

Introduction to Adult Ventilator Guidelines

This document contains a recommended triage protocol that could be applied when there are many patients in need of ventilator support and there is a limited supply of ventilators such as in pandemic influenza. Ventilator triage protocols are being discussed nationally. This “model” is meant to serve as a discussion tool for Clinical Review Committees at healthcare facilities that are charged with the development and implementation of guidelines for the allocation of scarce resources.

This triage protocol provides an example of the “tough decisions” that will need to be made about the allocation of scarce resources. The fact that there already is such a “model” and the ensuing discussion among clinicians and hospitals about this “model” ensures patients and the general public that clinicians and hospitals are studying these issues and preparing for making these difficult ethical and clinical decisions.

To date, this “Minnesota Model” has been reviewed by three groups of Wisconsin Critical Care Specialists. Minor modifications have been made. It is expected that, as more clinicians are involved in the discussion of these protocols, there will be further enhancements, leading to the eventual adoption of such guidelines by all hospitals across the state.

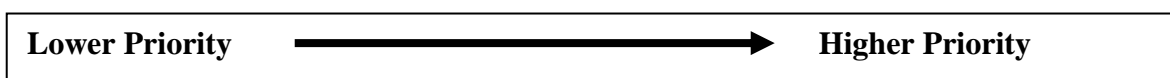
It is also expected that additional guidelines for the allocation of scarce resources will be developed. This may include guidelines for the triage of admissions to hospitals, for the triage of elective and urgent medical and surgical procedures, and for other such decisions that will arise from the scarcity of medical resources and personnel during a pandemic or disaster.

A similar tool is also available for pediatric patients.

Ventilator Triage Decision Tool for Adult Patients

“Compared to other patient(s), requiring and awaiting mechanical ventilation, does this particular patient have significant differences in prognosis or resource utilization in one or more of the categories below that would justify prioritizing this patient for ventilator support?”

It is recognized by healthcare professionals that it is more difficult to withdraw a patient from a ventilator versus to withhold a ventilator from a patient. This “tool” will assist in triaging patients so as to determine which patients have priority. Thus, certain patients, because of their prognosis, may not even be placed on a ventilator.



Category and Variables	LOW	MEDIUM	HIGH
1. Prognosis - SOFA Data: SOFA and ΔSOFA when available	High potential for death according to predictive model (>11)	Intermediate potential for death according to predictive model (7-11)	Low potential for death according to predictive model (<7)
2. Prognosis - Oxygenation Index* Data: OI and ΔOI - for ventilated patients	Worsening or very high oxygenation index	Stable and/or intermediate oxygenation index (no or marginal improvement after adequate trial of mechanical ventilation based upon disease process)	Improving or low oxygenation index
3. Duration of Need: Data includes days ventilated – if applicable - and expected duration of ventilation	3a Long duration – estimate > 7 days on ventilator (ARDS in septic patient with obstructive lung disease) 3b. Prolonged mechanical ventilation with poor or no progress toward weaning	3a. Moderate duration – estimate 3-7 days on ventilator (pneumonia in young healthy patient) 3b. Making slow progress toward weaning	3a. Short duration – flash pulmonary edema, chest trauma, other conditions (estimate < 3 days on ventilator) 3b. Making good progress toward weaning

4. Duration of Benefit: Data includes prognosis/duration modifying underlying diseases and patient age**	Severe underlying disease with poor short-term prognosis*** OR poor prognosis based upon epidemiology of specific disease	Severe underlying disease with poor long-term prognosis and/or ongoing resource demand (e.g.: home oxygen dependent, dialysis dependent) OR indeterminate / intermediate prognosis based upon epidemiology of specific disease process	No severe underlying disease OR good prognosis based upon epidemiology of specific disease state
---	---	--	--

*Oxygenation Index (OI) = Mean Airway Pressure (MAWP) x Inspired oxygen concentration (FiO2) / arterial oxygen pressure (PaO2)

(PaO2 may be estimated from peripheral oxygen saturation using the oxygen dissociation curve if blood gas measurements are unavailable)

OI = MAWP x FiO2 /

** Underlying disease may include epidemiologic prognostic information for *current* disease – e.g.: pandemic influenza mortality despite treatment in certain patient groups or with certain underlying medical conditions as well as *chronic* underlying conditions. Age is to be used in conjunction with other disease variables *only* to determine duration of benefit, not as stand-alone criteria or affecting prognosis.

***Examples of underlying diseases that may predict poor short-term survival or long-term resource demand may include (but are not limited to):

1. Congestive heart failure with ejection fraction < 25% (or persistent ischemia unresponsive to therapy or ischemia with pulmonary edema)
2. Severe chronic lung disease including pulmonary fibrosis, cystic fibrosis, obstructive or restrictive diseases requiring continuous home oxygen use prior to onset of acute illness
3. Central nervous system, solid organ, or hematopoietic malignancy with poor prognosis for recovery.
4. Cirrhosis with ascites, history of variceal bleeding, fixed coagulopathy or encephalopathy;
5. Acute hepatic failure with hyperammonemia
6. Acute and chronic and irreversible neurologic impairment, which makes patient dependent for all personal cares (e.g.: severe stroke, congenital syndrome, persistent vegetative state, severe dementia etc.).