

# **Ventilator Allocation in an Influenza Epidemic: Ethical Issues and Clinical Guidelines**

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# Ventilator Shortage in a Pandemic: Overview

- **Most severe scenario**
  - Too few ventilators for patients
  - Too few staff for more ventilators
  - Rationing of ventilators needed
- **Ethical Framework for Allocation**
- **Clinical Algorithm**

# Origin of Project

- **NYS DOH and NYC DOHMH table top exercises for pandemic flu**
- **Request for workgroup re: ventilator allocation**
- **National experts: critical care, emergency medicine, bioethics, public health**

# Ethical Framework: Allocation in Mass Casualty Scenarios

- Duty to Care
- Duty to Steward Resources
- Duty to Plan
- Transparency
- Justice

# Duty to Plan

- Predictable emergency
- Government's and health care system's obligation to healthcare professionals and community
- Lack of planning creates vulnerability for front-line providers
- Flawed plan versus no plan

# Justice

- Objective clinical criteria
- Applied broadly and evenly
- No differential access for special groups
- No discrimination based on age, diagnosis, ethnicity, perceived quality of life, or ability to pay

# Triage Process

- Pre-triage requirements
- Patient categories
- Facilities
- Clinical Algorithm
- Triage decision-makers
- Palliative care
- Communication



# Pre-triage Requirements

- Decrease ventilator need
  - Elective surgery, preventive care
- Increase vent supply
  - Stockpile
  - Collaborative arrangements
  - Use of OR, transport, additional vents

# Patient Categories

- Algorithm applies to all acute care patients
- Not flu only
- Includes patients on ventilator when triage starts



# Clinical Algorithm

- Adapted from Ontario guidelines, 2006
- Only triggered when need overwhelms supply
- Ventilator access based on patient's score, objective criteria
- Ventilator treatment for timed period with periodic review

# Measuring Clinical Status

- SOFA criteria
  - Non-proprietary
  - Simple, reproducible
  - Evidentiary basis for estimating mortality
  - Score based on objective measure of six key systems: lungs, liver, brain, kidneys, blood clotting, blood pressure

# Case 1: Meets Triage Criteria

- 58 year old man with asthma, weight 260
- Two day history fever, chills, cough, lethargy
- Six hours increasing respiratory distress, waxing/waning mental status, temperature 103.6
- SOFA score: 6

Variable	Score
PaO <sub>2</sub> /FiO mmHg = 80	4
Platelets, x 1000/microL = 135	1
Bilirubin, mg/dL = 1.1	0
Hypotension = borderline 110/60	0
Glasgow Coma Score = 13, confused	1
Creatinine, mg/dL = 1.1	0

## Case 2: Does NOT Meet Triage Criteria

- 62 year old woman admitted with acute MI, CHF, drug-resistant pneumonia, acute renal failure requiring dialysis, ventilated 4 days
- SOFA score: 12

Variable	Score
PaO <sub>2</sub> /FiO <sub>2</sub> mmHg = 80	4
Platelets, x 1000/microL = 150	0
Bilirubin, mg/dL = 1.2	0
Hypotension = Dopamine 5 µg/kg/min	2
Glasgow Coma Score = 9, obtunded	3
Creatinine, mg/dL = 4.7	3

# Triage Decision-making

- Time trials, objective clinical criteria
- Primary clinicians care for patients
- Triage decisions made by triage officers
- Role sequestration for decision-makers, clinicians

# Palliative Care

- Triage, not abandonment
- Policies for end-of-life care
- Continue non-ventilator treatments