Ethical Analysis of Emergency Allocation Protocols and Their Impact on Vulnerable Populations

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Abstract

In this article, I will use conceptual analysis to examine theoretical frameworks in ethical scholarly works on resource allocation in healthcare crises such as the COVID-19 pandemic, namely utilitarian, egalitarian, and justice theories. By centering on the key concepts in these ethical frameworks (i.e., equality, greatest happiness, justice), I will submit to criticism current allocation methods such as the Sequential Organ Failure Assessment (SOFA) score. Specifically, I will explore the limitations of these methods concerning their failure to consider vulnerable populations, in particular African Americans. To conclude, by focusing on this population group, I will identify ethical principles that healthcare providers must consider in designing ethical allocation methods. **Keywords:** pandemic ethics, utilitarianism, resource allocation, egalitarianism, justice.

Introduction: Resource Allocation in Healthcare Emergency Situations

Resource allocation is crucial in a healthcare emergency where the demand for resources is greater than the available supply of resources. Despite numerous past healthcare emergencies, such as the influenza pandemic of 1918, healthcare providers in the United States lack a standardized protocol for fair and ethical resource allocation (Antommaria et al., 2020; Tabery & Mackett, 2008). Many studies have proposed different ideas for distributing scarce resources in an emergency, such as a triage review board, utilitarian-based triage, and egalitarian-based triage (Baker & Strosberg, 1992; Geale, 2012; Tabery and Mackett, 2008). However, these proposed solutions have various shortcomings. Among them is the failure to account for vulnerable populations, which become more at-risk during emergency situations due to lack of jobs, healthcare, and basic resources. Indeed, by failing to account for such populations, current allocation methods may exacerbate health disparities (Elbaum, 2020). To analyze this problem, I center here on African American individuals and communities, investigating ways in which they are at risk in health emergencies such as the COVID-19 pandemic and identifying ethically relevant aspects that healthcare providers must take into account to develop ethical resource allocation methods.

Demographic data shows that African Americans are overrepresented in coronavirus cases, deaths, or both (Elbaum, 2020). Numerous factors contribute to these statistics, including, but not limited to, systematic injustices, the high percentage of essential workers coming from African American communities, and the utilization of utilitarian resource allocation methods (Elbaum, 2020). For example, systematic injustices negatively affect African American communities' socioeconomic status, increasing their risk for chronic conditions and earlier death compared to their white counterparts (Elbaum, 2020). The preexisting chronic conditions that disproportionally affect African Americans make this population less likely to receive scarce resources under many current allocation methods used across the nation. In addition to being less likely to receive lifesaving resources, individuals in this population group are at a higher risk of contracting the virus due to their working "essential" jobs (i.e., any employment that remains open during the pandemic for in-person services) (Elbaum, 2020). The disproportionate number of African American "essential" workers have to choose between providing for their family or being protected from the virus (Elbaum, 2020). Thus, social justice advocates and public health experts argue that resource allocation methods must account for the differences between African American individuals and members of privileged population groups. They also must consider a resource allocation plan that prevents widening health disparities gaps in inevitable future global and national emergencies to come (Elbaum, 2020).

Over 50% of hospitals in the U.S. reported not having a triage policy, which has numerous negative consequences (Antommaria et al., 2020). Allocation protocols are crucial to respond to a healthcare emergency successfully. Even if manufacturers could eventually produce all needed lifesaving supplies (e.g., ventilators, personal protective equipment), this will take time, making allocation necessary until sufficient resources become available. Also, protocols relieve healthcare professionals of the tough decisions and psychological burden that accompany deciding which patients should receive lifesaving resources when the demand for these resources is much greater than the supply (Emmanuel et. al, 2020). Beyond the psychological burden that the lack of protocols places on medical professionals, the absence of objective and fair standardized allocation methods will likely exacerbate health disparities, for medical professionals' bias may affect allocation decisions. Additionally, many individuals from vulnerable communities lack trust in healthcare policies and professions (Vergano & Goba, 2020). One way to rebuild the trust that these individuals place in the healthcare system is to create transparent protocols that account for systematic injustice and disadvantage and fairly distribute scarce resources. [1]

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[1] Beyond finding a fair and ethical protocol to allocate resources, there needs to also be a protocol for taking resources away from a patient. Little has been done to determine when individuals should be removed from a ventilator, ICU bed, or other life-saving supplies. After extensive review of who should receive resources, it is also important to consider when to stop giving a person resources or remove an individual from a ventilator. One algorithm "suggest that we leave the question of whether and when to remove people from ventilators to [these] health care professionals" (Brambel, 2020, p. 113). It is illogical to follow a detailed allocation method and have no protocol to follow regarding decisions to remove someone from a ventilator, which is just as harder, if not harder, than deciding who should receive scarce resources in the first place. Many hospitals and healthcare facilities are for-profit businesses leaving room for unethical allocation decisions that may have ulterior monetary motives to be made when removing patients from resources if no protocol is put into place. This is something that should be addressed in future proposed allocation methods.

In this article, I proceed as follows. I first offer a definition of triage and analyze triage methods used in past emergency situations where the demand for resources was greater than the available supply of resources. Then, I identify three allocation frameworks that draw on ethical principles, namely utilitarian, egalitarian, and justice-based frameworks. Lastly, I examine limitations of each framework to highlight what to consider when designing a standardized allocation method for resource distribution during a healthcare crisis.

Triage in healthcare emergency

In the case of a healthcare emergency, numerous patients will need care simultaneously, which results in higher demands for resources than available. The lack of available resources forces healthcare professionals to triage. Triage is a means of allocation used to sort patients according to the urgency of their need for care (Geale, 2012). This allocation method prioritizes patients with less severe cases to free up resources quicker and attend patients with more severe cases who require care for a longer period. Under existing triage allocation methods, patients with more severe cases receive care last, if they do at all (Geale, 2012). Emergency triage and day-to-day triage (i.e., under non-emergency circumstances within a healthcare setting) significantly differ because the number of victims that need care increases drastically (Geale, 2012). In day-to-day triage, the sickest victims have priority to treatment and lifesaving supplies even if the likelihood of survival is low because fewer victims need care. This contrasts with emergency triage that prioritizes victims who receive treatment quickly to enable healthcare providers to treat more people (Geale, 2012).

Unforeseen emergencies are commonplace in U.S. history. The influenza pandemic of 1918 in Pittsburgh, at its peak, had roughly one new flu-related case every 90 seconds and one flu-related death every ten minutes (Tabery and Mackett, 2008, p. 114). Other influenza pandemics such as the A(H3N2) in 1968 and A(H2N2) in 1957 have also had significant public health implications (Tabery and Mackett, 2008, p. 114). During these emergencies, healthcare providers and experts implemented the Sequential Organ Failure Assessment (SOFA) score to triage scarce resources (Khan, Hulme, & Sherwood, 2009). SOFA scores are determined based on a patient's age, sex, premorbid conditions, presenting symptoms, organ system support, ventilated days, length of stay in intensive care unit, and mortality (Khan et al., 2009). Individuals with higher SOFA scores are considered worse off than individuals with lower SOFA scores, and these scores, in combination with medical judgment, guide resource distribution decisions (Khan et al., 2009).

Healthcare providers often justify using SOFA scores on utilitarian grounds, arguing that the scores produce maximum benefit for the greatest number of people when resources are limited (Khan, Hulme, & Sherwood, 2009). However, the SOFA method is not inherently utilitarian and can be applied in different ways aligned with other ethical principles. For example, if healthcare practitioners use the SOFA score to determine their patients' condition and prioritize the worst-off patients, they draw on egalitarian principles by not focusing on the greater good of all individuals but rather on individuals' needs. Similarly, if they use the score to give patients with equal scores access to the same resources, while patients with unequal scores receive different resources, they apply a justice-based approach to triage. In this case, individuals who are "equal" are treated equally by getting access to the same resources, and individuals who are unequal (have relevant differences such as differences in health) are treated unequally by getting access to different

resources. In sum, the SOFA score is simply a tool that healthcare providers can incorporate into their allocation methods.

Using the SOFA score to triage has shortcomings, including its limited practical reliability and success. Little evidence supports the "predictive validity" (e.g., the ability of the score to accurately predict the health and who would benefit the most from resources) of the score (McGuire et al., 2020). Although the score offers guidance when the scores among patients differ significantly, it provides limited information on how to allocate resources when patients have similar scores. Additionally, medical professionals must use the SOFA score in conjunction with clinical judgment, which opens the door for potential bias in allocation decisions (McGuire et al., 2020). This may widen existing health disparity gaps. In addition, the score can contribute to widening such gaps by failing to account for individuals who are disproportionately impacted by comorbid conditions and are at greater risk of dying during a health crisis. These shortcomings demonstrate the need to include ethical principles into triage (Khan et al., 2009; McGuire et al., 2020; Rubinson, Knebel, & Hick, 2010).

To address these shortcomings, the UPMC Triage Board proposed a triage review board (TRB), that is, a decision-making panel led by medical professionals and prominent community members such as chief medical officers, physicians, legal representatives, and business leaders.[2] The panel would not oversee every allocation decision but rather serve as an aid to track levels of scarce resources and provide communication between frontline staff and administration (Tabery and Mackett, 2008). The TRB would meet before, during, and after a pandemic. Pre-emergency meetings help the board better prepare hospitals and healthcare providers for unforeseen emergencies by addressing complaints and errors observed in past emergencies, continuously considering community feedback and overseeing triage processes (Tabery and Mackett, 2008). Post-emergency meetings allow the board to evaluate areas that need improvement and continuously find better ways to handle a crisis situation where scarce resources are in high demand. Another benefit of the TRB protocol is that it incorporates individuals from various disciplines, such as medicine, law, and business, bringing together the many dimensions that interact during healthcare emergencies or crises.

Despite the potential benefits of the TRB proposal, this allocation method encounters limitations. First, the panel could be biased if composed of primarily medical professionals and prominent community members, which poses the risk that financial and political agendas may affect medical decisions. Second, because the panel cannot and does not intend to oversee every individual allocation decision, individual physicians and medical professionals lack a protocol to guide deliberation (Tabery and Mackett, 2008). Leaving allocation decisions up to individual healthcare providers places the burden of making tough choices regarding which patients should receive scarce lifesaving supplies from medical professionals. Third, by only having prominent community representatives and medical professionals on the TRB, individuals from low-income

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[2] "[A] chief medical officer or vice president for medical affairs, a critical care physician, an emergency medical physician, an ethicist, a family care physician, an infectious control nurse, an infectious disease physician, a legal representative, public representatives (e.g., clergy, business leaders, representatives of underserved or vulnerable populations), a nurse administrator, a palliative care physician, and a pediatrician." (Tabery and Mackett, 2008, p. 117)

African American communities, who are often most affected during a healthcare crisis, may not have a voice within it, failing to be considered during resource distribution. Fourth, the TBR may be less likely to give resources to members from the communities above because of the presence of preexisting conditions, among other reasons, which could potentially exacerbate health disparities. The implementation of a TRB is a step forward. However, it must be used in conjunction with ethical principles that guide allocation decisions and help account for all morally relevant aspects.

Utilitarian Resource Allocation Methods

Bioethicists and public health experts who advocate for the inclusion of ethical principles in triage split into two sides, namely utilitarian and egalitarian (Geale, 2012). The former argue that triage should seek to produce the greatest amount of good for the largest number of people, for instance, by freeing up limited resources as quickly as possible (Baker & Strosberg, 1992). This method was favored during the World Wars. The quicker soldiers were treated, the sooner they could return to the battlefield (Geale, 2012). Beyond its use in warfare contexts, emergency triage for the general public may also be utilitarian. In the case of an emergency where resources are limited, a patient who requires a large number of resources may take resources from numerous patients who could be treated quicker. While this could save the more ill individual, it could also disadvantage the many less ill patients who can free up resources more quickly (Geale, 2012). Because triage is only required when the supply of resources does meet the demand, giving resources to one individual instead of many disadvantages a large number of people, which is why many accept the idea that emergency triage is inherently utilitarian (Geale, 2012).

Although utilitarianism has a positive goal of maximizing good, this means of triage has its limitations. First, nothing guarantees that one patient may use a resource for less time than another patient. For example, if a patient arrives at the hospital and appears relatively healthy, doctors may treat this patient first under the assumption that resources will be available again soon. However, doctors can hardly know how fast patients will recover. Take the following example. When a new strand of a virus, such as the coronavirus, first emerges, healthcare professionals know little to nothing about how contagious the virus is, what course of infection the virus causes, which ways can best prevent transmission of the virus, etc. This lack of knowledge makes it hard to determine what patients will free up limited resources the quickest. Additionally, healthcare providers can hardly predict who has the greatest chance of survival and who will produce the greatest amount of good for the greatest number of people. Take the case of two kids who contract coronavirus, one Caucasian from a family of high socioeconomic status and the other African American from a family with low socioeconomic status. From a utilitarian standpoint, the kid who will produce the greatest amount of good should receive the lifesaving supplies. The Caucasian child who has a plethora of resources available and parents with successful careers allegedly has the means to produce greater good than the African American child whose parents live paycheck to paycheck. However, nothing guarantees that this will be the case. Healthcare providers who encounter situations similar to this would be unable to ethically and objectively determine who should receive access to limited lifesaving supplies because they cannot foresee all possible future consequences. Moreover, this absence of knowledge about possible consequences opens the door for biased healthcare decisions that may disproportionally affect vulnerable populations. Basing resource allocation decisions on a prediction raises concerns regarding personal bias. Leaving these decisions to healthcare providers' "best predictive abilities" could significantly impact the

frequency that individuals from vulnerable populations, specifically African American individuals and communities, receive the scarce, potentially lifesaving, resources they need.

Egalitarian Resource Allocation Methods

Despite having limitations, many scholars still defend the utilitarian triage method as the best way to allocate resources in healthcare emergencies (Geale, 2012). However, Surgeon General Dr. Larrey challenged utilitarian triage methods and implemented a different method rooted in egalitarian ethical principles, which require that everyone in a society is treated equally (Baker & Strosberg, 1992). One way healthcare providers have applied this method is by prioritizing individuals who most need medical attention (e.g., those in the worst health condition) and postponing treating those with less severe injuries, regardless of their military rank or status (Baker & Strosberg, 1992). For example, an individual who is enlisted and a general will both be judged solely on their health condition and treated equally regardless of their rank. By requiring that all individuals are treated equally based on the severity of their health condition, egalitarian-based allocation methods overcome the limitation of their utilitarian counterparts concerning the effect of bias in clinical judgment. Furthermore, this egalitarian approach to triage eliminates the need to predict which patient will benefit the most if given access to scarce resources. Deciding who, between two patients, should receive scarce resources can place unfathomable burdens on healthcare providers, especially when faced with hard consequences such as patient death. By prioritizing the worst-off, healthcare providers will no longer face tough decisions related to the lack of grounds to evaluate which patients should receive care.

Egalitarianism also encounters limitations. Suppose the worst-off individuals always receive the resources they need. In this case, these individuals may still not survive due to their condition, and better-off individuals may also die because of the unavailability of lifesaving resources. (Baker & Strosberg, 1992). Another limitation of egalitarian's emphasis on treating all patients equally is the failure to consider that individuals in vulnerable communities have different needs (e.g., fewer opportunities to access healthcare) that may make them deserving of differential treatment. For example, if a Caucasian individual gets very ill due to coronavirus, this individual may seek medical attention immediately, be accepted into a hospital, and receive resources right away due to their severe condition. Suppose the hospital only has six ventilators, and all six are taken up by individuals who have good access to healthcare through health insurance. If individuals from vulnerable communities fall sick to the coronavirus, and are in similar condition as the individuals occupying the six ventilators in the hospital, the former will be unable to receive treatment because of their inability to access healthcare resources as quickly as their more privileged counterparts.

Multidimensional Allocation Methods

Given the limitations of utilitarian and egalitarian triage methods, building an allocation protocol entirely upon one of those ethical frameworks is problematic. Combining these two types of ethical principles enables healthcare providers to capitalize on the strengths of each principle while reducing the negative effects resulting from their shortcomings. Multidimensional methods may "strive to incorporate and balance saving the most lives, saving the most life-years, and giving individuals equal opportunity to live through life's stages." (White, Katz, Luce, & Lo, 2009, p.135)

Saving the most lives and saving the most life years are the utilitarian aspect of this multidimensional approach, which seeks to produce the greatest amount of good by trying to provide the largest benefit (e.g., saving the most life years) for the highest amount of people (e.g., saving the most lives). Giving individuals an equal opportunity to live through life stages, is the egalitarian aspect of this multidimensional approach, which seeks to provide all individuals, regardless of external factors (e.g., social class, ethnicity, etc.), equal opportunities.

A multidimensional approach better accounts for the complexity of situations considered in lifesaving allocation processes. For example, from a utilitarian perspective, a young man with preexisting conditions who gets very ill from the coronavirus should receive care last due to the severity of his symptoms and because he could occupy resources for a long period of time. By using resources for an extended period, others with less severe symptoms could not benefit from these resources, which from a utilitarian perspective fails to produce the greatest amount of good. In contrast, using egalitarian ethical principles, this same patient may receive treatment first because he is in greater need of the resources than others and deserves an equal opportunity to these resources despite the severity of his symptoms. A combined approach, such as the one mentioned above, would consider the age of the man to determine how many life years would be saved if he survives, the severity of his symptoms and his overall likelihood to survive if given the proper resources, and his right to the opportunity to go through all life stages. While this combines the utilitarian and egalitarian principles and attempts to draw on the beneficial aspects of each, multidimensional approaches may not be practical or useful for healthcare professionals.

Utilitarian and egalitarian ethical principles have different goals. Thus, combining them into one multidimensional approach might undermine healthcare professionals' ability to achieve the goals from each ethical framework. For example, if there are four 60-year-old patients and two 6-year-old patients, but the former patients are experiencing less severe symptoms than the latter, it may be impossible to save the most lives, the most life years, and provide an equal opportunity of living through life stages simultaneously. This means that healthcare professionals will be left to decide what matters most (lives, life years, or life stages). Additionally, multidimensional frameworks that combine utilitarian and egalitarian principles fail to account for vulnerable populations. By having goals such as saving the most lives and the most life years, such populations, who are disproportionally affected by comorbid conditions, may not receive lifesaving resources, despite the goal of providing equal opportunity to live through all life stages.

Justice-Based Allocation Methods

In addition to utilitarian and egalitarian ethical principles, justice is another ethical principle to allocate resources in healthcare emergencies. Justice requires that people be treated equally unless there are morally relevant difference between them. (Miller, 2017) This principle helps to account for systematic injustices and targets disadvantaged communities in a time of crisis. Systematic injustices throughout history have lasting impacts still prevalent today. These impacts are morally relevant grounds for developing allocation protocols that provide additional support for individuals from these specific communities. One approach to justice is that of Rawls, which establishes two sets of principles to allocate "primary social goods" (i.e., liberty, opportunity, income, and wealth). First, the principle of equal liberties states that everyone is entitled to the same basic liberties. Second, the principle of fair equality of opportunity and the

difference principle states that "social and economic inequalities are to satisfy two conditions: 1. they are to be attached to offices and positions open to all under conditions of fair equality of opportunity, 2. they are to be to the greatest benefit of the least advantaged members of society." (Rawls, 2001, pp. 42–43)

Rawls theory's method of allocating resources uses a top-down approach to justice by providing a set of principles to be used across all specific resource allocation situations. This is why commentators such as Madison Powers and Ruth Faden (2006) refer to the theory as "ideal." While Rawls' theory may provide insight on justice and guide allocation decisions in certain situations, his theory fails to consider the complexity of applying justice in a situation, such as the COVID-19 pandemic, where multiple disciplines and policies have combined effects and impact one another. Non-ideal theories of justice consider these complexities and emphasize how inequalities interact and affect one another in real-world situations. The non-ideal theory of justice uses a bottom-up approach to justice by looking at the specific conditions of communities and individuals that need care, considering numerous relevant, concrete factors to guide allocation decisions fairly. For instance, Powers and Faden (2006) highlight that "social institutions, practices, and policies" can impact justice independently and in combination (p. 5). When social injustices and inequalities from multiple dimensions such as economics, law, access to resources, and geographical location combine, they can have a greater impact on an individual or situation cumulatively than they may have had alone.

African Americans, as well as other vulnerable populations, often are subjected to numerous disadvantages that together impact their wellbeing. For example, if an African American woman is working an essential job, has low socioeconomic status, and has children, all of these factors affect one another. By working an essential job, she cannot stay home and quarantine to decrease her risk of contracting the coronavirus. Her low socioeconomic status interferes with her access to healthcare, healthy food options, and the ability to work remotely or take a leave from work. Lastly, she has also to support her children, which can increase stress especially due to her financial situation. This example illustrates why it is important to evaluate justice holistically, considering how different factors influence one another. Allocation protocols must consider this cumulative impact of disadvantage, seeking to address the effects of disadvantage as experienced by individuals from vulnerable populations and provide support or compensation to these groups to prevent existing disparities from becoming significantly exacerbated during health emergencies (Faden & Powers, 2011; Marks, 2020).

In response to the coronavirus pandemic, Bramble (2020) proposes a multidimensional approach to distributing resources that uses a point system to respond to some of the limitations discussed above. This proposed allocation protocol first assigns patients points based on expected years remaining for a particular age group. For example, "for each expected year remain in their 20s, a patient receives 30 points" and "for each expected year remaining in their 30s, a patient receives 15 points", and so forth (Bramble, 2020, p.102). This drastic point value difference between years remaining in a patient's 20s compared to years remaining in a patient's 30s is justified because "it is a much bigger harm to miss out on your 20s than your 30s, to miss out on your 30's than your 40s." (Bramble, 2020, p. 103) This allocation method also assigns extra points to essential workers. Emergency doctors and nurses could receive an extra 100 points each, and other essential workers (e.g., bus drivers, food workers, cleaners, etc.) could receive an additional

50 points each. This method also assigns extra points to individuals with children and/or lower socioeconomic status. The last factor that contributes to a patient's score is the "chance of survival and expected length of treatment" (Bramble, 2020, p. 111). If a patient is half as likely to survive than "the average patient" due to having other health conditions, their score should be halved.

This allocation protocol algorithm does not explicitly reference justice. Yet, it draws on many aspects of the ethical principle of justice. By assigning different points to account for many of the individual differences among people, it treats people unequally based on morally relevant differences. For example, an essential worker who has a child and is of low socioeconomic status will receive a different score and, thus, different resources from a wealthy individual with no children and a higher socioeconomic status. This resource allocation method incorporates aspects of the "ideal theory of justice" by considering each criterion independently. For instance, it assigns different point values for things such as being a healthcare professional, having children, having a certain socioeconomic status, but does not necessarily consider the interaction of numerous factors like the "non-ideal theory" would. The non-ideal theory would likely have a "combo package" where, if patients have three or more disadvantages, they may get extra points to account for the greater negative impact of experiencing multiple disadvantages simultaneously, and how these disadvantages interact with one another, than experiencing just one disadvantage at a time.

The algorithm above has drawbacks though it allows for objective resource allocation and considers socioeconomic status, essential workers, etc., often failed to be addressed in many other protocols. First, the algorithm assumes that individuals value younger years more than older years. However, this fails to consider that many individuals spend their 20s and 30s working in hopes of retiring and living the best years of their life when they are older and more financially stable. Individuals from less affluent communities often spend younger working in hopes of financial freedom in the future. This is why an algorithm guiding resource distribution cannot draw on the idea that younger years are more valuable. This is just one example of a real-world situation that ideal principles of justice fail to capture. Additionally, being younger is not a sheer guarantee that one has more years to live in itself. For example, an individual in their 20s could get a chronic illness or get into an accident. Because of these uncertainties about what years individuals value the most or what could happen in the future, scores for individuals in different age categories should not differ drastically. Secondly, this protocol gives doctors and nurses an extra 100 points, but only 50 points to other essential workers. This algorithm does not clearly define what jobs/careers are considered essential. It also fails to consider that doctors and nurses would be unable to do their job without manufacturing company workers to continue making supplies and truck drivers or pilots to transport these supplies. The roles essential workers perform are highly important and provide grounds for them to receive more than half of the points that doctors and nurses receive. This algorithm does assign extra points to socioeconomically disadvantaged individuals. Specifically, it gives 12 extra points to African Americans. Yet, these 12 extra points will still not provide many African Americans from disadvantaged and underrepresented communities a fair shot at receiving resources. Their score may be impacted by shorter life expectancy resulting from conditions and diseases that disproportionally affect these communities. Lastly, this algorithm alters the patients' score based on their chance of survival and can go as far as cutting the score in half. African American communities are disproportionally affected by various conditions, that alongside COVID-19, could have significant impacts on perceived chance of survival, resulting in individuals from certain communities disproportionally getting their score

reduced. This shortcoming was also seen in SOFA score triage, and must be addressed by future allocation protocols.

The impact of trust on allocation method implementation

Even if an ideal allocation protocol that considers vulnerable individuals and communities is found, lack of trust in the healthcare system could significantly impact the success of implementing the protocol. In the COVID-19 pandemic, African Americans are contracting and dying of coronavirus in percentages greater than their demographic percentage. For example, in Washington, DC, only 46% of the population is black, yet black people account for 80% of the coronavirus cases (Vergano & Goba, 2020). These statistics could be related to African American's mistrust in the healthcare system because this population may be less likely to follow health recommendations (e.g., wearing a mask, social distancing), putting them at an increased risk for exposure to coronavirus (Vergano & Goba, 2020). This lack of trust is the result of the historical past of medical racism that persists until today. African Americans are continuously let down by medical professionals, which is seen in the Tuskegee experiment, the performance of cruel surgical experiments, and medical racism (e.g., physicians assuming African Americans experience less pain) (Vergano & Goba, 2020). Even if the majority of healthcare professionals do not mistreat or discriminate against African Americans, just one instance of subpar treatment towards an individual from this community (or any other vulnerable community) can be spread to other members of the community, creating mistrust throughout a community or demographic (Cuevas, O'Brien, & Saha, 2016). People from disadvantaged communities have never been a priority before, so if an allocation protocol suddenly begins to provide this population with resources and shows this population group they are valued, it will raise suspicion among its members. Lack of trust in medical professionals and healthcare among vulnerable, disadvantaged communities must be addressed for allocation methods to be effective.

Conclusion

Current allocation methods in the scholarly literature have numerous limitations ethically, including failure to account for vulnerable populations. Future allocation methods should consider the systematic injustice that puts certain populations at an increased risk and consider existing health disparities. Additionally, resource allocation methods should avoid exacerbating health disparities during non-emergency circumstances. The lack of any standardized protocol in the United States and the neglect of certain communities within healthcare emphasize the urgent need to develop allocation protocols that consider vulnerable populations and their needs and address the shortcomings highlighted throughout this paper. While there are numerous proposals on how to allocate resources, some include extensive algorithms and ideas to account for the complex nature of triage.

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