Public health priority setting: A case for priority to the worse off in well-being during the COVID-19 pandemic

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In Norway, priority for health interventions is assigned on the basis of three official criteria: health benefit, resources, and severity. Responses to the COVID-19 pandemic have mainly happened through intersectoral public health efforts such as lockdowns, quarantines, information campaigns, social distancing and, more recently, vaccine distribution. The aim of this article is to evaluate potential priority setting criteria for public health interventions. We argue in favour of the following three criteria for public health priority setting: benefit, resources and improving the well-being of the worse off. We argue that benefits and priority to the worse off may reasonably be understood in terms of individual well-being, rather than only health, for public health priority setting. We argue that lessons from the COVID-19 pandemic support our conclusions.

Keywords: COVID-19, Prioritarianism, Priority Setting, Public Health, Severity

Introduction

The COVID-19 pandemic has strained health care systems worldwide. As of November 2021, there have been more than 240 million confirmed cases, and the number of deaths attributed to the SARS-CoV-2 virus has exceeded five million (WHO 2021). Unchecked, the pandemic would have claimed an even greater number of lives throughout the world. In Norway, as in many other countries, preventing the uncontrolled spread of the virus has been prioritised by adopting extensive preventive measures. These preventive measures have significantly impacted the *well-being* of individuals whose lives have been restrained. By

individual well-being, we broadly mean what is non-instrumentally or intrinsically good for that individual. We may say that health is a constituent of individual well-being, and nevertheless argue that health is not everything that matters for an individual's well-being (Crisp 2021).[1] In this understanding, well-being is broader than health. At least temporarily, the pandemic preventive measures have also negatively impacted the world economy with further consequences for individual well-being.

The official Norwegian guidelines for priority setting state that priority for health interventions shall be assigned according to three criteria: *health benefit, resources,* and *severity*. During the pandemic, Norwegian hospitals have been instructed to follow the same guidelines for priority setting as before (Norwegian Directorate of Health 2020). Arguably, however, the primary mechanism to mitigate health loss in the Norwegian population has been the prevention of viral spread through extensive infection control measures rather than the treatment of cases within the health care system. As such, many elements of the Norwegian pandemic response have been non-pharmaceutical interventions at the population level, e.g., lockdowns, quarantine, testing, and mask mandates. These interventions can reasonably be defined as public health interventions. We will further argue that the coronavirus immunisation programme should be ranked alongside other public health interventions. However, it is not clear whether the three official Norwegian priority setting criteria can be straightforwardly adapted to inform policy in the context of the COVID-19 pandemic and other public health interventions. Clear criteria for the ranking of public health interventions will aid decision-makers in allocating resources for public health in general as well as in the face of a new pandemic in the future.

The aim of this article is to evaluate potential priority setting criteria for public health interventions. We begin by introducing the Norwegian discourse on priority setting in health care. We argue that there are relevant differences between public health and conventional priority setting that speak against excluding non-health benefits and burdens in public health. Specifically, the opportunity costs of public health interventions speak in favour of including other contributors to individual well-being as well as health. Furthermore, the nature of certain public health interventions—such as lockdowns in the face of a pandemic—raises salient questions of distributive justice that pertain not only to health. We then argue that epidemiological knowledge on social inequalities in health speak in favour of assigning priority to the socially disadvantaged. In sum, we argue in favour of a broader measure of well-being than only health in the ranking of public health interventions. We argue in favour of the following three criteria for public health priority setting: benefit, resources, and priority to the worse-off groups in terms of individual well-being.[2] Our proposed criteria follow the same underlying logic as the current three Norwegian priority setting criteria but with two important modifications: first, that benefits should be measured in terms of their effect on *individual well-being*, not only in terms of health benefits. Second, interventions that improve the well-being of the worse-off groups should have higher priority.

Priority setting in Norway

Priority setting can be defined as "the ranking of interventions with respect to obtaining resources for implementation" (Ottersen 2013a: 8). Norway has a

relatively long tradition of such priority setting in health. The official Norwegian guidelines for priority setting are currently based on the following three criteria: *health benefit, resources,* and *severity* (Meld. St. 34 2015–2016 a–b; Ottersen and others 2016; Barra and others 2020; Meld. St. 38 2020–2021). First, according to the health benefit criterion, higher priority is given to interventions with a higher expected benefit. Second, according to the resource criterion, higher priority is given to interventions that require fewer resources. Third, according to the severity criterion, higher priority is given to interventions that target more severe conditions. All three criteria are meant to be evaluated together when deciding on which new treatments should be offered through the publicly financed Norwegian health system or in assigning priority between different treatments and health interventions. The result is a severity-weighted cost-effectiveness strategy.

In specialist health care services, the benefit is usually measured by some proxy for health gains.[3] The most widely used measure of health benefits in the current health economics literature is the *quality-adjusted life year* (*QALY*). This measure assigns a value to time spent alive according to health status (Weinstein, Torrance, and McGuire 2009). The Norwegian Directorate of Health recommends the use of QALYs as the measure of effectiveness when seeking recognition of new methods and interventions into the Norwegian publicly financed universal health coverage system (2012: 5). However, in principle, other measures may be used to evaluate health outcomes.[4]

The three priority setting criteria have gathered wide acceptance in the Norwegian priority setting debate, and the underlying logic seems easy to follow: we have reason to care about maximising population health, and the ranking of interventions according to decreasing cost-effectiveness should, in theory, lead to the most effective use of finite resources. However, the health maximising principle is modified with a principle that claims it matters more to improve the health of those with more severe illness first.

The concept of "severity" has different connotations in the international priority setting discourse. Appeals to fairness, equity, urgency, dignity, compassion, and the alleviation of suffering have all been made in defence of a severity criterion (Barra and others 2020; for a critique, see Hausman 2019). Thus, both non-utilitarian and non-consequentialist claims are made. In Norway, as of 2021, severity is operationalised on the group level as *absolute (QALY) shortfall*: the more future healthy life-years (measured in QALYs) a patient can expect to lose due to a health condition, the more severe that condition is considered. Consequently, policy-makers have adopted a higher cost-effectiveness threshold for each additional healthy life-year gained by treatments targeting higher severity conditions. Examples of conditions with high absolute QALY shortfall include childhood deafness and rheumatoid arthritis (Lindemark, Norheim and Johansson 2014).

The three current Norwegian priority setting criteria are meant to maximise healthy life-years, aggregated over the population, but with a trade-off between maximisation and a perceived need to alleviate particularly severe individual losses first. This severity alleviation could be said to offer a fairer distribution of healthy life years, which conforms with a prioritarian principle to improve the health of the worse off.

However, an important point to note is that the QALY's main use is for *incremental cost-effectiveness ratio (ICER)*-based cost-utility analyses (CUA), i.e., a context where all resources are *health* resources and where all benefits are *health* benefits.[5] As such, the model purposefully neglects non-health related aspects of well-being. Slightly simplified, the current QALY-based cost-effectiveness paradigm assumes a fixed health budget within which health benefits, and only health benefits, should be maximised. It is, however, arguable whether the QALY serves as the best measure of *benefits* and *severity* in public health generally and during the COVID-19 pandemic.

Public health priority setting

What exactly is public health? Several definitions exist. The Norwegian public health act defines public health as "society's effort to affect factors that directly or indirectly promote the health and well-being of the population, prevent mental and somatic illness, injury or suffering, or that protect against threats to health, as well as aiming for a more even distribution of factors that directly or indirectly affect health" (Lovdata 2021). The World Health Organization defines public health as "the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society" (Acheson 1988; WHO 2015). Nevertheless, no singular definition of a public health *intervention* has gained widespread adoption in the literature. Cyr, Jain, Chalkidou, Ottersen and Gopinathan (2021) define an intervention as "an act performed for, with or on behalf of a person or population whose purpose is to assess, improve, maintain, promote or modify health, functioning or health conditions". Using this definition of an intervention together with the abovementioned definition of public health, we have a fairly broad definition of public health interventions. Classic examples of public health interventions are information campaigns against behaviours with a negative health impact and immunisation programmes to prevent communicable diseases.

During the COVID-19 pandemic, lockdowns, quarantines, restrictions on social and other activities, as well as the distribution of personal protective equipment, have been important measures to reduce population health loss.[6] These measures reasonably fall within the scope of public health. In the absence of effective vaccines, extensive public health efforts such as lockdowns would likely have been warranted for several years in order to reduce substantial health loss and further disruption to the economy.[7]

The distribution of vaccines is also typically considered a public health intervention, though its demarcation from other pharmaceutical interventions may be less clear. The vaccination programme both aims to prevent health loss in individuals as they become vaccinated as well as to reduce the need for other costly public health interventions by reaching herd immunity. Herd immunity, however, is a *public good*. One goal of reaching herd immunity is that most or all other preventive measures against the virus can be discontinued. It is thus reasonable to include the vaccination programme in the ranking of public health interventions.

Furthermore, priority setting can take place on micro, meso and macro levels (Kapiriri, Norheim and Douglas 2007). On the micro or bedside level, decision-makers are usually concerned with identified individuals and manifested disease. At this micro level, most ethical theories apply. That is to say, deontology, virtue

ethics, as well as proximity ethics may play important roles in the moral reasoning of decision-makers. Such ethical theories are prominent in traditional clinical ethics, which often draws on obligations of respect, beneficence and non-maleficence toward identified individuals. The Norwegian white paper on priority setting furthermore provides guidance for decision-makers on the micro level to define who should have priority for treatment with a textual definition of severity.[8] However, public health implies decision-making on the macro level, where comparison to group-level priority setting is more relevant than comparisons to the individual level. The beneficiaries of public health interventions are no longer identified patients but unidentified statistical individuals in the population (Cohen, Daniels and Eyal 2015). The absence of identified individuals as recipients furthermore suggests that certain ethical theories, specifically those grounded in the consequentialist or contractarian traditions (Cudd and Eftekhari 2018; Sinnott-Armstrong 2019), may be more plausible on the macro level of decision-making. One such theory, which has been defended on both consequentialist and contractualist grounds, is *prioritarianism*: the view that benefits matter more, morally speaking, the worse off their recipient is (Parfit 2012; Segall 2015; Nielsen 2021).

We now proceed to explore relevant differences between Norwegian conventional priority setting and the ranking of public health interventions in Norway. Of course, even if our case study includes analogous reasoning for priority setting in Norway, aspects of these discussions will be of generic value to public health priority setting in other countries that are relevantly similar to Norway. This would especially include high-income countries with a large share of public health care. We argue that the opportunity cost of public health interventions speaks in favour of adopting a broader definition of benefits than only health. Secondly, epidemiological knowledge of social inequalities in health also speaks in favour of defining the worse off in broader terms than only in terms of health. We argue that this broader definition of benefits and priority to the worse off should be *individual well-being*.

The opportunity cost of public health interventions

How should we account for the resources that go towards public health interventions? Conventional priority setting in health typically occurs *within* the health care sector, drawing on resources pre-allocated for health care. Although the actual resources are nurse hours, pharmaceuticals, hospital beds and so forth, these can all be measured by their costs. The (conventional) assumption in health economics is that (most) opportunity costs can be reasonably measured by QALYs forgone (Bognar and Hirose 2014). In this context, an ICER-based cost-effectiveness analysis will provide sound guidance for setting priorities: if all relevant benefits are QALYs, and if all QALY-generating interventions can be assigned a monetary cost, then consistently choosing the interventions with the best ICERs will ensure that when resources are depleted, QALY-gain is maximised[9]. A typical example of a priority setting decision in health is adopting a new cancer drug into the specialist health care services. In this case, all costs (resources) will be accounted for in the health budget. The domain of the benefits aligns with the domain of the costs.

For many public health interventions, however, resources are typically drawn from several sectors of the economy. An effort to increase physical activity through

increased cycling will typically involve funds allocated to the transport sector. Costs for public health interventions thus reduce the amount of resources left for other purposes unrelated to health. Notably, many of the resources that go into public health interventions will be deflected by non-health uses, and QALYs may not reflect the opportunity cost very well. The resources that go into public health interventions are thus more diverse and intersectoral than those within the health care system. For evaluations of public health interventions, it appears morally relevant to include costs that are not reflected in the health budget.

The pandemic has further shown that, in some cases, costs are also non-pecuniary or challenging to quantify in terms of monetary cost. The pandemic response has placed significant direct, non-health burdens on individuals and communities in terms of restricted opportunities for travel, social interaction and financial stability. These costs should be accounted for and taken into consideration in decision-making during a pandemic or similar context. Furthermore, these non-health burdens do not always impact the same individuals who stand to achieve a health gain. Younger individuals and others at low risk of a severe course of COVID-19 have forgone significant social and non-health benefits in order to protect the health of the elderly and others at risk. This makes salient the question of how to distribute burdens and benefits fairly in the population. Some form of common denominator with a broader scope than only health seems warranted.

The case for including non-health resources implies that the opportunity costs are not well captured in terms of QALYs but span the full range of contributors to individuals' overall well-being. For many public health interventions, either a monetary equivalent of non-health opportunity costs should be included when accounting for the resource use, or a more comprehensive measure for benefit, like overall *well-being*, should be used to measure net benefit.[10]

Priority to the worse off in public health

Recall that Norwegian priorities for health are operationalised as severity-weighted cost-effectiveness. Priority is given to more cost-effective interventions, with higher priority to interventions targeting more severe conditions.

At the group level, severity is operationalised as absolute QALY shortfall. It is questionable whether the absolute QALY shortfall approach is ideal to determine who should have higher priority in public health. First, absolute QALY shortfall is disease-specific, whereas it seems relevant to account for all factors that affect individuals' health for public health priority setting. Second, as we have argued above, there are compelling reasons to account for overall well-being, and not only QALYs, in determining priority for public health interventions.

Furthermore, we believe priority to the worse off in public health should account for social inequalities in health and the correlation between social disadvantage and health loss (Marmot 2005, 2015). The correlation between social disadvantage and health deficiency has gained increased attention also among moral and political philosophers as a question of justice (Daniels 2008; Preda and Voigt 2015). During the COVID-19 pandemic, some people have clearly been made worse off than others in terms of well-being, if not in health. A strong case that socially disadvantaged groups have been more severely affected by the pandemic has been advanced (Nielsen 2021; Schmidt 2021). Failure to account for social inequality in pandemic preparedness planning may worsen already existing,

objectionable inequalities (Mamelund and Dimka 2021). From an international perspective, it is feared that the combined effects of lockdowns and economic disruption could obliterate important gains in terms of poverty reduction and lifespan, worsening the quality of life in affected countries and widening income inequality (Norheim and others 2021).

On average, socially disadvantaged groups live in more crowded areas, with fewer opportunities to avoid viral exposure. Many have frontline jobs with fewer opportunities to work from home. Due to the correlation between social disadvantage and health, socially disadvantaged groups are more likely to suffer health loss from COVID-19. Alongside age, suffering from underlying conditions is a major risk factor of a severe or deadly course of COVID-19 (CDC 2021). Furthermore, financial instability and economic downturn following the pandemic plausibly has worse effects on those who have little from before.

Another point to note is that public health efforts are typically long-term and may affect individuals' health over their entire lifespan. This may speak in favour of a lifetime view of being worse off in public health (see also Adler 2011, Ottersen 2013b and Sharp and Millum 2018 for further argument in favour of lifetime views in priority setting). Granted, the immediate nature of a pandemic compared to the long-term perspective of other public health interventions may yield different ethical considerations in this regard (e.g., should vaccines and lockdown measures be distributed in order to compensate for skewed lifetime distributions or to alleviate those who are worse off right now and in the immediate future?). Whether lifetimes, present worse-off-ness or future shortfalls constitute the best understanding of the worse off is, however, beyond the scope of this article. Our point remains that we believe the best indicator to evaluate who are the worse-off groups for public health is individual well-being. This conforms with the language of the Norwegian Public Health Act, which explicitly aims to reduce social inequalities in health. Furthermore, it incorporates a core intuition behind the severity criterion—priority to the worse off—in a way that is applicable for public health priority setting.

Conclusion

In this article, we have evaluated potential priority setting criteria for public health interventions. We have argued that priority setting criteria for public health may draw on the same moral reasoning as the current three Norwegian criteria of health benefit, resources, and severity, but with important modifications: there are compelling reasons to account for interventions' impact on individual well-being, not only health, when assigning priority for public health interventions. We have further argued in favour of giving higher priority to interventions that benefit the worse off groups in terms of individual well-being. We have argued that lessons from the COVID-19 pandemic support our conclusions.

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Notes

[1] How to define individual well-being remains a hot topic in the philosophical discourse. *Hedonism*, *desire satisfaction*, and *objective list* theories are the most widely advocated in the philosophical literature. However, our conclusions do not hinge on any specific theory of well-being.

[2] *Cf.* Norheim (2018).

[3] Norway offers its citizens publicly financed universal health coverage for most medical and care services. Services are predominantly provided by two different public sectors: a primary health care sector and a specialised health care sector. In addition, numerous private health providers offer services for point-of-care payment, insurance-based services, and services remunerated by the public system for certain services.

[4] Such health measures could be general or specific reductions in morbidity and/or mortality, *disability-adjusted life years* (DALYs) averted, or deaths averted.

[5] More succinctly, QALY-based CUA is appropriate only if either all opportunity costs are measurable as QALYs or if the cost-effectiveness threshold is estimated so that the opportunity cost reflects societal value more broadly.

[6] This is especially true in Norway, where infection rates have been relatively low, and the epidemic has been largely under control; in other countries with significantly higher infection rates, allocation decisions for treatments such as ventilators have had higher importance.

[7] Holden and others 2020, for example, calculated the costs of recurrent lockdowns into 2024 in their first report.

[8] "Those at high risk of death or loss of function, degree of physical or mental loss of function, and pain, physical or mental distress. Both the present situation, duration and loss of future life years are of importance. The degree of severity increases the more urgently help is needed" (authors' translation; Magnussen and others 2015: 3; Meld. St. 34 2015–2016: 95).

[9] In practice, Norway has unofficial threshold values for ICERs. These were originally set to reflect the perceived threshold for when spending more money per QALY would displace more than one QALY elsewhere in the system.

[10] That is, when deciding whether to prioritise, say, lockdown of schools to inhibit transmissions versus keeping them open, either a monetary value on the total negative impact of this intervention on well-being should be added to the intervention's costs if relying on CEA-methodology, or CBA or CEA with well-being as the benefit measure should be employed.

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