

## ***Approaches to critical care resource allocation and triage during the COVID-19 pandemic: an examination from a developing world perspective***

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### ***Introduction***

The distribution of scarce critical care resources during public health emergencies in an ethically justified manner has been widely acknowledged as a major bioethics concern (1, 2). The Center for Disease Control (CDC) recommends that critical care allocation during a pandemic emergency should uphold basic biomedical principles through maintenance of procedural justice which requires decision-making that is consistent, impartial, neutral, and nondiscriminatory (3).

During the current COVID-19 pandemic, health systems, even in developed countries with robust existing health infrastructure, have experienced sustained demands that have compelled the rationing of critical medical infrastructure, especially ventilators and intensive care beds (4, 5). Conventionally, triage prioritizes medical utility by sorting and allocating the limited available care to patients based on their disease severity and favoring those whom the critical care intervention would give the highest survival chances (6, 7). During a public health emergency such as a pandemic, the overarching utilitarian goal of achieving the greatest good for the greatest number usually attains paramountcy. This dominant mainstream ethical view unequivocally advocates maximizing medical outcomes in terms of either lives saved or life-years gained when allocating scarce medical resources during pandemics (8, 9). Equity considerations and unresolved concerns pertaining to social justice are usually deemed secondary and may be disregarded, especially when in conflict with the utility view. However, Reid has strongly emphasized the need to firmly integrate justice-related concerns in resource allocation by elevating the ideals related to egalitarianism, non-discrimination and social justice (10).

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A survey of literature also reveals that in this confrontation between utilitarian and egalitarian strategies, triage management protocols during pandemics usually shun references to controversial concepts related to social utility (11), except for the limited application of instrumental value (1).

Nevertheless, existing ethical approaches in resolving the ethical conflicts pertaining to critical care resource allocation scenarios during the COVID-19 pandemic are predominantly derived from experiences in developed countries with their state of the art health systems, high doctor-to-population ratio, improved social determinants of health, and reduced income inequalities (12, 13). In contrast, several developing countries frequently experience a shortage of ventilators and rudimentary critical care resources with further worsening of the situation due to the heightened demand resulting from a surge in cases during public health emergencies (14). Consequently, we argue that resolving the ethical conflicts related to pandemic triage by applying existing ethical paradigms in the resource-constrained settings of the developing world is ineffectual in facilitating ethically sound decision-making. Furthermore, the incorporation of alternative pragmatic approaches in achieving ethical propriety may be preferable to advancing universal paradigms lacking consensus and feasibility.

#### ***The Disadvantages of Prioritizing the Utilitarian Approach over Pandemic Triage***

Ethicists mostly reject the first-come, first-served basis of allocating intensive care resources during a pandemic since it would

compromise the tenets of both utilitarianism and equity (10, 15). For instance, patients with better awareness, social influence, and preexisting health insurance in countries where it is not universal or mandatory have better opportunities of obtaining early access to critical care if needed. The greater the social and economic disparities are in a society, the more acute the health inequity and the resultant discrimination in pursuing such an approach towards resource allocation will be.

The fundamental principles guiding allocation decisions through a utilitarian approach involve maximizing benefits by either: (i) saving the most lives by advancing care to the worst-off or (ii) saving the most life-years by allocation of critical care to relatively younger patients or those having better prognosis with higher chances of survival (1, 4). Moreover, some countries have constituted triage committees to promote unbiased and collective decision-making in the process of critical care allocation to patients (16).

The primary threat in implementing a utilitarian approach during pandemic triage is when treatment prioritization based on measurement of objective medical criteria such as the Sequential Organ Failure Assessment (SOFA) score or the Clinical Frailty Scale (CFS) yield a tied prognostic score. Moreover, when multiple patient scores are clustered in a narrow range, they may not vary sufficiently to permit differentiation among the patients requiring critical care but having a similar chance of recovery. Furthermore, in developing

countries with limited health infrastructure and poorer health indicators, there exists a higher probability of such emergent situations when insufficient medical evidence would preclude the implementation of triage by overriding the individual's right to autonomy and equal treatment (6, 10).

Several months into the COVID-19 pandemic, there is a lack of universal consensus among experts regarding the preferred approach when two patients are likely to benefit equally from scarce medical interventions. Higher age as a tie-breaker criterion for triage during the COVID-19 pandemic has been advanced previously by applying the 'fair innings' argument based on life-cycle considerations which elevates the goal of enabling individuals with an equal opportunity to traverse the various stages of life, irrespective of their social utility (1, 17).

Moreover, early in the pandemic, when health systems were overwhelmed in some European countries, especially Italy, younger patients were favored over the elderly in receiving lifesaving treatment, considering their higher likelihood of survival (18). However, use of any arbitrary age-limit to withhold emergency treatment is often discriminatory both in principle and practice (19). Advanced age can also reduce the discriminant ability of emergency triage systems, causing the misclassification of patients into triage categories (20). Furthermore, there is growing recognition that comorbidities (and not age alone) are an independent predictor of adverse outcomes and mortality in COVID-19 cases.

Consequently, despite advancing consideration for younger patients, most of the global guidelines for pandemic triage caution against age-discrimination and favor assessing long-term prognosis for determining triage categories (21).

In several developing countries, the applicability of age as a triage criterion has been further flawed due to the inverse population pyramid wherein the elderly constitute a smaller proportion of the population compared to that in the developed world (22). Consequently, a large proportion of those affected by COVID-19 in developing countries comprise a relatively younger population (23), and age would be a less significant consideration in resolving the allocation dilemmas. Although chronic illnesses like diabetes and hypertension generally signify poor prognosis in COVID-19 cases, nearly 80% of the global burden of these diseases is concentrated in lower middle-income countries (24), increasing the likelihood of having multiple patients with a similar morbidity profile.

Under such circumstances, when triage based on the medical utility approach is not feasible, the lottery (ballot) method is usually considered a reasonably egalitarian and fair selection process (25) whose execution is efficient in terms of time and other resources. Moreover, Beauchamp and Childress also assert that the lottery method is likely to be more acceptable than other methods based on social worthiness, even for those not selected for treatment (26). However, this theory lacks empirical validation and assumes that

patients and their relatives searching for lifesaving care will rationally accept triage based on chance nonchalantly without having any misgivings about the process (27, 28).

However, the operational feasibility of implementing the randomized lottery method of triage during a pandemic situation, particularly in those societies experiencing protracted social conflicts based on race, ethnic, religious or political ideologies that fuel distrust amongst citizens, is yet to be ascertained. Furthermore, in corruption-ridden societies lacking transparency, the bypassed patients and their families may be unwilling to repose their faith in an ostensible 'fair' lottery system during a life or death situation. Governments and administrations should strive to promote transparency and demonstrate responsiveness to enable building trust within communities to facilitate triage through the lottery method whenever required. However, realizing these goals in a critical time-bound manner during an ongoing pandemic is a difficult proposition as it requires a long-term focus.

### ***The Disadvantages of Prioritizing Equitable Approaches over Pandemic Triage***

An equitable approach to pandemic triage seeks to provide a fair and just but not necessarily equal opportunity for access to lifesaving care (9, 29). An individual's socioeconomic status (SES) is linked to the extent of their risk of contracting the infection during a pandemic. Socioeconomically affluent individuals can insulate themselves from the risks of getting infected with COVID-19 by staying at home and living on their savings, working from home, traveling

in their personal vehicles, using medical-grade protective masks, and maintaining social distancing in spacious homes. Therefore, socioeconomically disadvantaged individuals would have a higher risk of contracting COVID-19 due to the preexisting suboptimal social determinants related to their living environments, workplace employment, transport and poor nutrition. In the context of developing countries with large impoverished populations, a majority may experience adverse social determinants that increase their vulnerability to COVID-19 (30).

To resolve the moral dilemmas stemming from the underlying social inequalities and promoting an equitable pandemic response, Reid (2020) has proposed balancing solutions for inculcating considerations of social justice and affirmative action in the scoring criteria for pandemic critical care triage protocols (10). Nevertheless, objective and valid data to truly differentiate patients as per their socioeconomic class or health inequities may be lacking. Even if such data can be obtained, their application for pandemic triage management could stoke ethnic conflicts and intensify social fault lines in heterogeneous societies lacking social trust. Moreover, in a pandemic situation, instances of unavoidable infections that can be attributed to an individual's underlying social determinants are mostly un-differentiable from avoidable infections resulting from their non-adherence to preventive measures.

Certain social determinants, especially limited accessibility to intensive care among populations living in rural, remote, and

underserved areas (like urban slums), represent a potentially insurmountable challenge in the absence of creating new health facilities. In countries with a dual public and private health system, access to the latter usually requires individuals to incur either steep out-of-pocket expenses or private insurance. A forcible takeover of private facilities by the government and distributing these resources in accordance with social justice norms may be unjustified since it involves trusting the government to achieve the goal of universal health coverage within days, which is what it has failed to do in years, probably since its inception. Moreover, such decisions may prevent people from availing themselves of their private health insurance for health access during a public health emergency, a violation of fair contract. Finally, ensuring sustainable operations of private healthcare facilities may not be viable below an economic threshold (31).

### ***A Place for Social Utility? Prospects and Threats***

According to the utilitarian theory, social utility is a measure of an individual's usefulness determined based on an interval scale with the potential for interpersonal comparisons (11). The concept of social utility encompasses both social value and social worth. Social value refers to the instrumental quality of performing essential tasks and maintaining services that benefit the society by saving and sustaining lives and thus preserving social harmony. Prioritizing health allocation for the individuals involved in fulfilling these key societal activities

especially in case of healthcare workers (HCWs) fulfills reciprocity-based obligations, but may also conflict with their duty to treat patients (32). However, the ethical dilemma in protecting HCWs confronted between balancing the duty towards self and serving their patients can be countered by considering their social instrumental value in protecting several other lives in a multiplier effect (1, 11).

So far, recognizing instrumental social value as a factor in triage assessment during a pandemic has been usually restricted to healthcare workers. Moreover, using social value as the criterion for making allocation decisions has been criticized since it would prioritize the economically dominant over the economically marginalized as the former are likely to be linked with greater social productivity (33). Nevertheless, we find that such reasoning is unwarranted especially in developing countries since social value can be recognized in a substantial category of essential workers belonging to low socioeconomic backgrounds. These include agriculturalists, dairy workers, retail shop employees, and those involved in home delivery of essential goods and services, etc., who also happen to experience occupational hazards during the pandemic. Some of them, especially urban sanitation workers, often experience societal discrimination, and frequently operate without appropriate safety equipment (34), further aggravating their risk of contracting the infection. Therefore, in a pandemic, resource-allocation conundrums are complicated by competing claims from

individuals with higher occupational social value in modern societies where interdependence is the norm. Furthermore, quantifying the social value of an individual through their employment (and associated risks) that enables others to meet their life sustaining needs lacks a validated metric with wide acceptability.

Social worth refers to an individual's subjective or intrinsic worth inclusive of past service to their communities and also the objective or extrinsic worth informed by their existing social value which critically envisage their potential contribution towards rebuilding the post-pandemic society (11). Conventionally, the concept of social worth is considered controversial in deciding health allocation and triage issues since it conflicts with the principle of egalitarianism, which deems all individuals to have equal moral worth and an equal right to access lifesaving treatment. Accordingly, most ethicists shun the idea of social worth considerations influencing rationing and triage decisions even during a severe pandemic due to the apprehension of undermining an individual's dignity (3, 11). Moreover, factors influencing social worth, including social status, economic affluence and social influence, can determine access to scarce health resources in many developing countries (35), including the preferential or out of turn allotment of lifesaving treatment and intensive care hospital beds. Conversely, in these settings, those with lower social worth are likely to be unfairly deprived of lifesaving care, such as prisoners compelled to live in crowded prison environments, the majority of whom are

undertrials awaiting trial verdicts without having been convicted for their alleged crimes (36, 37).

We argue that in a resource scarce scenario during a pandemic among individuals with tied or nearly tied prognostic scores needing lifesaving treatment, allocation methods based on a social utility consideration may be more equitable and consistent with justice concerns compared to random allocations. Such an ethical framework would measure the social utility of an individual by recognizing both their social value and their extrinsic social worth, while being oblivious to their intrinsic social or moral worth. Considerations for assessment of higher extrinsic social worth could possibly include the beneficiary's potential role in rebuilding the society in a post-pandemic environment (11), accounting for the impact of the breadwinner's death on the family, or recognizing the long-term psychosocial impact of the death of an only child on a middle-aged couple (38). Previous surveys in developed western countries have also highlighted the willingness of people to prioritize healthcare allocations among patients who are caregivers of dependents in exclusion of other considerations related to their socioeconomic status (39 - 41).

Furthermore, the possibility that the triage decision that accounts for social utility is more acceptable than the one based on a lottery can only be definitively answered through empirical probing of all stakeholders on this delicate question of ethical propriety. This is because random allocation based on chance, which distributes events equally,

presupposes the absence of greater long-term societal good achievable through an alternative allocation paradigm based on social utility. There is also emerging evidence of the feasibility of ordinary groups of citizens making informed decisions on complex problems related to healthcare allocation (42). Furthermore, in Eastern and Asian societies the family's relational involvement in medical decision-making is more likely to be prioritized over individual decision-making compared to Western countries (43). Consequently, when resolving ethical dilemmas related to pandemic triage, western paradigms based on the atomist view favoring radical individualistic notions of the self may lack applicability in developing countries with vastly different family structures, morals, and cultural beliefs (44, 45).

### ***Conclusion***

The reconciliation of utilitarian and equitable approaches to pandemic triage through a universal ethical proposition for allocation of critical care health resources is ineffective in most of the developing world primarily due to their large population size/density, and limited pre-existing healthcare availability. In these settings, existing parameters for

triage assessment based on considerations of age, equity, restricted instrumental value, and social justice may be inadequate for achieving the goals of maximizing both medical and equitable outcomes. Implementing random intensive care allocation among multiple patients with an equal need and an equal chance of recovery is further complicated within a complex social milieu in heterogeneous societies with prevalent ethnic tensions and social distrust. Consequently, greater expansion of social utility considerations in critical care resource allocation during public health emergencies as a policy warrants further inquiry and consultation among diverse and credible stakeholders, especially in multiethnic societies. Public engagement to solicit the opinions of health professionals, public intellectuals, civil society activists, and representatives from the lay public would be necessary for making such life and death decisions further efficient, consistent, and just.

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### ***Conflict of interests***

The author declares no conflict of interest.

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