Ventilator Allocation Protocol

This document is adapted from the New York State guideline which "provides an ethical, clinical, and legal framework that will assist health care workers and facilities and the general public in the ethical allocation of ventilators during an influenza pandemic." Superscript notations reference page number of the source document.

Decisions regarding ventilator therapy are made by the triage officer/committee; the patient's attending physician does not determine whether their patient receives or continues ventilator therapy.[5]

All acute care patients in need of a ventilator are subject to the protocol, whether or not their need is due to the condition causing the pandemic.[6] A chronically ventilator-dependent patient is subject to the protocol once they arrive to the hospital.[5]

Step 1: Assess for exclusion criteria. Patients with an exclusion criterion are not eligible for ventilator therapy.
Step 2: Assign priority: blue, red, yellow, green. **Blue** patients are least likely to benefit from ventilator therapy because of severe illness/poor prognosis and are therefore lowest priority for ventilator therapy; **red** patients are likely to survive and are therefore the highest priority for ventilator therapy; **yellow** patients are less likely to survive and are therefore second priority for ventilator therapy; **green** patients do not require ventilator therapy.
Step 3: For patients receiving ventilator therapy, formally reassess priority at 48 and 120 hours.

When the number of red priority patients exceeds the number of ventilators, further prioritization is **not** determined by clinical factors or physician judgment of need, ventilators are assigned to red priority patients **by randomization**.[16] This can be accomplished by computer generation (e.g. random.org/lists) or putting MRNs on equal sized pieces of paper and blindly drawing them out of a container.

The exception to the randomization provision is when a child 17 years or younger is red priority; in this case the child shall receive ventilator therapy.[7]

If a blue or yellow priority patient is receiving ventilator therapy and a red priority patient is identified, firstly the blue patient, and then the yellow patient is removed from ventilator therapy.[7] If more than one patient is in the blue or yellow group to be removed from ventilator therapy, this decision is made by randomization.[68]

Step 1 - List of Exclusion Criteria for Adult Patients

- Cardiac arrest
- Patient would not ordinarily meet criteria for ICU admission based on expected prognosis, including those with poor performance status (ECOG score 4) due to serious and progressive illness such as advanced dementia or cancer
- Desire by patient or surrogate decision maker to limit resuscitation efforts
- Any other conditions expected to result in near-term mortality even with aggressive therapy

Modified Sequential Organ Failure Assessment (SOFA) Score

Variable	0	1	2	3	4	Score (0-4)
1a. PaO_2/FiO_2 (mm Hg)	>400	300-400	200-300	100-200	<100	
1b. SpO_2/FiO_2	>400	315-400	235-314	150-234	<150	
2. Platelets ($10^3/\mu L$)	>150	100-150	50-99	20-49	<20	
3. Bilirubin (mg/dL)	<1.2	1.2-1.9	2.0-5.9	6.0-12	>12	
4. Hypotension	None	MAP <70 mmHg	Dopamine <5 (all doses are mcg/kg/min)	Dopamine 6-15 or Epi <0.1 or Norepi < 0.1	Dopamine >15 or Epi >0.1 or Norepi > 0.1	
5. GCS	15	13-14	10-12	6-9	<6	
6. Creatinine (mg/dL)	<1.2	1.2-1.9	2.0-3.4	3.5-5	>5	
					Total (0-24)	

If PaO_2 not available, use SpO_2 (use **1a** if PaO_2 if available, use **1b** if PaO_2 not available)

Estimating FiO_2 with Nasal Cannula: L/min (FiO_2)
1 (.24), 2 (.28), 3 (.32), 4 (.36), 5 (.4), 6 (.44), 7 (.48), 8 (.52), 9 (.56), 10 (.6)

If platelets not available, use recent value (within 1 week). If no prior available, assume 0 points

If creatinine not available, use recent value (within 6 months). If no prior available, assume 0 points

If bilirubin not available and +jaundice/scleral icterus, add 3 points, otherwise use prior bilirubin (within 6 months). if no prior available, assume 0 points

Step 2: Mortality Risk Assessment Using SOFA[a]

Color Code / Level of Access	Assessment of Mortality Risk / Organ Failure
BLUE No Ventilator Provided Use alternative forms of medical intervention and/or palliative care or discharge	Exclusion criterion **or** SOFA > 11
RED Highest Priority Use ventilators as available	SOFA < 7 or Single organ failure[b]
YELLOW Intermediate Priority Use ventilators as available	SOFA 8-11
GREEN Use alternative forms of medical intervention, defer or discharge. Reassess as needed.	No significant organ failure Does not require lifesaving resources

a. If a patient develops a condition on the exclusion criteria list at any time from the initial assessment to the 48 hour assessment, change color code to blue. Remove the patient from the ventilator and provide alternative forms of medical intervention and/or palliative care.
b. Intubation for control of the airway (without lung disease) is not considered lung failure

Step 3: 48 Hour Assessment[a]

Color Code / Level of Access	Assessment of Mortality Risk / Organ Failure
BLUE No Ventilator Provided[b] Use alternative forms of medical intervention and/or palliative care or discharge Reassess if resources become available	Exclusion criterion **or** SOFA > 11 **or** SOFA 8-11 and no change in SOFA Score from initial assessment[c]
RED Highest Priority Use lifesaving resources as available	SOFA < 7 and decrease in SOFA Score compared to the initial assessment[d] **or** SOFA < 11 and decrease in SOFA Score compared to the initial assessment[e]
YELLOW Intermediate Priority Use lifesaving resources as available	SOFA < 7 and no change in SOFA Score compared to the initial assessment
GREEN Use alternative forms of medical intervention, defer or discharge. Reassess as needed.	No longer ventilator dependent / actively weaning from ventilator

a. If a patient develops a condition on the exclusion criteria list at any time from the initial assessment to the 48 hour assessment, change color code to blue. Remove the patient from the ventilator and provide alternative forms of medical intervention and/or palliative care
b. A patient assigned a blue color code is removed from the ventilator and alternative forms of medical intervention and/or palliative care are provided
c. The patient remains significantly ill
d. These criteria apply to a patient who was placed into the red category at the initial assessment
e. These criteria apply to a patient who was placed into the yellow category at the initial assessment but because a ventilator was available the patient began ventilator therapy

Step 3: 120 Hour Assessment[a]

Color Code / Level of Access	Assessment of Mortality Risk / Organ Failure
BLUE No Ventilator Provided[b] Use alternative forms of medical intervention and/or palliative care or discharge Reassess if resources become available	Exclusion criterion **or** SOFA > 11 **or** SOFA < 7 and no change in SOFA score from previous assessment
RED Highest Priority Use lifesaving resources as available	SOFA < 7 and progressive decrease in SOFA score (3 point or greater decrease in previous 72h) compared to previous assessment
YELLOW Intermediate Priority Use lifesaving resources as available	SOFA < 7 and minimal decrease in SOFA score (<3 point decrease in previous 72h) compared to previous assessment
GREEN Use alternative forms of medical intervention, defer or discharge. Reassess as needed.	No longer ventilator dependent / actively weaning from ventilator

a. If a patient develops a condition on the exclusion criteria list at any time from the initial assessment to the 48 hour assessment, change color code to blue. Remove the patient from the ventilator and provide alternative forms of medical intervention and/or palliative care
b. A patient assigned a blue color code is removed from the ventilator and alternative forms of medical intervention and/or palliative care are provided

After the 120 hour clinical assessment, a patient who is allotted another time trial for ventilator therapy is reassessed every 48 hours. Every 48 hours, a clinical evaluation with the SOFA clinical scoring system is conducted and a triage officer/committee determines whether a patient continues with ventilator therapy. (see page 67 of source document)

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