How Do We Ration Ventilators?

By Chuck Dinerstein, MD, MBA — April 6, 2020

We will soon be approaching the moment when, despite all of our best efforts, we'll be one ventilator shy of what's needed. It's now time to share what critical-care physicians and nurses have known for some time, and what they're planning to do when that moment arrives.

Let me get you "up to speed" with some context. Futile care is "is the continued provision of medical care or treatment to a patient when there is no reasonable hope of a cure or benefit," and it is a situation we often confront in patients at the end of life. While a physician's ability to predict death is poor when looking across months or years, we are pretty good at identifying those patients who will die in the next week or so. In this setting, we can discuss with the patient and family the futility of continuing "aggressive" measures and, with consent, focus on making patients comfortable. We do this routinely. It is what advanced directives and living wills are all about, but talking about death makes everyone uncomfortable, so few of us, especially those who are currently healthy, consider their choices.

Making choices about futile care in the moment of crisis often results in patients and families falling upon the default choice, do everything! There is an extensive literature in behavioral economics on this default, simply put, we are more averse to loss than avid for gain – you feel worse losing money than the happiness you get from getting money. Dying is the ultimate loss. Another quirk in our thinking in these times is that stopping care is frequently viewed as more harmful than not starting care. I suspect that it has to do with ending care being so much more visible and directly
connected to a decision. The more direct your involvement, the more responsibility you may feel.

**In the time of COVID-19**

With two or more patients in need, who gets the ventilator? The framework for making that decision that is gaining the most traction comes from the University of Pittsburgh's Department of Critical Care. It is a well-considered, ethically based, clinically relevant approach, identifying selection criteria along with the who and how. The criteria weigh shift the calculus from the patient in front of you to the consequences to public health, a larger population. It is focused, not on saving one life but saving the most lives and life-years.

**Most lives**

Those felt to be able to survive with the assistance of ventilatory life-support are prioritized over those where the care will be futile. A scoring paradigm, the Sequential Organ Failure Assessment (SOFA), looks at six critical areas, your ability to oxygenate, mentate, circulate, urinate, coagulate, and metabolize. The system has been used as a predictive aid, not a final arbiter, for many years. Its [predictive power](#) is higher when more systems are not working or fail over time. There are other scoring systems, but the thrust is to identify those who, in the short-term, will survive and get off the ventilator, making room for another patient.

**Most life-years**

The second consideration looks at the gains, in years of life, that your recovery provides. Age is a crude approach, but we all know individuals that are spry and fragile in a range of ages. In place of age, a scoring is made on which of your current conditions will shorten your lifespan, e.g., dementia, heart failure, aggressive cancers. In general, conditions with severe reductions in the quality of that extended life weigh more heavily than those that bring less day-to-day disability.

**How**

Based on those two considerations, patients can be triaged into one of three priorities, highest, intermediate, and lowest; and scarce resources distributed by on a patient's priority. Of course, it comes with a few caveats. First, what do you do when there are two people with the same priority but only one ventilator? Here, they recommend that the "tie-breaker" begin with a consideration of who has the most life ahead of them, age, younger first. They also give priority to "individuals who are vital to the acute care response." Before you jump to that, "AHA! I knew there was a bias," note that those individuals include more than physicians and nurses, they include everyone on the hospital staff. If all else fails to differentiate, the choice is "by lottery," a random selection between equals.

"It is possible that patients, families, or clinicians will challenge individual triage decisions. Procedural fairness requires the availability of an appeals mechanism to resolve such disputes."
The offered appeals process is short and sweet; there is little time for long discussions while waiting for life support. The only grounds for challenge are that the initial scoring of survivability and life expectancy was miscalculated.

Sometimes, despite our best efforts, a patient started on mechanical ventilation continues to fail; the ventilator is life-support, not a cure. While currently about a third of patients on ventilators [1] are extubated and discharged home, the remaining two-thirds die from ventilatory failure or other causes. In the hard world of rationing, they are using vital resources in a futile enterprise. To identify those initially felt to “have a shot,” but who for other reasons are looking more and more like futile care, triage scores are recalculated daily. Remember, the predictive ability of SOFA improves with time so that assessments may become more “accurate.”

“Decisions to withdraw a scarce resource such as mechanical ventilation from a patient who is already receiving it may cause heightened moral concern. Furthermore, such decisions depend on more clinical judgment than initial allocation decisions. Therefore, there should be a more robust process for appealing decisions to withdraw or reallocate critical care beds or services.”

The phrase “moral concern,” echoes what I said previously, stopping care has a much different feel than not initiating care. The protocol attempts to assuage those concerns, a difficult task at best, by allowing the appeal to a larger, Triage Committee [2], but remains quick and final. The appeal is of process, “give them one more day,” rather than of the criteria themselves.

Whom

Triage is best served by the dispassionate so that the primary clinician (attending physician) who frequently shepherds this process in normal times is not the judge. Their role, as always, is acting as patient advocates. The ethical dilemma between do no harm and justice for all is too emotionally fraught for those looking directly into the eyes of their patients and families.

“Desirable qualities of triage officers include being a physician with established expertise in the management of critically ill patients ..., strong leadership ability, and effective communication and conflict resolution skills.”

They are assisted by an experienced critical care nurse and administrative help in gathering data. The triage decision will be communicated to patients and families by the attending physician or triage officer, alone or in combination.

[1] Like many numbers in this time, this is a rough approximation. Irrespective of the percentage, some patients on ventilators will die despite our best care.

[2] "The Triage Review Committee should be made up of at least three individuals, recruited from the following groups or offices: Chief Medical Officer or designee, Chief Nursing Officer or other Nursing leadership, Legal Counsel, a hospital Ethics Committee or Consult Service, members of an institution's ethics faculty, and/or an off-duty triage officer. Three committee members are
needed for a quorum to render a decision, using a simple majority vote.

Sources: Allocation of Scarce Critical Resources During a Public Health Emergency University of Pittsburgh [2]

A system to allocate scarce ventilators and ICU beds gains traction for not counting any group out Stat [4]


The Importance of Addressing Advance Care Planning and Decisions About Do-Not-Resuscitate Orders During Novel Coronavirus 2019 (COVID-19) [6] JAMA Network

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