/b) measures the degree of organ dysfunction using MSOFA (Modified Sequential Organ Failure Assessment), considers comorbid conditions, assesses how severely the patient is affected by COVID-19, and estimates for how long the patient will need the critical care resources.

All four sets of guidelines place patients into different triage categories, using a points system or color-coding system, that assigns them a higher or lower priority for treatment—in the case of the novel coronavirus, typically a bed in the ICU and/or use of a ventilator—compared with other patients. A patient’s response to the treatment is occasionally reassessed: at 24, 48, and 120 hours for Daugherty Biddison (2019, 852); “periodic[ally]” for Pittsburgh (2020a/b, 9); at 48 and 120 hours for New York (2015, 61-67); and every 24 hours for Washington (2020a/b, 36/5 in a, 37/6 in b). If there is no improvement or the patient’s response to the treatment is so slow that they would use ICU resources for a long time, that places a burden on the system and may provide less benefit, understood in terms of progress per day, than if the resources were allocated to others.<sup>5</sup>

Washington has struggled with an additional criterion, and it is unclear whether it is a measure of short-term survival, long-term survival, or quality of life after treatment. It was initially described as “baseline functional status (consider loss of reserves in energy, physical ability, cognition and general health)” (Washington 2020a, 34-35/3-4), but that was thought to discriminate against the disabled.<sup>6</sup> By including baseline physical ability and cognition, it seems to be saying that disabilities make life less worth living. The criterion was then changed to “prognostically relevant decompensation from a

person’s baseline health status, such as degree of frailty that impacts survival given the current circumstances that make crisis capacity triage necessary” (Washington 2020b, 35-37/4-6). There are many different scoring systems to determine frailty, such as the Johns Hopkins Frailty Assessment Calculator, but none are mentioned in the guidelines.

The addition of the frailty criterion is not insignificant, however, and it may pose some of the same problems as “baseline functional status.” A patient with multiple sclerosis (MS), for example, may be considered frail but may not have significantly reduced prospects for surviving a COVID-19 infection, even though MS reduces their life expectancy. To guard against discrimination, Daugherty Biddison (2019) explicitly defines long-term survival as survival one year or more after treatment (850). This cutoff is to avoid giving lower priority to groups of people who, in the aggregate and individually, have shorter lifespans. For example, people of color are more likely to suffer from comorbidities such as diabetes and hypertension, but if they are not so severe as to cause death within one year, they do not affect a patient’s score. New York (2015) does not consider long-term survival at all, stating that “advanced age was rejected as a triage criterion because it discriminates against the elderly” (5, 13; see also 45, 83, 104). Pittsburgh (2020a/b) takes a middle position: patients with less than one year to live (described as “severely life-limiting conditions” in Pittsburgh 2020a) get the lowest priority, while patients with less than five years to live (described as “major comorbidities (associated with significantly decreased long-term survival)” in Pittsburgh 2020a) get a lower priority than otherwise healthy patients, but a higher one than those who are likely to live for less than one year (6). Washington (2020a/b) considers “relevant comorbid conditions that impact survival,” a vague standard, in determining admission to the ICU and in reevaluation (36-37/5-6). It does not specify frailty in terms of life-years but seems to leave the determination of who counts as frail to individual hospitals and their triage committees.

<sup>4</sup>Similar positions, which focus narrowly on maximizing the number of people who survive to hospital discharge and use SOFA to measure that, include 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. *Canadian Medical Association Journal*, 175(11), 1377-1381; Devereaux, A. V., Dichter, J. R., Christian, M. D., Dubler, N. N., Sandrock, C. E., Hick, J. L., ... Rubinson, L. (2008). Definitive care for the critically ill during a disaster: A framework for allocation of scarce resources in mass critical care. *CHEST*, 133(5 suppl.), 515-66S; 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. Christian et al. recommend that “triage be based on incremental probability of survival” but call into question the use of SOFA scores to make that determination (Christian, M. D., Sprung, C. L., King, M. A., Dichter, J. R., Kissoon, N., Devereaux, A. V., & Gomersall, C. D. (2014). Triage care of the critically ill and injured during pandemics and disasters: CHEST consensus statement. *CHEST*, 146(4 suppl.), e61S-e74Se69S-e70S).

<sup>5</sup>There is also disagreement about whether healthcare providers should be given priority. Daugherty Biddison (2019), New York (2015, 44-45), and Washington (2020a/b) do not prioritize healthcare workers. Pittsburgh (2020a/b) allows for heightened priority for “those individuals who play a critical role in the chain of treating patients and maintaining societal order” (7 in a, 6 in b). Emanuel et al. also prioritize healthcare workers (Emanuel, E. J., Persad, G., Upshur, R., Thome, B., Parker, M., Glickman, A., ... Phillips, J. P. (2020). Fair allocation of scarce medical resources in the time of Covid-19. *New England Journal of Medicine*, “Sounding Board.” Mar 23, 1-7. Retrieved from <https://www.nejm.org/doi/pdf/10.1056/NEJMSb2005114?articleTools=true>, at 5).

<sup>6</sup>Stramondo, J. (2020). COVID-19 triage and disability: What NOT to do. *Bioethics.net*, Mar 30. Retrieved from <http://www.bioethics.net/2020/03/covid-19-triage-and-disability-what-not-to-do/>

### 3 | INDIRECT CONSIDERATION OF AGE

Life-stage is indirectly considered in these guidelines insofar as the elderly are more likely to have comorbid conditions that reduce the prospects for survival to and past discharge. For example, Pittsburgh (2020a) includes “moderate Alzheimer’s disease or related dementia” as a “major comorbidity” and “severe Alzheimer’s disease or related dementia” as a “severely life-limiting comorbidity,” both of which more often affect the elderly (6). Older people are also likely to have lower “baseline functional status” (Washington 2020a, 34-35/3-4) or to be more “frail” compared to younger people (Washington 2020b, 34-35/4-6). In such cases, although more old people would be denied life-saving treatment, the purpose of the allocation decisions is to save the most lives and the most life-years. Frail, old people are a subclass of the elderly, and their frailty, not their age, makes their use of scarce resources less likely to be worth it.

Although one purpose of the Daugherty Biddison (2019), Pittsburgh (2020a/b), and Washington (2020a/b) guidelines is to save the most life-years, none of them deprioritizes the elderly because they tend, on the whole, to have fewer life-years left than younger people. That is, older people are not given worse scores simply by virtue of the fact that they will probably have fewer years to live after treatment. Old age itself is not considered a comorbidity (just as old age is not considered a terminal illness for the purposes of physician-assisted suicide laws). An otherwise healthy eighty-year-old who responds well to treatment is given the same score as an otherwise healthy twenty-five-year-old who responds well to treatment. New York (2015) does not assess long-term prognosis at all because the guidelines are designed to save the most lives, and “there are many instances where an older person could have a better clinical outlook than a younger person” (5, 13; see also 83).<sup>7</sup> Categorical refusals of treatment to anyone, including the elderly and the disabled, are not included in any of the guidelines and are explicitly ruled out under the Pittsburgh (2020a/b) standards on fairness and other grounds (7).

#### 4 | AGE AS A TIEBREAKER

Although the Washington standards include no direct consideration of age, New York (2015), Daugherty Biddison (2019), and Pittsburgh (2020a/b) all include age as a tiebreaker.<sup>8</sup> If two patients are equally likely to survive treatment (New York 2015) and equally likely to survive a year or more after discharge (Daugherty Biddison 2019; Pittsburgh 2020a/b), then younger patients are given priority over older patients. The algorithms place patients into the following age ranges:

- New York (2015, 104-5): 0-17, 18+
- Daugherty Biddison (2019, 851): 0-49, 50-69, 70-84, 85+
- Pittsburgh (2020a/b, 8): 0-11(?),<sup>9</sup> 12-40, 41-60, 61-75, 76+

On these views, different patients are in different stages of life, and that is morally relevant for making allocation decisions, even if it is only a “secondary consideration” (Daugherty Biddison 2019, 850).

New York (2015), Daugherty Biddison (2019), and Pittsburgh (2020a/b) offer similar reasons for including age among their criteria. Pittsburgh (2020a/b) says that the value of young lives does not rest on utilitarian grounds. In particular, younger people are not

prioritized because of their supposed contribution to society, such as their being more likely than older people to raise children, have jobs, and pay more taxes (6-7). Instead, all three standards refer to younger people's opportunity to experience the different stages of life, the so-called “life-cycle” principle (New York 2015, 105; Daugherty Biddison 2019, 851; Pittsburgh 2020a/b, 6-7).<sup>10</sup> Older people have had a chance to get an education, pursue a vocation, raise a family, and have many more years of meaningful experiences than younger people. Life-cycle considerations during times of scarcity are said to reflect people's moral attitudes, specifically “the public's values with regard to children”—presumably its views about the value of being young and still having all these life-stages ahead (New York 2015, 105). Several empirical studies have revealed that such attitudes are widely held.<sup>11</sup>

#### 5 | AGE AS AN INDEPENDENT PREDICTOR OF SURVIVAL TO DISCHARGE

The claim that younger people should be prioritized over older people is, on some views, a form of morally objectionable ageism. However, there are three consequentialist reasons to regard life-stage as a third primary consideration (along with the SOFA score and comorbidities), one having to do with how age affects short-term prognosis, another having to do with long-term prognosis, and a third having to do with the value of life-years, given the right to experience different stages of life. First, with COVID-19, age is an independent predictor of a patient's likelihood of survival to hospital discharge, and it is not captured by either SOFA or a consideration of comorbid conditions. If one goal is to save the most lives, then age should not be used merely as a tiebreaker.

<sup>10</sup>See also Emanuel, E. J., & Wertheimer, A. (2006). Who should get influenza vaccine when not all can? *Science*, 312(5775), 854–855.

<sup>11</sup>Cropper, M. L., Aydede, S. K., & Portney, P. R. (1994). Preferences for life saving programs: How the public discounts time and age. *Journal of Risk & Uncertainty*, 8(3), 243–265; Nord, E., Street, A., Richardson, J., Kuhse, H., & Singer, S. (1996). The significance of age and duration of effect in social evaluation of health care. *Health Care Analysis*, 4(2), 103–111; Johannesson, M., & Johannesson, P. (1997). Is the valuation of a QALY gained independent of age? Some empirical evidence. *Journal of Health Economics*, 16(5), 589–599; Neuberger, J., Adams, D., MacMaster, P., Maidment, A., & Speed, M. (1998). Assessing priorities for allocation of donor liver grafts: Survey of public and clinicians. *British Journal of Medicine*, 317(7152), 172–175; Tsuchiya, A., Dolan, P., & Shaw, R. (2003). Measuring people's preferences regarding ageism in health: Some methodological issues and some fresh evidence. *Social Science and Medicine*, 57(4), 687–696; McKie, J., & Richardson, J. (2005). *Neglected equity issues in cost effectiveness analysis – Part 1: Severity of pre-treatment condition, realisation of potential for health, concentration and dispersion of health benefits, and age-related social preferences*. Melbourne, Australia: Monash University, Center for Health Economics, pp. 37–55; Daugherty Biddison, E. L., Gwon, H., Schoch-Spana, M., Cavalier, R., White, D. B., Dawson, T., ... Toner, E. S. (2014). The community speaks: Understanding ethical values in allocation of scarce lifesaving resources during disasters. *Annals of the American Thoracic Society*, 11(5), 777–783. Some studies attempt to distinguish three different kinds of age preferences: “productivity ageism,” which aims at saving young people because of their productivity at work and at home; “utilitarian ageism” or “health-maximization ageism,” which aims at maximizing remaining life-years; and “egalitarian ageism” or “fair-innings ageism,” which aims at giving everyone a roughly equal chance at experiencing life-stages. The triage algorithms that I am discussing reject productivity ageism but seem to adopt both utilitarian and egalitarian ageism—although, as I say, they are not merely prejudices (as the “ageism” label seems to imply).

<sup>7</sup>None of the standards use quality-adjusted life-years (QALYs) or disability-adjusted life-years (DALYs) in their algorithms. In addition to being perniciously vague, measuring quality (QALYs) introduces complexity into the decision-making process and slows down the calculation. The burdens associated with disease or disorders (DALYs) are considered when comorbid conditions are taken into account.

<sup>8</sup>The Washington (2020a/b) algorithm, which includes no age-related tiebreaker, would have a lottery or other random system to determine who should get treatment when two patients get the same scores. New York (2015, 74), Daugherty Biddison (2019, 851), and Pittsburgh (2020a/b, 8-9) all use a lottery if there is still a tie after age and other tiebreakers have been applied.

<sup>9</sup>The Pittsburgh (2020a/b) scale begins at age 12, and they do not explain why (6). I doubt that Pittsburgh means to exclude children under 12 from the tiebreaker entirely.

Using a multivariable regression model, Fei Zhou et al. showed that age is a significant predictor of successful extubation of COVID-19 patients, independent of comorbidities. Each additional year of life carries a relative risk of death of 1.1 when controlling for other analyzed variables (comorbidity, SOFA score, etc.), while univariate analysis (i.e., not controlling for other relevant risks) shows that each additional year carries a relative risk of death of 1.14. In other words, the odds that an infected patient dies from the coronavirus is 10% to 14% higher than it is for someone who is one year younger. If their findings are correct, comorbid hypertension increases the odds of death from COVID-19 by a factor of three (3.05 relative risk of death), while increasing a patient's age from 40 to 80 increases the odds of death by a factor of four or more (4.0 to 5.6 relative risk of death).<sup>12</sup> These findings are consistent with previous research on coronavirus-caused SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome), which has shown a similar relationship between age and mortality, even when isolating age from other factors.<sup>13</sup> Considering acute physiology (with SOFA) or comorbidities only, and ignoring age, thus excludes a clinically relevant predictor of outcomes.

New York (2015) even recognizes this fact, claiming that, with certain viruses, age is a strong predictor of survival to discharge: "It is also possible that using young age as a triage tie-breaker might lead to more people surviving the pandemic, because children generally may be more likely to respond better to ventilator therapy in an influenza pandemic" (105). Even though New York has saving the most lives as its sole measure of success in triaging, the worry about ageism prompts them to relegate age to a tiebreaker—and even then they only distinguish children (0–17) and adults (18+)—despite its relevance in achieving that aim. Because they privilege SOFA scores and comorbidities and they ignore or minimize age as a predictor, the New York (2015), Daugherty Biddison (2019), Pittsburgh (2020a/b), and Washington (2020a/b) algorithms are poorly designed consequentialist calculi, at best incomplete.

## 6 | AGE AS AN INDICATOR OF LONG-TERM PROGNOSIS

The one-year cutoff for predicting long-term outcomes is also arbitrary and unjustified. The reasoning behind the one-year time frame, at least on Daugherty Biddison's (2019) view (neither Pittsburgh [2020] nor Washington [2020] explains this restriction), is that going

beyond one year would compound the disadvantages of people, primarily people of color, who are already subject to shorter lifespans because of racial biases in society and in the healthcare system specifically (850).<sup>14</sup> Although we ought to avoid discrimination, we also have a prima facie obligation to maximize life-years as part of the duty to effectively and efficiently steward public resources when crisis standards of care are in place. The issue about inequities in healthcare generally is interesting, and perhaps different arguments apply when we are thinking about institutions distributing scarce resources outside of a triage situation. During a pandemic, however, the burden of proof is on those who would restrict the principle of saving the most life-years to considering a patient's survival only one year past discharge, despite the cost in terms of efficiency.

We ought to go beyond even the age-related tiebreaker that is endorsed by New York (2015), Daugherty Biddison (2019), and Pittsburgh (2020a/b). Consider the following two cases:

1. An otherwise healthy 75-year-old woman has, because of COVID-19, developed a mild case of acute respiratory distress syndrome (ARDS) and, as a result of the damage to her lungs, has a higher than normal SOFA score. Doctors give her an 80% chance of surviving treatment and being discharged from the hospital.
2. An otherwise healthy 30-year-old man with moderate ARDS has a 60% chance of surviving to discharge.

If there is only one available ICU bed and ventilator, all four of the frameworks that I am examining would not only make the same choice but would consider it an obvious choice: treat patient number 1. However, statistically speaking, treating patient number 2 is better in terms of life-years. To illustrate this, imagine that a regional triage team has to decide between one hundred number 1 patients and one

<sup>12</sup>Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., ... Cao, B. (2020). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: A retrospective cohort study. *Lancet*, 395(10229), 1054–1062. See also Caramelo, F., Ferreira, N., & Oliveiros, B. (2020). Estimation of risk factors for COVID-19 mortality – preliminary results. *medRxiv*. Feb24; Kang, S. J., & Jung, S. I. (2020). Age-related morbidity and mortality among patients with COVID-19. *Infection & Chemotherapy*, 52(2), 154–164.

<sup>13</sup>Choi, K. W., Chau, T. N., Tsang, O., Tso, E., Chiu, M. C., Tong, W. L., ... Lai, S. T. (2003). Outcomes and prognostic factors in 267 patients with severe acute respiratory syndrome in Hong Kong. *Annals of Internal Medicine*, 139(9), 715–723; Hong, K., Choi, J., Hong, S., Lee, J., Kwon, J., Kim, S., ... Kim, S. (2018). Predictors of mortality in Middle East Respiratory Syndrome (MERS). *Thorax*, 73(3), 286–289.

<sup>14</sup>Just as some people worry about ageism in triage decisions, there is a related worry that there will be disadvantageous triage outcomes for people of color. Even though race is not included in patient data that are considered by triage committees, if decisions are partly based on the presence of comorbidities, this may result in indirect racial discrimination, given the larger prevalence of comorbidities among people of color. However, there is a fundamental difference between poorer health outcomes as a result of age and poorer health outcomes as a result of race. The poorer health outcomes for people of color in the United States are largely the result of economic and environmental factors (social determinants of health) as well as institutionalized racial prejudice in the healthcare system. Even outside of the current conditions, the right of persons of color to experience the different stages of life is not fully protected owing to discrimination and other factors. That is, in normal times, their opportunities are limited by social determinants of health that disadvantage them. This inequity is compounded/evidenced by the current pandemic (Pan, D., Sze, S., Minhas, J., Bangash, M., Pareek, N., Divall, P., ... Pareek, M. (2020). The impact of ethnicity on clinical outcomes in COVID-19: A systematic review. *EClinicalMedicine*, 23(June)). One could argue that the duty of reparation would require us to prioritize people of color, or perhaps use race as a tiebreaker in the algorithms, so that people of color have some proportionate advantage to make up for the social disadvantages. Such an argument (for medical affirmative action?) would go beyond the scope of this paper. The purpose of this paper is to justify the use of age as an independent consideration in triaging based on the principles accepted under existing guidelines, not to defend existing guidelines against the charge of indirect racial discrimination.



hundred number 2 patients. All else being equal, assuming an 80-year life expectancy in the United States<sup>15</sup> and assuming that the physicians' prognoses are correct, the outcomes would be as follows:

1. If we prioritize the older woman in every case, we will save 80 lives and 400 life-years.
2. If we prioritize the younger man in every case, we will save 60 lives and 3,000 life-years.

The algorithms' choice of number 1 is contrary to our moral intuitions. Most people believe that saving fewer younger lives is as good as saving more older lives. According to one study, saving one 20-year-old is equivalent to saving seven 60-year-olds.<sup>16</sup> We assign a large, independent value to life-years that may override the value of whole lives, which is not absolute.

We could debate whether this is justified, of course. A strict utilitarian approach may not accommodate the demands of distributive justice. What is important for my purpose is that, in their primary principles, the existing guidelines presuppose a one-to-one equivalence between saving young people and saving old people. Patients' life-stages are ignored under all the proposed triage strategies, provided it is assumed that they will live beyond one or five years. Such a decision undervalues remaining life-years, contrary to age-related social preferences, and it is not justified by merely gesturing at worries about ageism.

Saving the most lives and saving the most life-years are supposed to be equally considered in the proposed algorithms. However, because of the focus on comorbidities only rather than age, the prospects of survival to discharge are being unduly privileged over the prospects for long-term survival. One could argue that the additional 2,600 life-years in scenario number 2 is equivalent to 32.5 additional lives ( $2,600/80 = 32.5$ ), making the number of "lives" saved in number 2 greater than in number 1. A whole-life consequentialist may balk at this, claiming that a bunch of loose years are not equivalent to a life. What is important for my purposes is that the triage algorithms themselves value both lives and life-years, and all of them fail to consider what makes a life valuable, including living through the different life-stages. As Emanuel et al. put it, "maximizing benefits requires consideration of prognosis – how long the patient is likely to live if treated – which may mean giving priority to younger patients and those with fewer existing conditions."<sup>17</sup> Therefore, a young person who has the same chance of survival as an old person has a better prognosis (in the sense that they are likely to live longer if treated)

simply because they are younger. Although this sort of thing should not be considered in normal times, it should be considered when crisis standards of care have been implemented. Including life-years in the initial scoring fulfills the duty to steward public resources effectively and efficiently.

## 7 | EQUALITY OF OPPORTUNITY TO EXPERIENCE LIFE-STAGES

The reason why the triage algorithms relegate life-cycle considerations to a secondary role seems to be driven by the moral commitment to give everyone equal access to medical care and the belief that we should not discriminate on the basis of age, which are basic ethical principles laid out in the Declaration of Geneva and elsewhere. These are important principles to hold. However, age-related social preferences are not merely expressions of an unjustified prejudice. There is a rights-based argument for privileging the young in such cases, one based on people's right to equal opportunity to experience life, which is referenced in New York (2015), Daugherty Biddison (2019), and Pittsburgh (2020a/b). Triage algorithms that seek to maximize positive consequences must also consider what they call the life-cycle principle: life-years are not uniformly valued across different age-ranges. According to Norman Daniels, a right to healthcare follows from the fact that, from behind a Rawlsian veil of ignorance, we would want to be healthy enough to be in the "normal opportunity range" so that we can pursue whatever it is we happen to value at each stage of life.<sup>18</sup> This justifies a universal right to access a basic level of healthcare. Under special circumstances, however, tradeoffs must be made. In times of scarcity, an age-based rationing scheme is preferable to a lottery system because each of us would, from behind the veil, prefer to increase our chances of a normal lifespan over increasing our chances of living a longer than normal lifespan.<sup>19</sup> One reason is because "it would be imprudent to count the expected payoff of years late in life quite as highly as the expected payoff of years more likely to be free of physical and mental impairment."<sup>20</sup> Without knowing where in life we are, age-based rationing is justified on prudential grounds.

The right to equal opportunity thus commits us to privileging the young in times of scarcity.<sup>21</sup> Assuming that there is indeed such a

<sup>18</sup>Daniels, N. (1988). *Am I my parents' keeper? An essay on justice between the young and the old*. New York, NY: Oxford University Press.

<sup>19</sup>Ibid: 66–102.

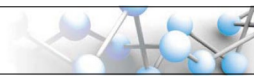
<sup>20</sup>Ibid: 89–90.

<sup>21</sup>Philosophers have given several similar but distinct arguments for prioritizing younger people over the elderly. A. Williams defends the "fair innings argument," which establishes an age threshold under which someone has not had a fair chance at living a life (Williams, A. (1997). Intergenerational equity: An exploration of the 'fair innings' argument. *Health Economics*, 6(2), 117–132). Emanuel and Wertheimer defend the "life-cycle principle," which prioritizes people who have lived through fewer stages of life (op cit. note 10). Persad, Wertheimer, and Emanuel defend the "complete-life view," which prioritizes those who have invested more in their lives (adolescents and non-elderly adults) over very young children and the elderly (op cit. note 15). Which of these specific views ought to inform an age-related principle for the purpose of triage is a matter for further discussion. The allocation guidelines that I am reviewing prioritize the youngest first, so they hold the life-cycle principle.

<sup>15</sup>My argument does not depend on assuming an 80-year life expectancy. A complete life could be defined differently. As G. Persad, A. Wertheimer, and E. J. Emanuel say, "the complete lives system requires only that citizens see a complete life, however defined, as an important good, and accept that fairness gives those short of a complete life stronger claims to scarce life-saving resources" (Persad, G., Wertheimer, A., & Emanuel, E. J. (2009). Principles for allocation of scarce medical interventions. *Lancet*, 373(9661), 423–431, p. 429).

<sup>16</sup>Cropper, M. L., et al., op. cit. note 11. See also Johannesson & Johannesson, op cit. note 11.

<sup>17</sup>Emanuel, E. J., et al., op cit. note 5, p. 5.



right or entitlement—and New York (2015, 102-103), Biddison (2019, 851), and Pittsburgh (2020a/b, 6-7) grant that the opportunity to experience different stages of life is a valuable goal, even if they do not call it a right—then it would require us to consider quality or value of life-years, in addition to quantity, in order to maximize positive outcomes. Although there is a right to equal access, there is also a right to equal opportunity to achieve a normal lifespan. These rights typically do not come into conflict, but they do when ICU beds and ventilators are scarce, and when the effects of COVID-19 significantly lower the prospects for one age group over others. A patient's life-stage affects not only the *length* but also the *value* of the time they would gain from treatment, whether it is 50 years, five years, or less than one year.

As I mentioned earlier, the guidelines seem to relegate age to a secondary role or to no role at all because of worries about discrimination, specifically ageism (New York 2015, 5). However, despite Richard Wagland's claim to the contrary, taking life-cycle into consideration is not discriminatory.<sup>22</sup> Discrimination occurs when someone is disadvantaged because of their membership in a group, and the decision rests on prejudice about typical group characteristics. In this case, people's equal opportunity to experience the different stages of life is being respected. Every person has the potential to live through different life-stages, so people are given equal consideration insofar as they all have the capacity to live full lives. As White et al. put it, "the life-cycle principle ... is inherently egalitarian because it seeks to give all individuals equal opportunity to live a normal lifespan. It applies the notion of equality to individuals' whole lifetime experiences rather than just to their current situation."<sup>23</sup> All people have an equal right to fair opportunity, but older people have already had more life-years than younger people, so the equitable enforcement of that right justifies unequal treatment under some conditions, including when there is a scarcity of life-saving resources.<sup>24</sup>

To illustrate this point, consider the right to healthcare, understood as a positive claim to access a basic tier of healthcare services (at least on Daniels' view). A person with chronic conditions or acute illnesses would get aggressive and costly medical treatment, while a relatively healthy person would receive less expensive and involved preventive care. They have an equal right to healthcare, but not everyone needs the same kind of care that would fulfill the correlative obligations that we as a community have to respect that right. Similarly, with the right to fair opportunity to experience the different stages of life, young people are akin to sick people: their right is more at risk in times of scarcity, so we have more of an obligation to them than we have to the elderly. There is no prejudice motivating

the decision to consider age as one factor in allocating medical care. Instead, it is based on the morally relevant fact that older people have experienced many of the central/important stages of life already, while younger people have not. If the young and the old have equal opportunity to pass through life-stages, the actions we must take to fulfill our obligations to them differ.

## 8 | THE ELDERLY WILL TYPICALLY BE PRIORITIZED

I am not proposing that we absolutely prioritize younger people by having an age cutoff or otherwise excluding the elderly from treatment during the crisis. In fact, if international trends continue, older people will likely be prioritized in most cases because the illness affects them more acutely. In principle, triage places people into the following three categories:

1. Those who are likely to survive even if they receive no medical treatment.
2. Those who are unlikely to survive even if they receive treatment.
3. Those whose lives are at risk but for whom treatment may positively affect the outcome.

The algorithms are designed to prioritize people in the third category in order to maximize positive outcomes. Since COVID-19 seems to have a more detrimental effect on older people's health, more of them will fall into the third category than younger people, who tend to fall into the first category. Even those younger people who fall into the third category are likely to benefit from delayed care, less aggressive treatment, or a shorter duration of care, thus placing less of a burden on public resources. Furthermore, my argument applies only to treatment, not prevention. As we distribute the coronavirus vaccines, prioritizing the elderly will maximize lives saved because younger people are more likely to be asymptomatic or to experience milder symptoms.

## 9 | CONCLUSION

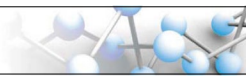
The exclusion of age in the Washington standards (2020a/b) and its relegation to secondary (tiebreaker) status in New York (2015), Daugherty Biddison (2019), and Pittsburgh (2020a/b) do not sufficiently further the common good, in accordance with healthcare professionals' duty to effectively steward public resources. With COVID-19 in particular, age significantly impacts a patient's ability to survive extubation (short-term prospects) as well as the additional life-years that are made possible by successful treatment (long-term prospects). It also impacts the value of those years under a life-cycle principle that recognizes everyone's equal opportunity to achieve a normal lifespan.

States are constantly scrutinizing and periodically revising their allocation guidelines during the coronavirus outbreak. Incorporating

<sup>22</sup>Wagland, R. (2012). Social injustice: Distributive egalitarianism, the complete-life view, and age discrimination. In H. Lesser (Ed.), *Justice for older people* (pp. 143-160). Amsterdam, the Netherlands: Rodopi.

<sup>23</sup>White, D. B., Katz, M. H., Luce, J. M., & Lo, B. (2009). Who should receive life support during a public health emergency? Using ethical principles to improve allocation decisions. *Annals of Internal Medicine*, 150(2), 132-138, p. 135. See also New York 2015, 102-103; Persad, Wertheimer, and Emanuel, op cit. note 15, p. 429; and Williams, op. cit. note 21.

<sup>24</sup>Daniels, op cit. note 18, p. 81.



age into the triage algorithms would be easy to do—conceptually at least, if not politically. Daugherty Biddison's (2019) proposed strategy already includes "life-cycle considerations" as a secondary principle (tiebreaker), assigning points to different age ranges—one point for 0–49, two points for 50–69, three points for 70–84, and four points for 85+ (850). The points could simply be added to the points based on the SOFA score and the points based on chronic comorbidities that worsen mortality risk. Of course, one would have to decide whether to accept these age ranges or an alternative scheme, and also how much weight (e.g., more points or fewer) life-stage should receive compared with the other measures, but those are separate questions. Making life-cycle a primary principle would make the ethically relevant consideration of age transparent, in a way that accords with "the public's values with regard to children," but without being discriminatory (New York 2015, 105). The role of age in allocation decisions during the coronavirus pandemic could be explained and justified based on moral principles that the public and the guidelines already hold.

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#### CONFLICT OF INTEREST

The author declares no conflict of interest.

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