outside of typical ICU settings. Ventilators should have settings that adjust for volume and pressure, important in caring for patients with the severe respiratory symptoms of patients with H5N1-related pneumonia. Supplemental oxygen may be in short supply, so ventilators that are relatively oxygen-sparing are preferable. Staffing will be severely limited; ventilators should therefore be easy to use, since less experienced staff may need to manage patients on ventilators. This type of ventilator should be introduced as soon as possible into regular use in hospitals, for instance when transporting patients, so that many workers will be competent in their use.

III. ETHICAL FRAMEWORK FOR ALLOCATING VENTILATORS

An ethical framework must serve as the starting point for a plan that proposes to allocate ventilators fairly. A just rationing plan cannot evolve from technical considerations alone, such as survival probabilities and resource estimates, then have ethics applied as an afterthought, and hope to withstand ethical scrutiny. Discourse in medical ethics has generated various sets of principles and values. Different ethical considerations have greater or lesser weight in the process of resolving any particular dilemma; a number of authors have addressed ethical principles for decision-making in public health crises. [10]

The workgroup has articulated the following ethical framework in support of this specific effort to allocate ventilators in a pandemic:

Ethical Framework for Allocating Ventilators

- Duty to care
- Duty to steward resources
- Duty to plan
- Distributive Justice
- Transparency

Duty to Care: First and most importantly, an ethical rationing scheme must respect the fundamental obligation of health care professionals to care for patients. Indeed, in a pandemic, clinicians will try to care for as many patients and save the lives

of as many patients as is possible. However, doctors, nurses, and other health professionals offer care at the bedside to individual patients, not to populations. An ethically sound rationing system must sustain rather than erode this relationship between patient and provider. Physicians must not abandon, and patients should not fear abandonment, in a just system of allocation. Patients who are not eligible to receive mechanical ventilation will receive other forms of curative and/or palliative treatment.

In day-to-day health care in the U.S., the preferences of capable patients are generally the deciding factor in whether recommended treatments will or will not be initiated. However, patient preference is not and cannot be the primary factor in devising a rationing system for ventilators in a pandemic; more patients will want ventilators than can be accommodated. A public health disaster such as a pandemic, by virtue of severe resource scarcity, will impose harsh limits on decision-making autonomy for patients and providers. Allocation guidelines must reflect those limits. Nonetheless, a just rationing scheme must endeavor to support autonomy, when possible, in ways that also honor the duties of care and stewardship. Guidelines must stress the provision of care that is possible when ventilation is not. An ethically sound triage system will include other treatment or palliative measures for patients denied access to ventilators.

Duty to Steward Resources: The second element in the ethical framework is the obligation for government and health care providers to steward resources during a period of true scarcity. The effort to balance this obligation to the community of patients against the primary duty to care for each patient generates the ethical tension in devising a rationing system. Even under ordinary circumstances, critical care providers question whether the estimated benefit of an intervention merits the use of scarce resources.

Providers struggle to decide whether a unit of platelets (or antibiotics, or surgical intervention) is appropriate or justified for a particular patient, given that the quantity of a particular resource is limited. Yet a disaster on the scale of a severe pandemic will force providers to confront limits far more starkly than they now do. Patients who might survive under ordinary circumstances cannot be given the ordinary level of resources, or numerous other patients will die without any resources at all. Clinicians will need to balance the obligation to save the greatest possible number of lives against that of the obligation to care for each single patient. As the number of affected patients increases, accommodating these two goals will require more and more difficult decisions.

Duty to Plan: A motivating force in designing a triage system is the knowledge that planning is an obligation. An absence of guidelines leaves allocation decisions to exhausted, over-taxed, front-line providers, who already bear a disproportionate burden in a disaster. A failure to produce acceptable guidelines for a foreseeable crisis amounts to a failure of responsibility toward both patients and providers. Health care providers are aware that some who served in the aftermath of Hurricane Katrina have been accused of serious crimes. Appropriate guidelines may help prevent both the actuality and the fear of similar consequences for those who provide care in a future emergency.

Though plans are obligatory, any guidelines the group devises will be imperfect, both ethically and medically. Ethically, current access to health care is unequal; no rationing system for a crisis can resolve inequities in pre-existing health status resulting from unequal access. Medically, the clinical parameters of a pandemic are as yet uncertain, increasing the difficulty of predicting survival or duration of critical symptoms. Nonetheless, the workgroup accepts the importance of creating guidelines

under conditions of uncertainty, including plans for allocating ventilators for this foreseeable public health emergency.

Distributive Justice: A just system of allocation must be applied broadly in order to be fair. The same allocation system should be in use across the state, and the decision to implement rationing must be authorized by the state. The timing and content of just rationing systems cannot be hospital-based, but must be coordinated within the community, among communities, and between the local communities and the State. A just or equitable healthcare system cannot allow for more expansive access at a prestigious private facility and more restrictive access at a community or public hospital. Cooperative agreements to pool scarce resources among local hospitals may help alleviate shortages. The allocation of ventilators from state and federal stockpiles must take into account the ratio of local populations to available resources, and supplement those resources accordingly. Ethically sound responses to disaster must not exacerbate disparities in access to care. Rather, planners must designate appropriate resources for the most vulnerable, who are most likely to suffer the greatest impact in any disaster.

Transparency: Transparency is the next element in the ethical framework. Any just system of allocating ventilators will require robust efforts to promote transparency, by seeking broad input in the design of the system, and educating the public about the evolving plan. The state should publicize proposed guidelines, translate them into different languages as necessary, and share them with health care leaders and the community, including historically underserved communities. After assessing comments, revisions that will assure a just allocation process should be incorporated.

Pitfalls: In building an ethical framework, there are pitfalls that an allocation system must avoid. Disaster planning must not serve as a covert means to resolve long-standing problems in health care. For instance, a rationing system does not alleviate the need to provide adequate resources. In a resource-constrained environment, rationing may lead to the acceptance of a lack of resources without challenging the problem of scarcity. A just system will seek to avoid rationing by first implementing less drastic means of limiting and deferring the use of scarce resources. Prior appropriate steps will include the purchase and use of supplemental ventilators, cancellation of elective surgeries, and altered standards of care for staffing ratios. Triage should not be lightly invoked, but must be reserved for situations of true scarcity.

Additionally, guidelines for ventilator allocation in a pandemic must not be used to summarily resolve the controversial question of ventilator use for severely and permanently impaired patients. Covert quality of life judgments must not substitute for ethically sound principles that are available for public scrutiny. Guidelines must reflect our common duty to protect the rights of the disabled, even while potentially encompassing them in a rationing system

Taking into account this ethical framework, parameters for an allocation system for ventilators emerge. The workgroup accepted the idea of removing patients with the highest probability of mortality from ventilators in order to benefit patients with a high likelihood of survival. However, they struggled with the notion of removing less ill patients from ventilators, particularly those who might recover with continued mechanical ventilation. Guidelines should reflect this tension by minimizing circumstances that

require patient extubation, the most ethically and emotionally challenging aspect of any ventilator rationing system.

Clinicians and family members will be reluctant to withdraw ventilators from patients. Guidelines that rely heavily on withdrawal of ventilators will generate great concern and controversy and may be set aside in an emergency. Further, the experience of withdrawing ventilation and observing the subsequent demise of patients will be traumatic for all concerned, including clinicians. Doctors and nurses forced to extubate patients, even to save other patients, may not recover full professional confidence until long after the pandemic is resolved. Finally, the withdrawal of ventilation without patient consent raises significant liability issues; again, appropriate guidelines will limit instances of tragic choices.

IV. MEDICAL FACTORS IN TRIAGE SYSTEM DESIGN

In order to design a perfect critical care triage system, clinicians would need a method that accurately differentiates in advance those patients who will survive without critical care, those who will survive only with critical care, and those who will die despite treatment. There are a number of proposed systems for estimating critical care mortality, but none is specifically designed to demonstrate the most efficient use of scarce resources. Some systems require resource-intensive tests that might be scarce during an epidemic; others focus on trauma patients and so are less applicable for an influenza pandemic. [11] Further, no scoring system is accurate enough to provide finely calibrated, reliable distinctions among similar patients; existing data may support estimates of survival among broad categories of patients. In sum, no known clinical scoring system offers a quick, resource-sparing, and accurate prediction of mortality in an influenza pandemic. Our limited ability to assess survival capacity except in broad categories has critical implications for the design of a ventilator rationing system. These guidelines incorporate features of existing triage systems, yet the workgroup finds that the result remains imperfect. The workgroup urges critical care and emergency physicians to pursue the goal of perfecting a clinical scoring system appropriate to an influenza pandemic.

Scoring systems may help determine which patients will benefit from interventions; a well-designed triage plan will also focus on the limited number of critical care interventions likely to have the greatest impact. For a febrile illness likely to cause respiratory failure, mechanical ventilation will be one of the most important interventions.

One way in which an epidemic in the 21st century differs from that of 1918 is the increased ability to collect and analyze data quickly. Guidelines must incorporate new data as they become available, based either on resource availability or clinical circumstances. Systems set up in advance, as part of the planning process, could support the collection of information on symptoms, disease course, treatments, and survival.

Existing Triage Protocols

Hick and O'Laughlin: Very few authors have explicitly addressed the problem of allocating ventilators in a pandemic. Drs. John Hick and Daniel O'Laughlin propose guidelines that would 1) be implemented on a regional, not an institutional basis; 2) provide liability protections for providers and institutions; and 3) provide tiers so that as patients increase and resources are depleted, the criteria become more stringent. [12]

Hick and O'Laughlin devised three tiers of criteria; the first tier would eliminate access to ventilators for patients with the highest probability of mortality, including ventilator-dependent patients with persistent hypotension, and/or failure of greater than four organ systems. If resources continue to fall short, Hick and O'Laughlin propose a second tier that would be denied access to ventilators, containing patients with respiratory failure as well as high use of additional resources. This tier includes patients who have a pre-existing illness with a poor prognosis, including: severe congestive heart failure; acute renal failure requiring hemodialysis; severe chronic lung disease; AIDS with a low CD4 count; active malignancy with a poor potential for survival; cirrhosis with ascites; hepatic failure; and irreversible neurologic impairment, including persistent vegetative

state. In sum, this tier includes patients with respiratory failure and other chronic or potentially fatal conditions.

The third tier in this system is left intentionally vague. The authors suggest that a guideline development committee examine survival data in real time, and add categories of patients who would not have access to ventilators in an overwhelming disaster.

Hick and O'Laughlin propose the extubation of any patient "who might be stable, or even improving, but whose objective assessment indicates a worse prognosis than other patients who require the same resource." [13] Thus, patient A's continued use of the ventilator appears to depend not only on the estimated survival probability of patient A, but also upon that of newly arriving patient B, whose better health status leads to the extubation and probable death of A, and the intubation of B (at least until C arrives).

The workgroup members applauded Hick and O'Laughlin's effort to address the problem of ventilator allocation, and in particular to develop an analysis of regional, as opposed to local rationing. However, the workgroup expressed significant reservations about the plan to extubate a patient because a newly arriving patient had a better health assessment. First, patients require a sufficient trial on the ventilator in order to determine its benefit. More importantly, though, patients expect that doctors will provide treatment, to the extent possible, based on assessments of their health as individuals. If ventilator use is primarily determined by the health of other potential users of the ventilator, clinicians must abandon their obligation to advocate for individual patients. This proposal evokes an ICU war of all against all that ignores deeply felt professional obligations to advocate and care for individual patients. Though Hick and O'Laughlin offer many useful insights on the design of a triage system, workgroup members rejected

this aspect of the proposal upon ethical grounds. Participants also believed that clinicians would resist implementing guidelines based upon these premises.

Ontario Health Plan for an Influenza Pandemic (OHPIP): An additional pandemic triage protocol that merits consideration was proposed in April 2006 by the OHPIP Working Group on Adult Critical Care Admission, Discharge and Triage Criteria. Finding that no triage system has been developed for use in critical care or medical illnesses, the OHPIP authors present a new critical care triage tool based in part on the Sepsis-related Organ Failure Assessment (SOFA) score. [14] The SOFA score adds points based on objective measures of function in six key organs and systems: lungs, liver, brain, kidneys, blood clotting, and blood pressure. A perfect SOFA score, indicating normal function in all six categories, is 0; the worst possible score is 24 and indicates life-threatening abnormalities in all six systems. The components of SOFA scoring are listed in Appendix I.

The OHPIP triage protocol is based on three evaluative components: inclusion criteria, exclusion criteria, and minimum qualifications for survival (MQS). Inclusion criteria focus on respiratory failure and refractory hypotension, and identify patients who will benefit from admission to critical care. Exclusion criteria include a list of severe ailments. These exclusion criteria focus on illnesses that draw extensively upon resources. MQS, a term taken from military triage, refers to limits placed on resources used for any individual patient. The authors recognize this concept is "very foreign to western medical systems," but suggest such ceilings would be essential to optimizing resource allocation in a pandemic.

Patients are initially assessed for inclusion and exclusion criteria; if inclusion criteria are present and exclusion criteria are absent, patients are then evaluated with a SOFA score. Patients are reevaluated at 48 and 120 hours and either continue with similar levels of care or are re-assigned to a different category, based on SOFA scores and other objective criteria. In the OHPIP protocol, patients may lose access to ventilators and other critical care resources if their SOFA score increases. They may also lose access if SOFA scores fail to improve within the allocated period; OHPIP experts argue that failure to improve during the designated interval is associated with a high probability of mortality and thus these patients should be assigned to a different treatment category. Tables describing the protocol are presented in Appendix II. The overview of the protocol is as follows, with colors corresponding to triage categories:

- Blue: High probability of mortality; should be discharged from critical care and should receive medical management and palliative care as appropriate;.
  Initial: Exclusion criteria or SOFA > 11
  48 hours: Exclusion criteria or SOFA > 11 or SOFA 8-11 unchanged
  120 hours: Exclusion criteria or SOFA > 11 or SOFA < 8 unchanged
- Red: Highest priority for critical care
  Initial: SOFA $\leq$ 7 or single organ failure
  48 hours: SOFA < 11 and decreasing
  120 hours: SOFA < 11 and decreasing progressively
- Yellow: Intermediate priority for critical care
  Initial: SOFA 8-11
  48 hours: SOFA < 8 unchanged
  120 hours: SOFA < 8 with minimal decrease (< 3 point decrease in 72 hours)
- Green: Low probability of mortality; defer admission/ discharge from critical care
  Initial: no significant organ failure
  48 hours: no longer ventilator dependent
  120 hours: no longer ventilator dependent

Appeals: OHPIP also proposes a Central Triage Committee to perform ongoing modifications of the triage protocol as the pandemic progresses, and to consider appeals

and/or exemptions requested by clinicians. For example, the committee could be consulted if a triage officer or clinician thinks a patient is inappropriately designated "blue" under the protocol. OHPIP contemplates a 48-hour trial for such a patient, followed by re-triage at 120 hours.

The OHPIP proposal presents an ethically promising approach to triage. Appropriately, the patient's access to the ventilator depends on the patient's own clinical status, as objectively measured, rather than on a direct competition with other patients presenting for care. Nonetheless, patients will be re-assessed and those who do not benefit over time will lose access to ventilators; this system thus honors the ethical principles of caring for patients while stewarding resources wisely. This proposal suggests a form of appeals process. Workgroup participants were divided about the practicality of permitting appeals to the allocation protocol.

The OHPIP proposal has many excellent features yet does reveal some technical limitations. The list of exclusion criteria requires additional refinement as well as simplification for use in an emergency. The workgroup wished to exclude factors that reflect quality of life judgments rather than estimates of mortality. In addition, the SOFA score upon which the OHPIP proposal partly relies is a technically complex measure. Although some components of the score require only simple laboratory tests such as bilirubin and creatinine, the blood pressure measure depends upon invasive monitoring and pharmacologic therapy available in the intensive care unit. Thus, SOFA scores may prove more useful in determining continued use of ICU resources, rather than initial entrance to this level of care. The workgroup revised these exclusion criteria, based on the work of OHPIP and the SOFA criteria; see chart on page 33.

V. RECOMMENDED PROCESS FOR ALLOCATING VENTILATORS IN AN INFLUENZA PANDEMIC

The workgroup proposes the following ethically acceptable process for allocating ventilators in a public health emergency. These recommendations should be publicly presented, with the explicit goal of inviting comment and revision. The system includes the following components:

1) Pre-triage requirements
2) Patient categories for triage
3) Implications of triage for facilities
4) Clinical evaluation
5) Triage decision-makers
6) Palliative care
7) Appeals process
8) Communication about triage

1) Pre-triage Requirements

Limiting Need: As the pandemic spreads, hospitals should limit the non-critical use of ventilators. Elective procedures should be canceled and/or postponed during the period of emergency. As a pandemic stretches from days to weeks, facilities will require a review system for procedures that decrease morbidity or mortality, but are not of an emergency nature. In addition, the state may wish to limit outpatient procedures that require a back-up option of hospital admission and ventilator support if complications arise.

Securing Resources: Before rationing procedures are implemented, facilities should institute all available means of creating "surge capacity." Staffing issues are critical, for personnel are the most valuable resource in any healthcare facility. Staff members will fall ill, will leave work to care for family, or may decline to serve from fear of contagion, while the number of infected patients reaches unprecedented levels. The

stockpiling of protective equipment, including masks and gloves, is a critical planning responsibility for facilities. Without adequate protective measures, facilities may undermine their capacity to provide adequate staffing during a public health disaster. Alternate levels of staffing should be permitted during the pandemic emergency, and systems for extending the skills of available staff must be utilized.

Facility, state, and federal ventilator stockpiles should be assessed, and additional ventilators should be brought into the system as rapidly as possible. Systems for sharing information about the number and severity of cases, equipment availability, and staffing shortages could be activated throughout hospital systems and regional networks. For instance, not all facilities may be equipped to care for infants who need ventilatory support; clinicians and families need rapid access to information about where such support is available. Federal and NYSDOH pandemic plans address these and related issues.

2. Patient categories for triage

A just rationing system must be applied to all hospitalized patients, and not only to patients with influenza. As a practical matter, clinicians could not limit the use of triage criteria to patients solely with influenza; critically ill patients may have multiple diagnoses or no clear diagnosis. Furthermore, a system that suggests a preference of one disease over others might result in inaccurate reporting of diagnoses, and heighten the danger of contagion.

Workgroup members debated whether various characteristics should factor into assessments of access to ventilators, including age. Age factors indirectly into any

criteria that assess overall health, since chronic disease generally increases with age. Existing triage proposals vary on this issue; some decline to refer to age overtly, while others list age as an exclusionary factor, but do so at a range that varies from 65 to 85. These recommendations do not include age as an exclusion criterion. Social worth, such as being the parent of many children or an important community member, was also rejected as a factor in determining access.

Health Care Workers and First Responders: Participants debated with great concern the question of offering enhanced access to ventilators to health care providers, first responders, or other special groups. Many participants argued that patients should be assessed on medical factors only, regardless of their work role, for various reasons. First, health care workers sick enough to require ventilators are unlikely to regain health and return to service during the pandemic. The predicted period of recovery will be at a minimum several weeks; the worst phase of the pandemic will likely end before a stricken individual can return to work. Second, workers in many occupations risk exposure and provide crucial services in a pandemic. Doctors and nurses face risks, but so do respiratory therapists, orderlies who keep rooms clean, morgue workers, laundry workers, ambulance staff, security personnel, fire fighters, police and others. Nor is it always easy to determine who is and is not a health care worker. Part-time volunteers staff ambulances in some communities; an unpaid family member may serve as the full-time caregiver for a disabled relative. These unpaid providers take risks comparable to or greater than some paid health care providers. Expanding the category of privilege to include all the workers listed above may mean that only health care providers win access to ventilators in certain communities. All other community members, including all

children, would be denied access; this plan was unacceptable to the workgroup. Participants also objected strongly to the appearance of favoritism, in which those who devised the rationing system appeared to reserve special access for themselves. Participants ultimately found that access to ventilators should depend on clinical factors only. Of note, the allocation of other scarce resources, such as vaccine or anti-viral medications, as well as personal protective equipment, may well favor health care providers based on differing ethical and clinical considerations. [15]

3. Implications of triage for facilities

Statewide Application: It is in the nature of an epidemic that some facilities will be hit harder, or sooner, than others; one facility may run out of critical supplies, including ventilators, while other facilities still have capacity. Participants considered a number of options for balancing need and resources. One suggestion was for the transfer of patients to facilities with available resources, although the transfer of large numbers of critically ill and highly infectious patients is not easily, or perhaps wisely, undertaken. During the pandemic, leadership of facilities within a region should be encouraged to work out voluntary plans for loans of equipment and staff in a crisis. Hospital associations might play a role in convening such planning meetings. State and federal assets, including ventilator stockpiles, should be allocated to areas with the greatest discrepancy between population and resources.

Statewide policies are crucial; large variations among facilities will lead to inequities. Equitable rationing systems, particularly ones that contemplate limiting access to life-saving treatment, must assure that the same resources are available and in use at similarly situated facilities, i.e., all facilities in one city gripped by the pandemic.

Participants found morally unacceptable a rationing system that allowed terminal extubation at one hospital, while patients with similar symptoms survived by virtue of being in a neighboring hospital. Hospitals in less affluent neighborhoods typically serve a far larger population base. Thus, a system of rationing that permits wide variation between hospitals in different areas will likely result in excess mortality for the poor.

Acute and Chronic Care Facilities: Distinctions should be maintained between acute and chronic care facilities once triage begins, permitting chronic care facilities to maintain their specific mission. Patients using ventilators in chronic care facilities would not be subjected to acute care triage guidelines. If, however, such patients required transfer to an acute care facility, they would be assessed by the same criteria as all other patients, and might fail to meet criteria for continued ventilator use. Chronically ill patients will be vulnerable to the pandemic; chronic care facilities will have to provide more intensive care on site as part of the general process of expanding care beyond standard locations. Barriers to transfer are appropriate and likely during a phase in which acute care hospitals are overwhelmed.

An alternative approach would require assessing all intubated patients, whether in acute or chronic care facilities, by the same set of clinical criteria. Depending on the design of these criteria, the result might be the sudden and fatal extubation of stable, long-term ventilator dependent patients in chronic care facilities. The proposed justification for such a strategy would be that more patients could ultimately survive if these ventilators were used by the previously healthy victims of the flu epidemic. This strategy would, however, make victims of the disabled. More patients might survive, but they would also be different survivors. It is hard to avoid the conclusion that such a

strategy relies heavily upon ethically unsound judgments based on third-party assessments of quality of life.

Applying acute care triage guidelines to chronic care facilities fails to adhere to the ethical principle of providing care for each patient, including the most vulnerable. The second principle of using resources wisely must also be considered. Setting aside the small number of ventilators in chronic care facilities for use by the chronically ill, who likely will have severely limited access to ventilators in acute care facilities, offers an appropriate balance between the duties to care and to allocate wisely.

Small but increasing numbers of persons who depend on mechanical ventilators reside in the community, rather than in institutions. Workgroup participants concurred that community-dwelling persons should not be denied access to their ventilators. The rationing scheme must take into account the needs of this group of patients.

Finances and Special Centers: Financial factors will significantly affect the ability of hospitals to provide adequate care. Hospitals with more limited resources might not be able to buy or rent supplemental ventilators either before or during the crisis. State pandemic plans should assess how to balance the differences among facilities in their ability to pay for and provide surge capacity.

The creation of "special centers of excellence" to care exclusively for influenza patients is controversial, since such a plan could prove financially burdensome to selected hospitals. Elective surgeries would be canceled, and patients with other illnesses would stay away. In contrast, non-designated hospitals would perform a greater share of well-compensated procedural work not related to influenza. This dilemma affected the delivery of care for SARS patients in Toronto during the outbreak in 2003. Ultimately, four

hospitals in Toronto were designated centers for SARS patients; such an arrangement may be easier under Canada's single payer system than it would be in the U.S.

Centers of excellence for pediatric, as opposed to adult, influenza patients may be more appropriate, since the requisite expertise will not be widely distributed. Planning assumptions must adequately reflect the needs of infants and children. Special expertise, likely to be in short supply, is needed to care for this population, who may also be especially vulnerable to morbidity and mortality in a pandemic. Stockpiled ventilators accommodate patients weighing as little as 10 kilograms; these ventilators will not support infants. NYSDOH pandemic planning for pediatric patients is assessing these issues.

4. Clinical evaluation

A clinical evaluation system based on the OHPIP protocol and on the SOFA score is adapted for use in these guidelines. [16] Incoming patients who meet the inclusion criterion of pulmonary failure will be assessed for exclusion criteria and will then be placed in categories based on a variation of the OHPIP system (see Appendix II). Patients on ventilators when triage begins will also be assessed to see whether they meet criteria for continued use. Candidates for extubation during a pandemic would include patients with the highest probability of mortality. These include patients like those in Hick and O'Laughlin's first tier, or those described in the OHPIP blue category. When a ventilator becomes available and many potential patients are waiting, clinicians may choose the patient with pulmonary failure who has the best chance of survival with ventilatory support, based on objective clinical criteria.