

COMMENTS AND RESPONSE

Ethical Issues and the Allocation of Scarce Resources During a Public Health Emergency

TO THE EDITOR: To me, the thought-provoking article by White and colleagues (1) raises an even bigger issue: What is the ethical context of not allocating sufficient resources in advance so that these wrenching ethical decisions become necessary in the first place? The scenarios for pandemic flu are well recognized and its consequences studied extensively; is it unethical for the government and society not to spend money to develop an inexpensive temporary respirator, to stockpile such respirators (as we do such drugs as oseltamivir), to modify auditoriums so they can serve as temporary respiratory intensive care units, and to develop protocols so that respiratory care providers can efficiently handle large numbers of patients on ventilators?

Because a future flu pandemic, like past ones, is likely to hit many young persons without comorbid conditions, persons who could have a good chance of survival if provided temporary respiratory support, shouldn't we be taking the steps that would enable the provision of care to all or most and thus obviate the type of ethical problems described by White and colleagues? As our government ponders a massive infrastructure spending program to stimulate the economy and put people back to work, perhaps we should consider this the ideal time to beef up our public health infrastructure as well.

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Reference

1. White DB, Katz MH, Luce JM, Lo B. Who should receive life support during a public health emergency? Using ethical principles to improve allocation decisions. *Ann Intern Med.* 2009;150:132-8. [PMID: 19153413]

TO THE EDITOR: White and colleagues (1) propose a strategy based on contemporary moral considerations for allocating a limited number of mechanical ventilators in the event of an influenza pandemic or other comparable public health emergency. Their approach prioritizes patients for life support by summing their scores on three 4-point scales: prognosis for short-term survival on the basis of acute organ dysfunction, prognosis for long-term survival on the basis of assessment of comorbid conditions, and life stage (age). It is instructive to test this strategy against an actual, well-documented public health emergency that unfolded at the dawn of modern respiratory intensive care.

Beginning in July 1952, 2899 residents of Copenhagen became ill with poliomyelitis (2). The number of patients who required assisted ventilation soon vastly outnumbered the 7 functional negative-pressure ventilators on hand. Because most victims were young, had no consequential comorbid conditions, and initially had a similar prognosis for short-term recovery, many may have scored identically on the proposed allocation scale. Thus, application of the strategy suggested by White and colleagues might have required a tie-breaking scheme. Also, patients developed respiratory failure sequentially over 6 months, raising the unsettling question of whether later

victims with higher priority scores should have displaced from life support earlier victims with lower priority scores. Both allocation challenges might occur again if, for example, a pandemic sweeps a large university community.

What did the physicians in Copenhagen do? They improvised and innovated. Among the many solutions devised on the spot was the widescale application of manual positive pressure ventilation delivered through cuffed tracheostomy tubes. Altogether, approximately 1500 medical and dental students worked continuously in 6-hour shifts to sustain ventilation for all patients in need by hand-squeezing rebreathing balloons attached to the tracheostomies. This remarkable experience suggests the wisdom of deliberately including in the organization of responders to a public health emergency a multidisciplinary team charged and empowered with overcoming clinical, logistic, financial, and legal obstacles to serving as many victims as possible, thereby minimizing the need for an allocation strategy.

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TO THE EDITOR: White and colleagues (1) have proposed a carefully considered algorithm to ensure appropriate use of resources during a public health disaster. Their system should be widely applicable and reflects commonly held values.

White and colleagues acknowledge the difficulty in denying access to specific patient groups. Therefore, their system does not address conditions associated with diminished functional (particularly cognitive) status. However, a just system cannot avoid taking these conditions into account.

Permanent unconsciousness is an example. Consider 2 women age 42 years with septic shock and respiratory failure, neither with significant comorbid conditions that would limit long-term survival. One is a wife and mother of 3; the other is permanently unconscious following traumatic brain injury. As I understand it, the authors' "multiprinciple strategy" would not distinguish between these individuals.

Disagreement over the appropriateness of life support in permanently unconscious patients has inspired heated debate (2). Many contend that permanently unconscious patients should not be offered life support, particularly when resources are scarce (3, 4). However, these opinions do not necessarily represent a consensus (5).

Although the issue is ethically challenging and emotionally laden, we cannot avoid considering functional status when making allocation decisions, particularly when the patients in question are cognitively and permanently devastated.

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TO THE EDITOR: White and colleagues (1) offer an interesting and useful critique of existing proposals for allocating critical care resources in public health disasters. We comment as drafters of the New York proposal cited by these authors, a group that included numerous ethicists, clinicians, and public health experts and developed an ethical framework to guide allocation principles. The differences in the specific recommendations about allocation are testimony to the difficulty of translating ethical principles into concrete actions in the clinical realm. For instance, we use exclusion criteria before applying a Sequential Organ Failure Assessment (SOFA) score, thus barring patients with severe comorbid conditions from receiving ventilators in a disaster. White and colleagues calculate SOFA scores and then exclude patients with severe comorbid conditions (1). On the basis of these aspects of the allocation process, both proposals will result in similar groups receiving or being denied access to ventilators. One substantive difference between the proposal by White and colleagues and the one from New York is the explicit use of age as a factor that limits ventilator access. We considered and rejected this option because the SOFA score would inherently weigh against elderly persons, who tend to have more comorbid conditions than young persons. However, our own New York state focus group data indicate that community members may prefer a system that enhances ventilator access for young persons.

White and colleagues raise very important concerns, shared by us, about the process of public engagement. They salute the ethical propriety of eliciting public input before devising a plan based on expert opinion. However, they then immediately reject their own advice and propose revisions based on their expertise, without benefit of public input or a consensus group. That leaves unanswered the difficult question of the proper role and timing for public and expert input in the shaping of public policies, particularly those that refer to technical knowledge, such as survival rates in critical illness and the use of critical care resources. In discussing disaster allocation in dozens of forums across New York and nationally, clinicians are shocked by our recommendation that all patients be treated equally (that is, that there be no special priority for health care professionals or other first responders). In contrast, community members not only prefer a system with equal access to the community's resources for all patients, but fear that health professionals will secure a disproportionate

share of resources for themselves regardless of the allocation system. We concur that focus groups and other modes of genuine public engagement are critical to the development of just policies. We will continue to work toward these goals and look forward to working with these thoughtful colleagues toward that end.

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1. White DB, Katz MH, Luce JM, Lo B. Who should receive life support during a public health emergency? Using ethical principles to improve allocation decisions. *Ann Intern Med.* 2009;150:132-8. [PMID: 19153413]

TO THE EDITOR: The perfect tertiary triage protocol for a pandemic or mass casualty event has not yet been published. We welcome and congratulate White and colleagues (1) on their contribution to the ongoing dialogue related to tertiary triage. However, just as triage is always a balance between available resources and demand, one must also attempt to strike the right balance among ethical doctrine, evidence, usability, and functionality when developing a triage score. The triage score proposed by White and colleagues leans in favor of addressing the issues most important in the conceptual world of ethics at the expense of a solution that could be translated into action in the stark reality of a pandemic or disaster.

In an effort to arrive at a very "basic solution," White and colleagues have lost many of the components essential for application of a triage protocol in a disaster. A triage protocol must be easy to use at the bedside (the front end of the protocol), which often requires the back end of its development and design to be very complex. In the current proposal by White and colleagues, the score is not anchored and no action is directed. When a triage officer evaluates a patient, what does a score of 4, 6, or 10 mean? How does it relate to the patient's likelihood of survival? If there is only 1 patient, what is the score compared with, or does that patient get the available resource regardless of how low the chance of survival is? What happens 30 minutes later, when another patient arrives but now there is no ventilator? Does one rescore all the patients who are on ventilators and take the highest-scoring patient off ventilation in favor of the new patient? Situational awareness is a challenge in any disaster, and knowing every patient's score in the intensive care unit every time a decision has to be made is impractical. What happens if 2 triage

officers are working in different parts of the hospital? How is every patient compared with another? Color coding and the use of 4 triage categories with predefined guides for actions are tried and tested components of triage protocols. A triage protocol should bring order to chaos early in an event, but there must also be a mechanism to evaluate outcomes and adjust for too much or too little triage. These components are lacking in White and colleagues' proposal.

We also wish to clarify some of the misinterpretations regarding previous triage protocols (2, 3). It was stated quite clearly in previous groups' documents that using exclusion criteria should not equate with judgments of whether any one person is worth saving. We feel that, were it possible, every life is "worth saving." The "exclusion criteria" are intended to assist with prioritization of patients during extreme imbalances of need and resources. If the balance improved and resources were sufficient for all, then patients who met the exclusion criteria of course would not be restricted from receiving life-sustaining care. In the context of an overwhelming mass casualty event, the issue at hand is balancing the resources required to save 1 life versus potentially many other lives. White and colleagues go on to say that we have made a "mistaken assertion that patients with severe comorbid conditions will always have a bad outcome." Again, this is a misinterpretation of our reasoning. In part, the exclusion criteria are related to the likelihood of 1-year survival. However, they are more related to the additional quantities of resources that would be required for a person with such severe comorbid conditions to survive, and therefore would not be available to many others. Under normal circumstances with unlimited supplies, highly trained staff, and state-of-the-art care, it may be possible for someone with end-stage organ failure to recover from a critical illness, but these are not the circumstances of a disaster or pandemic. In a disaster, level of care will be significantly altered (4).

The previously published triage protocols put forth by Ontario, New York, and the Task Force for Mass Critical Care were driven by the best available clinical evidence and guided by ethical principals rather than driven by them. The exclusion criteria were not arrived at arbitrarily and were based on definitions of end-stage disease states or organ failure as defined by recognized objective criteria whenever possible. To be objective, they refer to specific disease states. Most of the objectiveness of the past protocols is removed in the proposal by White and colleagues by not operationalizing the comorbid conditions with specific definitions and thus opening up the decisions to the complete subjectivity of individual physicians.

Finally, the lack of a ceiling on resource utilization and guidelines for retriage is a major shortcoming of this proposal. When applying a population approach during a disaster, any triage protocol must address the rationing of resources in addition to prioritization. The current protocol, without limits on resources, would allow consumable resources to be depleted quickly and early in a pandemic by patients with little or no chance of recovery, while at the same time committing nonconsumable resources to the patients who present early without offering any mechanism for reassessment. Placing a limit on how many resources will be committed to any individual is a difficult but necessary component of triage (5).

Although the authors have raised some valuable points in their discussion that should lead to reflection and reevaluation of the current protocols, their proposal lacks many of the features necessary for it to be applied in the field during a disaster or pandemic.

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IN RESPONSE: We appreciate our colleagues' comments and are heartened to see that our analysis has stimulated further thought among clinicians and policymakers. We agree with Dr. Glass that government has an ethical obligation to carefully plan for foreseeable public health emergencies, such as pandemic influenza. However, because society's resources are limited, it is impossible to fully meet all emergency needs while still allocating adequate resources to competing routine societal needs, such as primary care, education, infrastructure, and defense. Public health emergencies remind us of the

inevitable need to balance competing considerations when shaping public policy.

Dr. Hansen-Flaschen uses the 1952 poliomyelitis outbreak in Sweden as a test case for our multiprinciple allocation strategy. He raises the concern that even with a multiprinciple allocation system, clusters of patients may be indistinguishable on the basis of age, prognosis for survival, and life-years saved, requiring a tie-breaking mechanism. This is possible, but not necessarily problematic. If patients are indistinguishable on the basis of allocation principles set forth as morally relevant, then there is no compelling reason to prioritize any one over the others in the group. We advocate that if such a situation occurs, random allocation should be used to break ties.

Dr. Siegel eloquently argues that individuals with severe functional impairment should receive relatively less prioritization for life support. He also correctly points out that there is deep disagreement in society about whether functional status and social worth are material considerations when allocating scarce resources. This is an emotionally charged social issue. Because public trust and cooperation with restrictive measures will be crucial to a successful public health response, we think including such a controversial criterion that affects a very small, vulnerable patient group may ultimately be more detrimental than beneficial to an effective response. We agree that this is a key issue for robust public engagement.

Dr. Powell and colleagues assert that the allocation strategy we propose is similar to theirs because both propose to exclude patients from life support on the basis of certain criteria. We disagree. We argued against categorical exclusion of patients and instead favor assigning a priority score to all who would be eligible to receive life support in routine conditions, then having the cut-point for receiving life support determined by the availability of resources. Dr. Powell and colleagues also claim that we have gone against our own recommendation for genuine public engagement by proposing an alternative allocation strategy without first engaging the public. We had no intention to set policy; that is a task for policymaking bodies and officials. Instead, our goal was to inform policymakers and the public about alternative allocation strategies and their ethical implications. Our hope is that the ideas we present will be vigorously discussed during the public engagement process—and ultimately will be accepted or rejected by informed citizens and policymakers.

Most of the criticisms from Dr. Christian and colleagues seem to come from their misunderstanding of the purpose of our proposal. They fault it for failing to comprehensively address all of the organizational and logistic challenges of a public health emergency. However, our goal was not to create an organizational protocol. Their group did this admirably (1, 2). We sought to complement their work by providing a clear analysis of the ethical issues at stake when the demand for life support exceeds supply during a public health emergency. We also sought to provide policymakers and the public with an alternative set of allocation criteria that are ethically robust and accompanied by clear justifying arguments, a feature lacking from the efforts of past groups. The assertion by Dr. Christian and colleagues that our proposed multiprinciple allocation strategy is not feasible seems premature. The continuous allocation score that our approach yields could be categorized into the familiar 4 color-coded triage categories.

We are not persuaded by Dr. Christian and colleagues' defense of categorical exclusions of certain patient groups from access to life

support. They claim that these exclusions are justified because these patients would have an exceedingly poor prognosis for 1-year survival or would require a disproportionate amount of scarce resources in order to survive. They exclude, for example, very elderly persons, patients with severe cognitive impairment, and patients with certain severe comorbid diseases. However, advanced age alone is not a reliable predictor of poor intensive care unit outcomes or disproportionate resource use (3, 4). Moreover, we are aware of no solid data to support the claim that individuals with severe cognitive disabilities require disproportionately more life support than matched individuals without cognitive disabilities. Of note, some of the excluded chronic diseases do not reliably predict poor 1-year outcomes or disproportionate resource use, as illustrated by our case example in Table 1 of our article.

Dr. Christian and colleagues also criticize our proposal for allowing a degree of clinical judgment in determining whether a patient has a life-limiting comorbid condition. We acknowledge that allowing clinical judgment also opens the door to physician bias. However, ample empirical and actuarial data could inform the development of lists of diseases known to be associated with various degrees of shortened life expectancy. These data could guide the assessment of life-limiting diseases in our allocation strategy.

Space constraints prevent us from providing a detailed account of whether life support should be withdrawn from some patients in order to provide it to others with a more favorable allocation score. Several groups have addressed this issue (1, 2), and we agree with their assessment that it would probably be necessary to withdraw life support from patients whose conditions worsen considerably, or from those who demonstrate via a time-limited trial that their need for resources will be disproportionate to the needs of others.

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