

Triage of critical care resources in COVID-19: a stronger role for justice

Lynette Reid

Department of Bioethics,
Faculty of Medicine, Dalhousie
University, Halifax, Nova Scotia,
Canada

Correspondence to

Dr Lynette Reid, Bioethics,
Dalhousie University, Halifax NS
B3H 4R2, Nova Scotia, Canada;
lynette.reid@dal.ca

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ABSTRACT

Some ethicists assert that there is a consensus that maximising medical outcomes takes precedence as a principle of resource allocation in emergency triage of absolutely scarce resources. But the nature of the current severe acute respiratory syndrome-related coronavirus 2 pandemic and the history of debate about balancing equity and efficiency in resource allocation do not support this assertion. I distinguish a number of concerns with justice and balancing considerations that should play a role in critical care triage policy, focusing on discrimination and on fundamental egalitarian and social justice concerns.

INTRODUCTION

Some ethicists assert that there is a consensus in favour of maximising medical outcomes in emergency triage of absolutely scarce resources.^{1,2} Debate turns to the kind or kinds of outcome maximisation that should be adopted, for example, lives or life years,^{1,2} and to whether the same principle also licenses resource reallocation.³ Equity considerations may be integrated into triage¹ but only if they do not interfere with the goal of maximising outcomes.¹

Should it be a commonplace? Should it apply to our response to critical care triage in the current severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2) pandemic?

WEAKNESSES IN ARGUMENTS FOR MAXIMISING MEDICAL OUTCOMES

Decades ago, we could contrast the ethics of clinical care, with its focus on the good of a patient to whom the physician owes a special duty of care, against emergency triage and public health ethics, with their prioritisation of outcomes.² Clinical practice is now shaped by considerations of ‘good value’ care, and the gap between clinical and triage ethics is less categorical. In other allocation processes, we balance maximising medical outcomes with various values. In health technology assessment, some form of values pluralism is reflected in multidimensional decision-making in many jurisdictions.^{4,5} In organ allocation, despite the absolute scarcity of a life-saving resource, need still plays a strong role and

equity considerations are taken into account.⁶ Public health ethics, contrary to the claim of White and Lo,² is informed by values beyond utilitarianism,^{7–11} such as social justice and legitimacy in public policy. The latter is particularly important when we are at odds in our fundamental moral commitments about values like justice and outcome maximisation.

Triage of critical care resources in the SARS-CoV-2 pandemic shares some features with emergency triage and other features with resource allocation decisions in routine care. The situation is unprecedented, and we face momentary, absolute resource scarcity. However, the current situation is also going to be a prolonged one. Public health has engaged the entire population in an outbreak response that fundamentally alters our day-to-day lives. That broader public health response takes into account values beyond outcome maximisation. A few countries (New Zealand, Vietnam¹² and some countries of Sub-Saharan Africa¹³) have maximised lives saved by immediately implementing containment. The goal of most countries has been to keep the outbreak within expanded critical care capacity. Many countries are reopening despite ongoing community transmission.

Furthermore, the pandemic and our public health response expose disadvantaged groups to risks that raise justice concerns. Consider two persons. One is a middle-aged person in good health with a life expectancy in their mid-80s, who can work from home with full salary and no threat to housing security. Their home is spacious, well ventilated with little pollution, and they enjoy access to green space. They can pay to have necessities delivered. If they must have some contact with the public, they can afford measures to avoid household transmission.

The second person is the same age but of lower socioeconomic status and works in precarious employment that cannot be done from home. They have either been designated essential or they cannot leave work because they have no resources to sustain unemployment. Their housing is crowded, with poor ventilation and no green space; the pandemic increases their housing insecurity. They cannot afford temporary shelter apart from their family; the whole family faces a substantial risk of household transmission. Government financial assistance may provide some relief, but it also saddles them with debt after the pandemic. They rely on public transit to get to and from work and for essential shopping. In many countries, they are disproportionately immigrants or members of racialised minorities and/or immigrant groups.^{14,15} They are exposed to a greater risk of contracting COVID-19^{14,16} for the very reasons that they are at greater risk of chronic health conditions that may

¹Every ICU admission involves a judgment of need and a judgment of potential to benefit. Even the most extreme outcome maximising triage proposal can be described as a modification of needs-based ICU admission, to be applied only where there are too many patients of equal need. My discussion is about triage protocols adopted when existing standards for ICU admission and the surge in demand for critical care resources present the healthcare system with a shortage.



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lower their likelihood of responding favourably to intensive care unit (ICU) or organ support in the case of severe COVID-19.¹⁷

In the current pandemic, maximising outcomes in critical care triage may compound the injustices of the social determinants of health and have negative implications for equity of racialised groups.^{18–19} Concern with these inequities is at least consistent with public health ethics, if not also core to public health ethics. Decades of work in resource allocation about balancing equity and efficiency should be brought to bear on critical care resource triage in a pandemic.ⁱⁱ

EQUITY VERSUS EFFICIENCY IN RESOURCE ALLOCATION

The goal of maximising outcomes in the specific form of maximising lives saved seems highly morally plausible until one considers the unacceptable results of its pursuit at all costs. Decades of research into public attitudes and of ethical debate^{20–24} have explored three forms of justice in tension with outcome maximisation.

I will label these forms of justice concerns as follows: the *egalitarian* concern to give everyone a chance, connected to a fundamental sense of human equality,^{25–26} the *non-discrimination* concern to protect those at risk of discrimination and the *social justice* concern to address unjust health detriments, whether relating to natural (eg, ability or age) or social (eg, socioeconomic status or racialised identity) categories. I will also refer to *procedural justice* concerns and *domain-specific fairness*²⁷ for the distribution of a good.ⁱⁱⁱ

Surveys of public and professional attitudes in the 1990s suggest that some persons are committed to maximising outcomes and other persons are committed to maximising equality by, for example, granting *more* livers in organ allocation to those less likely to benefit in order to improve equality of outcomes. This latter commitment is consistent with our approach to disabilities in many realms, and a positive argument for abandoning it in pandemic response, if there is one, must be made. Many people can be described as ‘balancers’ who prefer distributions that give weight to both equity and efficiency.^{22–24 28 29} The metaphor of ‘balancing’ as I use it here captures the idea that we resolve moral dilemmas by developing approaches that take into consideration multiple values: each value retains metaphorical weight, even when it does not dominate. When we cannot do as much good as we should in some dimension, we have responsibilities to limit and mitigate the harm this causes.

In balancing conflicting values, risk and uncertainty come into play, specifically epistemic uncertainty, risk of bias and the moral irrelevance of small differences in risk. For example, in

allocation dilemma research, balancers were willing to sacrifice equal chances for all in order to save a greater number of persons, but only where the difference in probability of benefit was substantial and where epistemic warrant for categorising individuals was good. In the process of balancing competing, important moral claims that could not all be maximised, they wanted decisive rather than marginal considerations to tip the scale.

Balancing considerations can also reflect an *egalitarian* concern that persons deserve an equal opportunity or deserve not to have their chance taken away because it is smaller than another’s. That is, a balancer might readily agree to prioritise saving the most lives if the choice is between a person who has a 10% chance of survival and a person who has a 90% chance of survival. Where the differences are smaller, it is plausible to reason that the differences in survival probability between two persons do not justify a categorical difference in treatment: for example, a person with a 45% and one with a 55% chance of survival both deserve an equal chance at their marginally different possibility of benefiting from access to ICU.

We may have reasons to be more or less sensitive to the size of difference in probability to benefit as it relates to concerns of discrimination, fundamental human equality or social justice. An epistemic metaconsideration that has long led people to adopt random selection (by lottery^{iv} or by using time as a natural, but imperfect, randomiser in a wait list or first-come, first-served situation) is that it is both difficult and time consuming to categorise persons in fair ways. This is particularly difficult to accomplish under emergency conditions or conditions of competing resource claims. When considerations of procedural justice and the possibility of appeal come into play, the supposed efficiencies of acting to save the greatest number by applying defensible categories in a fair way may be lost.

Contrary to the argument of Emanuel *et al*,¹ balancing competing values in resolving ethical dilemmas does not render ‘illusory’ our commitment to values that we compromise. Compromise across deeply held, diverse moral values is essential to the legitimacy of pandemic policy.

THREE WAYS TO TAKE EQUITY INTO ACCOUNT IN TRIAGE

Avoid bias and discrimination

In this approach, medical criteria should be designed solely to maximise outcomes. Bias would be detrimental to those subject to triage, and would also interfere with outcome maximisation.

Insofar as social injustice occurs because of bias and discrimination, non-discrimination also addresses some social justice concerns. However, it does not address all of them: the consistent application of criteria that exclude people with health detriments that are due to the social determinants of health compounds existing health injustices. Neither does non-discrimination address the egalitarian or epistemic balancing concern that differences in probabilities must be substantial in order to dissuade us from treating everyone equally or from attending to social justice. These are not reasons to reject unbiased application of medical criteria, of course, but reasons to think that this solution is an incomplete response to concerns of justice.

Note that some concerns about discrimination are not about irrelevant criteria or inconsistent application of relevant criteria, but about a predetermined idea of persons against whom it is

ⁱⁱNote that the hospital triage process is not the only priority-setting question in pandemic response. We raise justice concerns when we prioritise hospital admission (assigning risk to caregivers and families in the community), balance tertiary-care surge-capacity preparation with continuing care sector preparedness and community public health response (testing and tracing for outbreak control), and decide which services are necessary and which characterised as elective can be safely postponed. We also ration personal protective equipment and will likely ration vaccines when they become available but are not yet plentiful. The broader public health response raises substantial justice questions that are beyond the scope of this paper. Many of these other prioritisation questions will affect far more people than the subject of this paper.

ⁱⁱⁱThe interpretation and specification of each of these forms of justice are controversial, but they are still legitimate concerns in public policy.

^{iv}Broome articulates the classic moral case for random selection, distinct from the argument for its use as a tie breaker in uncertainty.³²

impermissible to discriminate. As Johnson points out,¹⁸ no one has proposed prioritising women over men for ICU admission, even where there has been evidence that men with COVID-19 are less likely to survive. The grounds for this (in balancing considerations or in social justice concerns) must be made transparent and consistent with other groups for whom discrimination is a threat.

Another disadvantage is that consistent application of outcome-maximising criteria creates a relatively homogenous treatment pool, such that poor prognosis becomes a self-fulfilling prophecy. As people with certain conditions are excluded from ICU, the opportunity for healthcare providers to refine their management of persons with these conditions is lost, along with the opportunity to improve outcomes.

We should modify critical care resource triage on the basis of considerations of justice, even at the cost of saving fewer lives

In this section, I review several possible balancing solutions that reflect a willingness to sacrifice outcome maximisation for justice considerations.

One way to give weight to social justice considerations is to refuse outcome-maximising criteria that further structural inequalities. That is, outcome-maximising criteria could be adopted only where they are neutral in distribution among categories relevant to justice, such as socioeconomic status, gender and racialised groups. Triage protocols based on life expectancy or chronic multimorbidities may fail this test in relation to concerns about health inequities, as would the use of quality-adjusted life years in relation to disabled persons. If no such criteria can be found, then we can move to random allocation by lottery or time.

Another balancing approach would be to allow outcome maximisation to outweigh social justice considerations and fundamental egalitarian concerns, but only where the distinctions we apply make a substantial difference and the categories are homogeneous enough to warrant discrimination among individuals. Note that the differences in odds of surviving critical care between groups are not 9–1.^v Preliminary UK data on critical care survival suggest differences of 10–14 percentage points between risk categories (including adjacent age categories).¹⁷

A third approach would be to use justice considerations to limit our choice of which outcome-maximising principle or principles to use. Some candidates are lives, life years, quality of life and fair innings. Adopting several outcome-maximising principles at the same time would further compound health inequities. For example, given a 10-to-30-year difference in life expectancy for persons of different socioeconomic status and different chronic disease patterns,³⁰ including life years saved or quality-of-life considerations in addition to probability of survival-to-discharge in critical care triage, would doubly advantage persons who already enjoy a considerable health advantage. We should instead choose whichever single outcome-maximising principle is least detrimental to social justice and to egalitarian opportunity. Since saving the most

lives limits each person's claim to a maximum of one, it is theoretically more egalitarian than saving the most life years, a principle that allows one person's claim to outweigh another person's by much more.

Another approach would be to place the most weight on pure egalitarian concerns in order to give everyone the same opportunity to have their existing chance, within a reasonable range of chances. This could be operationalised through randomisation by lottery or time. The same approach could be chosen on the basis of epistemic considerations: in circumstances where judgments of individual probabilities are uncertain, risks of bias are high and/or categorical differences in possibility of benefit are small, it may be preferable to turn to random allocation.

Social justice considerations should play a role in how we operationalise random allocation. Using time to randomise (by wait lists or first-come, first-served) is more publicly acceptable than using a lottery, but it is an imperfect randomiser.^{vi} Healthier persons of higher socioeconomic status are likely to be more successful in seeking care and navigating systems than disadvantaged persons, and will have more alternatives for care. It is feasible for healthcare systems and providers to make judgments about, for example, delayed care seeking, the availability of care alternatives, the burden of returning for reassessment or a limited accessibility for follow-up care. Such an approach would also tie our response to health inequities closely to dimensions in which healthcare providers and systems can support disadvantaged patients. Non-critical care resources can be called on to assist in improving outcome potential, for example, by addressing gaps in postdischarge care or supporting home care to delay or prevent admissions.¹⁹

We should modify how we pursue the goal of saving the greatest number in order to also achieve equitable outcomes

A solution that maximises both equity and efficiency without sacrificing either would be ideal. One way to address the limitations in the 'avoid bias and discrimination' approach discussed above has been proposed by Schmidt³¹ and is permitted by Emanuel *et al*¹: among those who meet the chosen threshold of likelihood to survive ICU and organ support, we could prioritise disadvantaged persons. We would then (in theory) save the same number of lives but save more lives of disadvantaged persons. This would be a form of affirmative action in medical resource allocation. Proponents point out that we may be able to save even more lives of the disadvantaged than we would on the balancing solutions canvassed above. However, this proposal faces two normative challenges from quite different perspectives.

First, if we take this approach, we will fail to remedy social injustice. If we select healthy disadvantaged persons, ones whose health is not detrimentally affected by the social determinants of health, then we will not interfere with the way that maximising outcomes compounds the health inequities caused by socioeconomic or racialised inequalities. We will save only those disadvantaged persons who have escaped the health effects of their disadvantage. This can be described as awarding resources to those who share a feature that is proxy for health injustice but is not itself health injustice.

Second, this approach violates competing principles of domain-specific fair distribution. If we take an affirmative action approach, we attract the objection that access to medical care

^vThe extensive literature on the imperative to save the greatest number (SGN), following Taurek's provocative arguments,³³ focuses on saving 1 versus ≥ 2 lives, not saving 4 versus 5 lives, and Taurek himself argued against SGN on the grounds of partiality, not justice. The deontologist or contractualist who advocates matching procedures for settling these cases might construe all tradeoffs, ultimately, as $\geq 2/1$ cases—the leftover after matching. I think this reveals that the contractualist/deontological matching process is a poor representation of equity concerns.

^{vi}Thanks to Jeff Kirby for pressing this question in response to an earlier draft.

should be based on medical, not social, criteria.^{vii} We would also face feasibility challenges that support concerns about domain-specific fairness, even if we reject the controversial idea that appropriate allocation principles flow from the nature of what is being allocated. These include the preparation of healthcare providers and healthcare systems to discern the categories of social disadvantage in question.^{viii} Data on race and ethnicity but not class are routinely collected in some health systems, such as in the USA, and not in others, such as Canada. These data are collected for monitoring health system performance and enabling epidemiological surveillance. They are unlikely to have the accuracy sufficient to inform life and death decisions for individuals. Consider the use of postal codes to support judgments of socioeconomic status based on neighbourhood income, which would privilege gentrifiers. If the role of racial, ethnic or socioeconomic markers in affirmative action were known, they would be subject to manipulation. Asking healthcare providers to distribute resources based on social inequities may increase rather than mitigate vulnerability to discrimination. Expecting people to triage against their own class identities may not be feasible. Addressing procedural justice concerns would readily swamp the efficiency gains that the proposal otherwise promises.

Furthermore, the proposal would achieve its goal only where triage protocols are categorical, such that there is a group above a threshold chance of benefit but still too large for the available resources, and further selection to maximise outcomes is not possible. (If further outcome maximising is possible using a scalar approach, but that has been rejected, then the proposal no longer demonstrates true outcome maximising.²) Empirically, this group must contain enough disadvantaged persons such that preferentially selecting these persons will address the fundamental concerns of social justice raised by medical criteria that are designed to maximise outcomes.

Proponents of affirmative action argue that it could achieve even greater benefits for those worse off than could the balancing solutions I have proposed in the previous section, such that rejecting outcome maximisation and affirmative action would constitute levelling down for the disadvantaged themselves. The argument is that admitting all of the disadvantaged persons who have escaped the health detriments associated with disadvantage could result in admitting more disadvantaged persons than would be admitted under a lottery that includes a broader group of both advantaged and disadvantaged persons who are on average less likely to survive.

However, my normative critique of outcome-maximising affirmative action would still apply under this so-called levelling down scenario. On this proposal, we select those who have not experienced the health detriments of the social determinants of health. This achieves, at best, an ambiguous case of levelling up. Its application in disability cases, for example, involves playing the interests of the 'healthy disabled' against those whose

disabilities imply greater health detriments or shorter life expectancy. Insofar as it does this, it weakens the claim that those with greater health vulnerabilities or shorter life expectancy should see the persons who are preferentially selected as levelling up for a group with which they identify.

Because only those with fewer health detriments are treated, the problem of the self-fulfilling prophecy still applies. And like the 'avoid bias and discrimination' approach, it does not address the egalitarian sense that differences in probabilities of survival must be substantial to override a fundamental commitment to human equality.

CONCLUSION

In this paper, I have challenged the claim that there is a consensus in a pandemic emergency triage of scarce critical care resources that the value of maximising outcomes should dominate. My argument draws on work in resource allocation and organ allocation, where balancing multiple criteria is common. I focus on concerns of justice, specifically fundamental egalitarian concerns, social justice concerns and non-discrimination concerns. In addition to arguing that maximising outcomes is detrimental to egalitarian and social justice concerns, I have also described balancing considerations that should come into play. In resolving dilemmas, competing values retain their weight even when they do not dominate. They can set standards for evidence and limit the lengths to which we are prepared to go to maximise the value we think is more important. They establish responsibilities to support those of us who are harmed by our failure to live up to values that matter to us, in order to mitigate or compensate for these harms.

In addition to these general considerations in favour of balancing justice and outcomes in emergency triage, there are considerations specific to the current SARS-CoV-2 pandemic that favour triage rules informed by solidarity with those experiencing health detriments arising from social determinants of health and compounded by racialisation. Furthermore, it is not clear what in the current pandemic warrants abandoning existing societal commitments to inclusion for disabled persons. This pandemic has required, and will continue to require, an enormously disruptive societal response with substantially inequitable effects. We should broaden our focus beyond which form or forms of maximising outcomes are appropriate in a pandemic response. We need to consider mitigating the health inequities of a global pandemic, in critical care resource allocation and beyond.

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REFERENCES

- 1 Emanuel EJ, Persad G, Upshur R, *et al*. Fair allocation of scarce medical resources in the time of COVID-19. *N Engl J Med* 2020;382(21):2049–55.

^{vii}Sen characterises this as a 'procedural' objection to achieving health equity by discrimination.³⁴ I have discussed this as a social justice concern. Affirmative action in education can be justified by the argument that students of low socioeconomic status have abilities that are not adequately reflected in prior performance: they will succeed once given the chance. This rationale would not be available in medical affirmative action. A rationale that will stand up in law is necessary for an affirmative action approach.

^{viii}Compare my proposal above for mitigating social justice concerns with wait lists, where the healthcare system is not asked to make global judgments of relative disadvantage, but to identify and address barriers more proximal to healthcare.

- 2 White DB, Lo B. A framework for rationing ventilators and critical care beds during the COVID-19 pandemic. *JAMA* 2020;323(18):1773–4.
- 3 Peterson A, Largent EA, Karlawish J. Ethics of reallocating ventilators in the covid-19 pandemic. *BMJ* 2020;369:m1828.
- 4 NICE. *Social value judgments: principles for the development of NICE guidance*. 2nd Edn, 2008.
- 5 Kristensen FB, Lampe K, Wild C, *et al*. The HTA Core Model[®]-10 Years of Developing an International Framework to Share Multidimensional Value Assessment. *Value Health* 2017;20(2):244–50.
- 6 Stegall MD, Stock PG, Andreoni K, *et al*. Why do we have the kidney allocation system we have today? a history of the 2014 kidney allocation system. *Hum Immunol* 2017;78(1):4–8.
- 7 Selgelid MJ. A moderate pluralist approach to public health policy and ethics. *Public Health Ethics* 2009;2:195–205.
- 8 Grill K, Dawson A. Ethical frameworks in public health decision-making: defending a value-based and pluralist approach. *Health Care Anal* 2017;25(4):291–307.
- 9 Kirby J. Enhancing the Fairness of pandemic critical care triage. *J Med Ethics* 2010;36(12):758–61.
- 10 Munthe C. The goals of public health: an integrated, multidimensional model. *Public Health Ethics* 2008;1:39–52.
- 11 Powers M, Faden R. *Social justice: the moral foundations of public health and health policy*. New York: Oxford University Press, 2008: 248.
- 12 Klingler-Vidra R, Tran B-L. Vietnam has reported no coronavirus deaths – how? the conversation, 2020. Available: <https://theconversation.com/vietnam-has-reported-no-coronavirus-deaths-how-136646> [Accessed 25 May 2020].
- 13 Moore J. What African nations are teaching the West about fighting the coronavirus, 2020. Available: <https://www.newyorker.com/news/news-desk/what-african-nations-are-teaching-the-west-about-fighting-the-coronavirus> [Accessed 20 May 2020].
- 14 Bhala N, Curry G, Martineau AR, *et al*. Sharpening the global focus on ethnicity and race in the time of COVID-19. *The Lancet* 2020;395(10238):1673–6.
- 15 Yancy CW. COVID-19 and African Americans. *JAMA* 2020;323(19):1891–2.
- 16 Office for national statistics. deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 17 April 2020, 2020. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19bylocalareasanddeprivation/deathsoccurringbetween1marchand17april> [Accessed 20 May 2020].
- 17 Intensive Care National Audit & Research Centre. ICNARC report on COVID-19 in critical care, 2020. Available: <https://www.icnarc.org/DataServices/Attachments/Download/b8c18e7d-e791-11-9125-00505601089b> [Accessed 20 May 2020].
- 18 Johnson LSM. Prioritizing justice in ventilator allocation, 2020. Available: <https://blogs.bmj.com/medical-ethics/2020/04/15/prioritizing-justice-in-ventilator-allocation/> [Accessed 20 May 2020].
- 19 Sederstrom NO. Unblinded: systematic racism, institutional oppression, and colorblindness, 2020. Available: <http://www.bioethics.net/2020/05/unblinded-systematic-racism-institutional-oppression-and-colorblindness/> [Accessed 20 May 2020].
- 20 Wagstaff A. QALYs and the equity-efficiency trade-off. *J Health Econ* 1991;10(1):21–41.
- 21 Nord E. The QALY--a measure of social value rather than individual utility? *Health Econ* 1994;3(2):89–93.
- 22 Ubel PA, DeKay ML, Baron J, *et al*. Cost-effectiveness analysis in a setting of budget constraints--is it equitable? *N Engl J Med* 1996;334(18):1174–7.
- 23 Nord E, Pinto JL, Richardson J, *et al*. Incorporating societal concerns for fairness in numerical valuations of health programmes. *Health Econ* 1999;8(1):25–39.
- 24 Ubel PA, Loewenstein G. Distributing scarce livers: the moral Reasoning of the general public. *Soc Sci Med* 1996;42(7):1049–55.
- 25 Broome J. Fairness versus doing the most good. *Hastings Cent Rep* 1994;24(4):36–9.
- 26 Fairness BJ. *Proceedings of the Aristotelian Society*. , 1990: 91, 87–101.
- 27 Walzer M. *Spheres of justice: a defense of pluralism and equality*. New York: Basic Books, 2008.
- 28 Ubel PA, Baron J, Nash B, *et al*. Are preferences for equity over efficiency in health care allocation "all or nothing"? *Med Care* 2000;38(4):366–73.
- 29 Neuberger J, Ubel PA. Finding a place for public preferences in liver allocation decisions. *Transplantation* 2000;70(10):1411–3.
- 30 Marmot M. *The health gap: the challenge of an unequal world*. London: Bloomsbury Publishing, 2015.
- 31 Schmidt H. The way we ration ventilators is biased, 2020. Available: <https://www.nytimes.com/2020/04/15/opinion/covid-ventilator-rationing-blacks.html> [Accessed 20 May 2020].
- 32 Broome J. Selecting people randomly. *Ethics* 1984;95(1):38–55.
- 33 Taurek JM. Should the numbers count? *Philos Public Aff* 1977;6(4):293–316.
- 34 Sen A. Why health equity? *Health Econ* 2002;11(8):659–66.