

How can we decide a fair allocation of healthcare resources during a pandemic?

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ABSTRACT

Whenever the government makes medical resource allocation choices, there will be opportunity costs associated with those choices: some patients will have treatment and live longer, while a different group of patients will die prematurely. Because of this, we have to make sure that the benefits we get from investing in treatment A are large enough to justify the benefits forgone from not investing in the next best alternative, treatment B. There has been an increase in spending and reallocation of resources during the COVID-19 pandemic that may have been warranted given the urgency of the situation. However, these actions do not bypass the opportunity cost principle although they can appear to in the short term, since spending increases cannot continue indefinitely and there are patient groups who lose out when resources are redirected to pandemic services. Therefore, policy-makers must consider who bears the cost of the displaced healthcare resources. Failure to do so runs a risk of reducing overall population health while disproportionately worsening health in socially disadvantaged groups. We give the example of ethnic minorities in England who already had the worst health and, due to structural injustices, were hardest hit by the pandemic and may stand to lose the most when services are reallocated to meet the resource demands of the crisis. How can we prevent this form of health inequity? Our proposal is forward-looking: we suggest that the government should invest our resources wisely while taking issues of equity into account—that is, introduce cost–equity analysis.

INTRODUCTION

The COVID-19 pandemic has posed a serious challenge for the UK government, and, in particular, for the National Health Service (NHS). Both primary and secondary care in the UK were experiencing overcrowding, shortage of staff and excessive waiting times for patients before the pandemic. The situation was made much worse during the pandemic because of the additional problems created by a limited supply of ventilators and personal protective equipment available to healthcare workers. Therefore, a quick response was necessary. However, the government's response was met with criticism and many have pointed out that the lockdown restrictions and cancellation of services have caused collateral damage. The government has been accused of transforming the NHS into a 'Covid-only service', where most of urgent healthcare services such as cancer diagnostic tests and cancer treatments have been postponed. This alone has had and will continue to have a huge impact on mortality and morbidity. In the UK, over 1 million patients had their surgery postponed, all

non-urgent surgery was suspended for at least 3 months in England and at least 40 000 people did not receive their cancer treatment.¹

Mental health services have also been completely shut down across England. The Royal College of Psychiatrists were worried they may not be able to face and deal efficiently with the 'tsunami of referrals' they expect after the pandemic.² While in May this was merely a prediction, it has now become a fact. On 1 November, psychologists have published a letter to policy makers detailing the devastating mental health effects that lockdown restrictions have had on the UK population, in particular on children and adolescents: they report a significant increase in depression, self-harm and child suicide.³

The situation has created the impression that governments have made resource allocation decisions in an arbitrary manner, whereby only certain people have access to health resources.⁴ However, situations of crisis require tough decisions and prioritisation of resources. For instance, in a recent article, Mannelli speaks of the difficult decision that doctors had to make in Italy about which patients should be provided with a ventilator.⁵ Given that there weren't enough ventilators for all patients, doctors found themselves in the position of 'playing God' to decide whose life to save and who to let die.⁶ As she points out, it is a fact of our society that we do not have the resources to treat everyone, this is, 'something we already know' but 'we just try to forget about it'.⁵

But what does it mean 'not to forget about it'? It implies a concern with issues of cost-effectiveness: we need to invest our limited resources wisely. This means two things: (1) We should use resources to save the lives which can be saved; to do this, we need good evidence that the treatment is clinically effective, instead of wasting money on futile treatment and (2) We should invest where we can do the most good and save the most lives, and this in effect means that we have a duty to also consider lives which could be saved in the future. This, indeed, is the aim of our national healthcare system: to generate health that is equitably distributed.⁷

However, something unprecedented has happened in the UK. In a rare act, during the COVID-19 pandemic, the government has made decisions that appear to put people first and save lives, and responded to the crisis with no apparent reference to costs or forgone benefits elsewhere in the healthcare system and outside of it. Contrast this with the immediate introduction of a set of austerity policies in the aftermath of 2008 global financial crisis which was justified by ministers in economic and ethical terms; reducing the budget deficit was presented to the public as an imperative



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to promote growth and avoid an unfair tax burden on the next generation. Nevertheless, linking economic spending to a future distribution of resources in such difficult times as a pandemic seems inhumane and perhaps politically unwise.

But was it the right thing to do and should we do the same in the future whenever another crisis comes along? Although it seems that the decision expresses concern about issues of fairness, ignoring the principles of cost-effectiveness can itself lead to serious injustice, disadvantaging the very people we want to protect. In order to move forward and progress in a way which promotes fairness, we suggest that we need to pay attention to two things: who was mostly affected by the COVID-19 crisis and why? Who are the patients most likely to bear the true opportunity costs of the crisis?

Our argument will take the following form. We start with the plausible premise that a crisis will cause an increase in spending or reallocation of resources during a pandemic. We then argue that allocating resources based on a cost-effectiveness analysis is better, all things considered, than an arbitrary increase in spending, and this is because of the principle of opportunity cost. This principle, we argue, ensures that resources are allocated more fairly, that is, in a way which guarantees we save lives instead of unnecessarily sacrificing people's health. Despite this, we then turn to argue that a cost-equity analysis is a better cost-effectiveness principle in general, but it becomes especially relevant in situations of crisis. This additional consideration should provide National Institute for Health and Care Excellence (NICE) and other governmental bodies with a reason to move to a cost-equity analysis and abandon the simple cost-effectiveness principle. Briefly, our main argument is that there is something special about a crisis where it is even more important to think in cost-equity terms: A crisis will exacerbate and magnify the consequences of societal injustices on health. We illustrate this point by focusing on Black, Asian and Minority Ethnic (BAME) communities, drawing on evidence which shows that racism is a cause of them being disproportionately affected by the COVID-19 crisis and the corresponding disinvestment of some services.

WHAT IS THE PURPOSE OF COST-EFFECTIVENESS ANALYSIS AND IS IT FAIR?

Conducting a cost-effectiveness analysis when human life is at stake may seem cruel, inappropriate, based merely on rational utilitarian calculus. Human life, after all, has a dignity and not a price, as Kant famously argued in his *Groundwork of the Metaphysics of Morals*. But is this true in our society? First of all, the NHS has always placed a price on human life. Since the introduction of NICE this has been made explicit, with cost thresholds beyond which an intervention will likely not be made available to the public even if it means that people will die. For a heart-breaking account of how NICE makes decisions of what treatments can be introduced in the NHS we recommend the documentary 'The Price of Life'.⁸ This is devastating, and it may seem unfair and unseemly: how can a national public body intentionally decide to withhold treatment from people who would otherwise suffer or die prematurely?

In spite of this, the argument we put forward, in what follows, is that the alternative to cost-effectiveness analysis is much worse. By ignoring the reality of our economic system, we will end up doing more harm than good.

The NHS and NICE have been introduced to ensure that everyone has a fair chance of accessing shared healthcare services, and not only the privileged members of society. NICE's decisions are transparent and consistent, based on the best

available evidence, and they often produce new revised guidelines to make sure the process is fair for everyone. What normatively justifies its existence and makes it attractive is precisely its concern with issues of fairness.⁹

NICE's guidelines are fundamentally based on egalitarian principles. It does not discriminate based on age, gender, class or wealth. The idea of cost-effectiveness analysis is to maximise aggregated health benefits, regardless of how these benefits are distributed across the population—it assumes 'distributive neutrality'.¹⁰ Another reason to care about the cost-effectiveness principle is because it takes issues of opportunity costs explicitly into account. That is, it tells us in a transparent way the amount of health that may be sacrificed when an expensive treatment is approved.

Despite the advantages of cost-effectiveness analysis, compared with an unplanned allocation of resources, we argue that under the current circumstances this approach is not egalitarian enough and we have reasons to weight units of health differently across social groups. But how can we identify these social groups and the disease areas we should prioritise? One major flaw of NICE decision-making process is that, when they approve a certain expensive intervention, say nothing about the displaced activities: we thus do not know the type of health or whose health will be sacrificed. Crucially, we do not know who the losers are.

Fortunately, Love-Koh *et al*¹¹ and Claxton *et al*,¹² at the University of York, have done an impressive work identifying which activities are likely to be displaced and how these changes affect different social groups when NICE, perhaps under pressure from stakeholders and pharmaceutical companies, approves an intervention which the NHS cannot afford from its current budget. The answer is not that the NHS budget will be increased—it almost never is, and the growing economic crisis will not help. Instead, treatments which improve life expectancy and quality of life at a much lower cost will be made unavailable to NHS patients. Claxton estimates that the main disease areas displaced in the past have been cancer, mental illness, circulatory disease, respiratory and neurological diseases. Love-Koh *et al*¹¹ similarly conclude that 'the health effects from NHS expenditure changes are produced largely through disease areas in which individuals from more deprived areas account for a large share of healthcare utilisation, namely, respiratory and neurological disease and mental health'.

But should we expect the same after the pandemic? Will the same type of disinvestment take place and will it continue to affect the same deprived social groups? We believe that the current crisis has made this kind of prediction difficult and uncertain. This is for three reasons. One limitation of standard cost-effectiveness analysis is that it focuses on opportunity costs that fall exclusively on the NHS and social care budgets. In order to correctly evaluate a public health intervention during a national emergency we ought to take a wider social perspective on costs and benefits, and therefore, we would need to consider the health, non-health benefits and opportunity costs which fall on different sectors. An intervention may not produce sufficient health benefits to justify the additional costs placed on the NHS budget; however, a programme which introduces COVID-19 vaccination in the general population will result in positive externalities and benefits outside the health sector that can make the intervention more appealing.

Public spending on the COVID-19 interventions so far has reached £190 billions in July. This figure already exceeds the entire health budget for 2020–2021.¹³ It would be deceptive to think that just because the government did not carry out a

cost-effectiveness analysis during the pandemic that considerations of the costs incurred will be forever ignored. What is likely to happen and has already started is that other budgets are reduced (as of November, overseas aid and public sector pay) or the deficit will increase and this debt will eventually be passed onto the taxpayers (in the form of increased taxation or inflation), who in turn will become poorer economically, which again will have an impact on health. Another issue to consider which cannot be fully addressed here, is the fact that the more we spend now the less we have available for future emergencies unless, somehow, gross domestic product raises quickly. This kind of opportunity cost should also be taken into account because it is, after all, taking resources from use in a future pandemic that could be even worse.

Finally, another source of uncertainty in making predictions about which groups bear the opportunity costs of COVID-19 spending comes from the fact that changes which were introduced in the healthcare system may be retained, and these changes may save money in the long run. One such example is the telehealth—GP consultation via phone or internet which may be cost saving. Another attractive change announced recently by the minister of health is that the NHS COVID-19 testing system could be used for fighting the seasonal influenza, which would reduce the community spread of influenza.¹⁴ This could save money from reducing absenteeism at work due to illness.

Regardless of the reasons for uncertainty, given the magnitude of spending and services changes under the pandemic there is an imperative to carefully consider displaced activities to minimise population health losses caused by displaced activities which, as Claxton and colleagues have shown, regularly occurs even in circumstances when the cost-effectiveness of spending has been considered.

We turn now to argue that a cost–equity analysis is the right way to move forward. It is an approach that considers both the magnitude of the losses and who stands to lose, and without such explicit considerations of fairness the consequences of discrimination on poor health is worsened in a crisis. In doing this, we defend the claim that it is sometimes permissible not to maximise health in the population in order to protect values such as justice.

COVID IMPACT ON BAME COMMUNITIES

Health economists have already argued that equity concerns should be part of economic evaluations.¹⁵ They have focused their attention on economic deprivation and socioeconomic status as the main unfair social determinants of health. To date, this appeal has been unsuccessful, and NICE continue to reject introducing explicit equity weights in order to prioritise treatments for certain groups of people.¹⁶ We believe that the crisis brings to the foreground the need for a definite move to cost–equity analysis that NICE should consider seriously.

Evidence from Public Health England (PHE)¹⁷ published in June this year shows that COVID-19 has not impacted all population groups equally. In fact, there is a great disparity in mortality and morbidity between BAME groups and their British white counterparts. BAME communities do worse in terms of higher death rates (four times higher in this period), higher probability of infection and higher risk of developing serious complications once infected. Why is this the case? Socioeconomic deprivation is statistically correlated with excess mortality and morbidity from COVID-19 and BAME communities are more likely to come from poorer socioeconomic backgrounds

and work in jobs where infection risk is higher. There is also strong evidence that BAME groups suffer from health conditions which are likely to increase the severity of disease and therefore cause death—obesity, diabetes, hypertension, smoking and mental health illness.¹⁷

This is not news, of course, but only proves what we suspected all along: long-standing inequalities are made worse by the COVID-19 crisis, will further disadvantage those in poor health, and will worsen socioeconomic deprivation in a country which is already very unequal. We know this because research spanning for over thirty years from health economists shows that there is a steep gradient in life expectancy and quality of life between the rich and the poor in the UK. For instance, researchers at the Centre for Health Economics at York show that ‘The richest fifth of people in England can expect to live at least 12 more years of life in full health than the poorest fifth’.¹⁸ Furthermore, these stark health inequalities are stubbornly difficult to improve since they are rooted in structural inequalities related to wealth, income, socioeconomic background, level of education and occupation—known as the ‘the social determinants of health’.¹⁹ Therefore, the rise in health inequality from COVID-19 is likely to persist long after the pandemic is over, further entrenching social inequalities.

We choose to focus on the PHE report because they include in their analysis important social determinants of health. Three things came as a great surprise to us, which we believe constitute original findings. First, after controlling statistically for age, gender and economic deprivation, ethnicity is statistically significant, that is, BAME communities were disproportionately affected by COVID-19.

The second surprising finding was that poor mental illness is a big risk factor for COVID-19 severity and death. BAME communities and people from deprived socioeconomic backgrounds are more likely to develop mental illness and less likely to have access to NHS mental health support, according to the Adult Psychiatric Morbidity Survey.²⁰ For example, only 6.5% of black men receive mental health treatment for their illness compared with 14.5% for white men.

Finally, a plausible explanation for the high mortality and morbidity is racism (see section of the report on ‘Racism, discrimination, stigma, fear and trust’). Consequently, PHE recommends that ethnicity should be a specific concern in future policy actions: ‘Fully funded, sustained and meaningful approaches to tackling ethnic inequalities must be prioritised’.

We defend the claim that BAME communities should be favoured in economic analysis because we have reasons to believe their disadvantage is inequitable. (1) First, as proven by the PHE report, they have poorer health outcomes even after controlling for age and gender. What makes (1) inequitable is that a likely explanation of the different health outcomes is racism, and therefore unfair discrimination. (2) Second, BAME communities have poorer socioeconomic circumstances which lead to poorer health outcomes. To the extent that these disadvantages are the result of unfair social circumstances, they constitute a further inequity. The policy response may have exacerbated this inequality on account that some of the health services temporarily displaced (cancer treatment¹ and mental health services) are mostly needed by lower socioeconomic groups (see Love-Koh *et al*¹¹) and by BAME communities. In the next section we propose

¹There is also evidence that the BAME communities in the UK relied the most on cancer treatment as they are at higher risks of developing advanced cancers and have poorer survival rates compared with the white British.²¹

that introducing cost–equity analysis in the future has the potential to correct for this unfair discrimination and prevent further disadvantage.

HOW SHOULD WE MOVE FORWARD?

We need a very good reason to justify a reduction in population health. One such reason, we suggest, is that it is sometimes permissible to sacrifice the value of maximising health in order to uphold other values, that is, justice. We cannot ignore that the members of the BAME communities are already systematically disvalued in our society and thus ‘an adequate engagement with health equity also requires that the considerations of health be integrated with broader issues of social justice and overall equity’.²² Therefore, we propose that measures aimed at improving health in general should be implemented such that they always benefit the most the worse-off groups of society in a way which compensates for their unfair disadvantage.

How can we then aim at reducing health inequities between groups and still incorporate cost-effectiveness principles? We suggest that the government should move to adopt a cost–equity analysis, where equity weights on health can be introduced to give some priority in our policies to vulnerable groups. This in effect would translate to accepting a higher threshold for interventions which directly impact the health of the BAME communities.

One difficulty is how much priority can and should be given to reducing unjust health inequalities. How much more weight should we place on an additional unit of health gain if we are to make good the balance of health inequality between social groups?²³ We suggest that, given that the question is how to allocate resources from a publicly funded system, the answer may need to incorporate the view of the general public.²³ There is a lot of support in the empirical literature for the claim that people do care about health inequalities.^{10 23} We need to know whether people would prioritise patients from vulnerable groups and, above all, to what extent the citizenry is willing to redirect NHS resources from highly cost-effective treatments to those which will reduce the most health inequities.

CONCLUSION

BAME communities already suffer from poorer health in everyday medical contexts through no fault of their own. What this crisis has shown is that they are also the ones most vulnerable during exceptional medical emergencies. However, these two things are not independent. Their poor health during normal conditions, which has its roots in unfair social disadvantage, puts them at high-risk during pandemics. The existence of health inequalities therefore gives us additional reasons to care about redressing social injustices. We need to correct for this unjustified inequality by introducing a type of cost-effectiveness analysis which takes equity into account.

The solution is not to ignore the rule of opportunity cost. If we want to protect the BAME communities in the future and thus reduce health disparities between social groups, the government should consider and make explicit the displaced treatments and programmes. They should make sure they do not disinvest from the very activities that promote the health of the BAME communities, as already acknowledged by PHE: ‘Local and national policy initiatives will need to be sensitive to BAME

communities to ensure existing health and economic inequalities are not widened due to the extraordinary measures taken during the pandemic’.¹⁷

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REFERENCES

- 1 NHS shutdown risks thousands of deaths in Covid-19 second wave. Available: <https://www.theguardian.com/world/2020/aug/06/nhs-shutdown-risks-thousands-of-deaths-in-covid-19-second-wave>
- 2 Psychiatrists see alarming rise in patients needing urgent and emergency care and forecast a ‘tsunami’ of mental illness. Available: <https://www.rcpsych.ac.uk/news-and-features/latest-news/detail/2020/05/15/psychiatrists-see-alarming-rise-in-patients-needing-urgent-and-emergency-care>
- 3 A record of the letter. Available: <https://www.psychologycounts.com>
- 4 Appel JM. Who gets a ventilator? Thinking through the ethics of a coronavirus conundrum. Available: <https://www.nydailynews.com/opinion/ny-oped-who-gets-a-ventilator-20200402-udmtwyk3sze2fp6fp7p7sn2ka-story.html>
- 5 Mannelli C. Whose life to save? scarce resources allocation in the COVID-19 outbreak. *J Med Ethics* 2020;46(6):364–6.
- 6 Appel JM. Don’t make doctors play God. Available: <https://www.nj.com/opinion/2020/04/dr-appel-dont-make-doctors-play-god.html>
- 7 Cookson R, McCabe C, Tsuchiya A. Public healthcare resource allocation and the rule of rescue. *J Med Ethics* 2008;34(7):540–4.
- 8 The price of life Documentary. Available: <https://vimeo.com/4796803>
- 9 Orr S, Wolff J. Reconciling cost-effectiveness with the rule of rescue: the institutional division of moral labour. *Theory Decis* 2015;78(4):525–38.
- 10 Nord E. *Cost-value analysis in health care: making sense out of QALYs*. Cambridge University Press, 1999.
- 11 Love-Koh J, Cookson R, Claxton K, et al. Estimating social variation in the health effects of changes in health care expenditure. *Med Decis Making* 2020;40(2):170–82.
- 12 Claxton K, Sculpher M, Palmer S, et al. Causes for concern: is NICE failing to uphold its responsibilities to all NHS patients? *Health Econ* 2015;24(1):1–7.
- 13 Coronavirus: public spending on crisis soars to £190bn. Available: <https://www.bbc.co.uk/news/business-53342271>
- 14 Matt Hancock wants to use NHS testing system to fight flu after Covid. Available: <https://www.theguardian.com/world/2020/nov/24/matt-hancock-wants-to-use-nhs-testing-system-to-fight-flu-after-covid>
- 15 Asaria M, Griffin S, Cookson R. Distributional cost-effectiveness analysis: a tutorial. *Med Decis Making* 2016;36(1):8–19.
- 16 The National Institute for Health and Care Excellence. Social value judgements: principles for the development of NICE guidance: National Institute for health and clinical excellence 2008.
- 17 Public Health England. Beyond the data: understanding the impact of COVID-19 on BAME groups 2020.
- 18 Asaria M, Ali S, Doran T, et al. How a universal health system reduces inequalities: lessons from England. *J Epidemiol Community Health* 2016;70(7):637–43.
- 19 Marmot M, Allen J, Goldblatt P, et al. *Healthy lives: the Marmot review: strategic review of health inequalities in England post-2010*. 2010. London: Department of International Development, 2019.
- 20 McManus S, Bebbington P, Jenkins R, et al. Mental health and wellbeing in England: the adult psychiatric morbidity survey 2014: NHS digital 2016.
- 21 Forman D. *Cancer incidence and survival by major ethnic group, England, 2002–2006*. London: National Cancer Intelligence Network, 2009.
- 22 Sen A. Why health equity? *Health Econ* 2002;11(8):659–66.
- 23 Brazier J, Ratcliffe J, Salomon J, et al. *Measuring and valuing health benefits for economic evaluation*. OXFORD university press, 2017.