

## TABLE TOP EXERCISE PARTICIPANT GUIDE

### Hospital Resource and Clinical Management Guidelines for Hospital Healthcare Providers When Routine Critical Care Resources Are Not Available

Time expectations for each session:

SECTION	ACTIVITY	TIME
I	<b>Introduction</b>	5 minutes
II	<b>Exercise Part 1</b>	10 minutes
	<b>Discussion</b>	10 minutes
III	<b>Guidelines Education</b>	20 minutes
IV	<b>Exercise Part 2</b>	20 minutes
	<b>Discussion</b>	15 minutes
V	<b>Evaluation</b>	10 minutes
<b>TOTAL EXERCISE TIME</b>		<b>90 minutes</b>

### **Exercise Objectives**

1. To guide the allocation of critical care resources during a public health emergency, such as an influenza pandemic, when demand for supplies and equipment necessary for ventilatory and circulatory support exceeds supply.
2. To provide an ethical, moral and practical framework for decision-making during a public health emergency.
3. To provide an opportunity for members of the hospital medical staff to discuss and exercise using the Multi-principled Critical Care Resource Allocation Score (MCCRAS) triage guidelines.
4. To provide feedback to the State of Wisconsin on mass casualty triage and/or crisis standards of care.

**Exercise Scenario**

It is May 2012 and the CDC and WHO have identified a new influenza strain that has documented person to person transmission with all ages susceptible, high infectivity and virulence and with unknown projected mortality rate.

1. The State of Wisconsin Department of Military Affairs Emergency Management Agency has declared a Public Health Emergency due to the number current and projected in hospital patients.
2. Your hospital is experiencing unavailability of critical resources and cannot access these resources from other sources. Ventilator and IV fluids are limited – your supplier of IV fluids is unable to make delivery this week.
3. The hospital is unable to refer patients to another facility because other facilities cannot receive the referred patients.
4. The hospital internal emergency operations plan has been activated.

**You have been assigned by your hospital to place in rank order the next patients who arrive in the Emergency Department. Your ranking will be used by your hospital incident command to determine who will receive critical care resources and who will be assigned to supportive care.**

## Hospital Resource and Clinical Management Guidelines for Hospital Healthcare Providers When Routine Critical Care Resources Are Not Available

Medical College of Wisconsin  
Center for Medical Incident Management and Preparedness

RG Pirrallo and GM Akuna

### These Guidelines:

- ▶ Are triggered when bed capacity and critical care supplies and equipment are exhausted
- ▶ Are limited by the capability of the critical care supplies and equipment to accommodate the physiologic requirements of patients' of various ages
- ▶ Are designed to accommodate the variability of patient volume, patient acuity and resource availability

### These Guidelines:

- ▶ Do not address all of the accompanying hospital administrator responsibilities.
- ▶ Do not address strategies for providing and maintaining patient care surge capacity or staffing

### Basic Premises Adopted From Previously Published Works

- ▶ For triage decisions to be considered fair, just and ethical, the medical resource must be allocated with prudence and consistency.
- ▶ The goal is to optimize the effectiveness of the triage protocol so that every patient who receives resources will survive.

### Benefits of Standardized Triage

- ▶ Provides way to draw organization out of chaos
- ▶ Brings first care to those who will benefit the most
- ▶ Guides resource allocation
- ▶ Provides an objective framework for stressful and ethical decisions

### Ethical Triage



Hardin uses the metaphor of a lifeboat to make his argument

### Lifeboat Ethics

- ▶ **Lifeboat ethics** is a metaphor for resource distribution proposed by the ecologist Garrett Hardin in 1974.
- ▶ Hardin's metaphor describes a lifeboat bearing 50 people, with room for ten more. The lifeboat is in an ocean surrounded by a hundred swimmers.

### Multi-Principled Allocation System

- ▶ **Doing the greatest good for the greatest number**
- ▶ **Maximizing life-years saved**
- ▶ **The Life-Cycle Principle**

### Doing the greatest good for the greatest number

- ▶ Decision making shifts to doing the greatest good for the greatest number of individuals
- ▶ Not everyone may receive the services that may be available at other times or places

### Maximizing life-years saved

- ▶ All other things being equal, it is better to save more years of life than fewer.

### Life-Cycle Principle

- ▶ Has been called the "fair innings" argument and "intergenerational equity"
- ▶ Gives individuals equal opportunity to pass through the stages of life
- ▶ Does not rely on considerations of one's intrinsic worth or social utility

### Hospital Resource and Clinical Management Guidelines

- ▶ The central components are:
  1. **Clinical Management Decision Process for the Individual Patient**
  2. **Multi-principled Critical Care Resource Allocation Score (MCCRAS)**

### Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
Perform appropriate medical screening exam	
Provide initial treatment and stabilization	
Determine need for critical care resources  (ventilatory and/or circulatory support)	Criteria for ventilatory support <ul style="list-style-type: none"> <li>Respiratory Failure</li> <li>Hypoxia</li> </ul> Criteria for circulatory support <ul style="list-style-type: none"> <li>Shock</li> <li>Volume Depletion</li> </ul>

### Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
Evaluate for critical care resource eligibility	Baseline severe and irreversible chronic neurological condition  Acute severe neurologic event with minimal chance of functional neurologic recovery  Severe acute trauma with a Revised Trauma Score of less than 2  Burns with a predicted hospital mortality of greater than 50%

### Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
Determine Sequential Organ Failure Assessment (SOFA) Score	
Calculate Multi-principled Critical Care Resource Allocation Score (MCCRAS)	When determining rank order, scores should be ordered lowest to highest with resource allocation beginning with the lowest score.
Provide MCCRAS to the hospital emergency operations center for determination of allocation of critical care resources	All patients to be assessed for eligibility and rescored after 48 hours

### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Save the most lives	Best prognosis for short term survival  SOFA score	SOFA 5 or less	SOFA 6-9	SOFA 10-13	SOFA 14-17	SOFA 18-21	SOFA 22-24	---

### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Opportunity to live through phases of life	Priority to those who have not lived through life's stages  Age in years	Age 0-12	Age 13-20	Age 21-40	Age 41-60	Age 61-80	Age 81 or greater	---

### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Maximizing most life-years	Best prognosis for long-term survival  Comorbidities	No co-morbid conditions	Likely limited impact on long-term survival	Likely moderate impact on long-term survival	Likely significant impact on long-term survival	Likely profound impact on long-term survival	Likely death within 1 year	---

**Hospital Resource and Clinical Management Guideline Assumptions**

- Ventilatory and circulatory support supplies and equipment will be the most limited resources
  - ventilators
  - supplemental oxygen
  - IV fluids
  - vasopressors
  - blood

**Hospital Resource and Clinical Management Guideline Assumptions**

- Consumable and non-consumable resources may become limited at differing rates
- They are activated when the hospital no longer has the critical care resources to meet the patient's ventilatory and circulatory support needs
- They may be applied other types of limited resources
- They apply to patients with and without influenza

**Hospital Resource and Clinical Management Guideline Assumptions**

- Critical care patients require many resources that are shared with non-critical care patients
  - oxygen
  - intravenous fluids
  - suction catheters
  - bed linens

**Hospital Resource and Clinical Management Guideline Assumptions**

- They do not apply to patients who reside in chronic care facilities or in the community who currently receive ventilatory and circulatory support

**Hospital Resource and Clinical Management Guideline Assumptions**

- They should be applied to all patients to establish a rank order list for resource allocation.
- Scoring is independent of resource need, yet rank order is based on the specific resource required

**Hospital Resource Management Guidelines Operational Framework**

- Resource allocation decisions will be made within an established Incident Command System (ICS) structure
- Patients' informed request to not receive critical care resources will be honored. These resources will be reallocated to the next eligible patient.
- In order for patients to receive critical care resources they must meet eligibility criteria

### Hospital Resource Management Guidelines Operational Framework

- In anticipation of trigger conditions being met within 48 hours, patients requiring limited resources should be:
  - evaluated for eligibility for these resources
  - subjected to the MCCRAS decision algorithm

### Hospital Resource Management Guidelines Operational Framework

- When these Guidelines are activated, all patients needing **consumable** resources will be scored and resources will be allocated based on rank order.
  - intravenous fluids
  - medications
  - oxygen

### Hospital Resource Management Guidelines Operational Framework

- When these Guidelines are activated all available needed **non-consumable** resources will be assigned to patients.
  - ventilators
  - monitors

### Hospital Resource Management Guidelines Operational Framework

- If the specific limited resources are interdependent for survival, the lowest rank will be used to determine the patient's rank order for all resources.

### Hospital Resource Management Guidelines Operational Framework

- The MCCRAS reassessment is performed every 48 hours and determines:
  - patient's eligibility
  - MCCRAS score
  - rank order

### Hospital Resource Management Guidelines Operational Framework

- Patients will receive critical care resources until:
  - they have improved such that they no longer require these resources
  - they become ineligible
  - their 48 hour MCCRAS reassessment score rank is higher than other individuals who require those resources

### Hospital Resource Management Guidelines Operational Framework

- Patients whose MCCRAS remains the same over 2 rounds of MCCRAS reassessment will no longer be eligible for the identified critical care resource.
- Retrospective review of clinical decisions and resource allocation will be done on a daily basis.

### Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
1. Perform appropriate medical screening exam	
2. Provide initial treatment and stabilization	
3. Determine need for critical care resources	Criteria for ventilatory support <ul style="list-style-type: none"> <li>Respiratory Failure</li> <li>Hypoxia</li> </ul> Criteria for circulatory support <ul style="list-style-type: none"> <li>Shock</li> <li>Volume Depletion</li> </ul>

### Clinical Management Decision Process for the Individual Patient

#### Respiratory Failure

- refractory hypoxemia
- respiratory acidosis
- clinical evidence of impending respiratory failure
- inability to protect or maintain airway

#### Hypoxia

- ABG PO<sub>2</sub> less than or equal to 55 mm Hg
- SpO<sub>2</sub> less than or equal to 88% when awake and at rest on room air

### Clinical Management Decision Process for the Individual Patient

#### Shock

Systolic blood pressure less than 90 mm Hg or relative hypotension with clinical evidence of shock

- altered level of consciousness
- decreased urine output
- other evidence of end organ failure

#### Volume Depletion

Evidenced by orthostatic hypotension

- reduction in systolic blood pressure of 20 mmHg or reduction in diastolic blood pressure of 10 mmHg within 3 min of undergoing orthostatic stress

### Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
4. Evaluate for critical care resource eligibility	Baseline severe and irreversible chronic neurological condition  Acute severe neurologic event with minimal chance of functional neurologic recovery  Severe acute trauma with a Revised Trauma Score of less than 2  Burns with a predicted hospital mortality of greater than 50%

### Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
5. Determine Sequential Organ Failure Assessment (SOFA) Score and Calculate Multi-principled Critical Care Resource Allocation Score (MCCRAS)	When determining rank order, scores should be ordered lowest to highest with resource allocation beginning with the lowest score.



### Sequential Organ Failure Assessment (SOFA) Score

Variables used to determine the SOFA score are:

- ▶ Glasgow Coma Score
- ▶ Hypotension
- ▶ PaO<sub>2</sub>/FiO<sub>2</sub>
- ▶ Platelets
- ▶ Bilirubin
- ▶ Creatinine

### Clinical Management Decision Process for the Individual Patient

#### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Save the most lives	Best prognosis for short term survival	SOFA 5 or less	SOFA 6-9	SOFA 10-13	SOFA 14-17	SOFA 18-21	SOFA 22-24	---
	SOFA score							

### Clinical Management Decision Process for the Individual Patient

#### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Opportunity to live through phases of life	Priority to those who have not lived through life's stages	%Age 0-12	Age 13-20	Age 21-40	Age 41-60	Age 61-80	Age 81 or greater	---
	Age in years							

### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

- ▶ \*The age range for Potential Score 0 includes all patients age 12 or less who may be accommodated by the available equipment and supplies.
- ▶ Patients needing specialized pediatric equipment in limited supply will be ranked in a separate group with consideration for age scoring in reverse order.
- ▶ Patients who cannot be accommodated by a particular piece of equipment because of size or age should be assigned to the supportive care group.

### Clinical Management Decision Process for the Individual Patient

#### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Maximizing most life-years	Best prognosis for long-term survival	No co-morbid conditions	Likely limited impact on long-term survival	Likely moderate impact on long-term survival	Likely significant impact on long-term survival	Likely profound impact on long-term survival	Likely death within 1 year	---
	Comorbidities							

### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

#### Comorbidities that may impact long term survival include:

- ▶ Known severe dementia medically treated and requiring assistance with activities of daily living
- ▶ Advanced untreatable neuromuscular disease
- ▶ Incurable metastatic malignant disease
- ▶ Individuals whose weight exceeds 3 times their ideal body weight
- ▶ Second and third trimester pregnancy

### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

**Comorbidities that may impact long term survival include:**

- ▶ Moderate or severe congestive heart failure
- ▶ End stage liver disease
- ▶ End stage pulmonary disease
- ▶ End stage renal disease
- ▶ DNR orders with consideration of underlying disease process.

### Clinical Management Decision Process for the Individual Patient

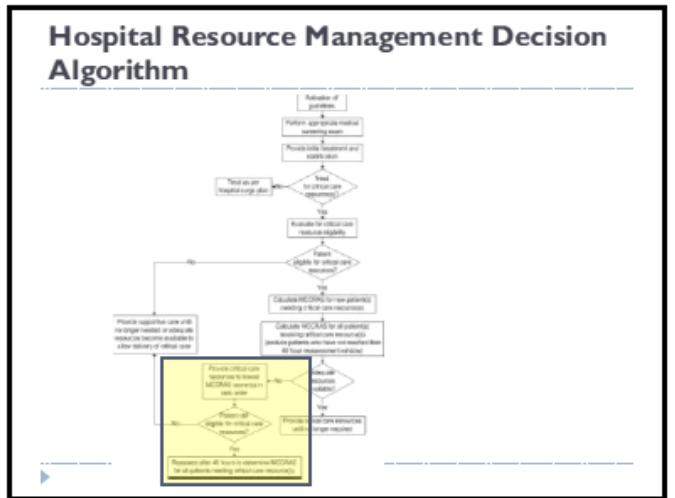
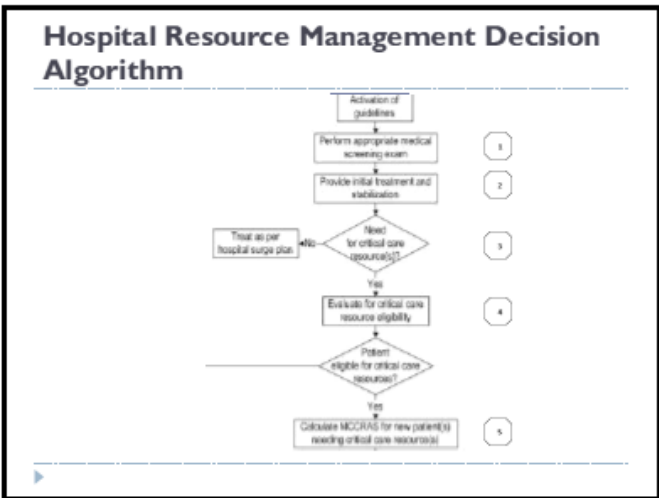
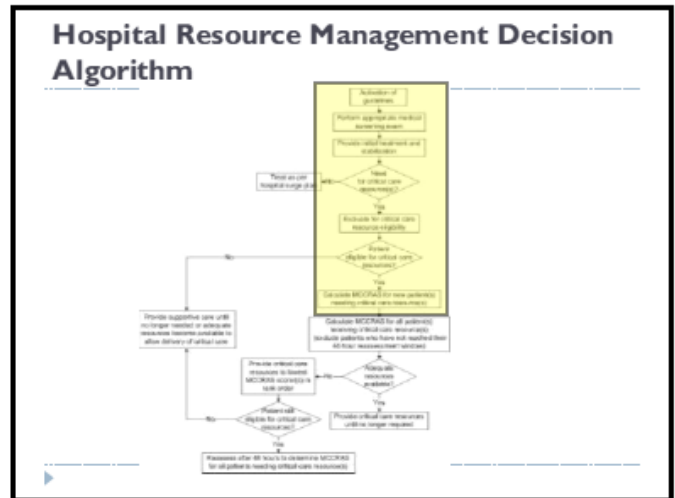
#### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						RCM SCORE
		0	1	2	3	4	5	
<b>Save the most lives</b>	Best prognosis for short term survival <b>SCORE</b> 5 or less	SCRA 5 or less	SCRA 6-9	SCRA 10-17	SCRA 18-17	SCRA 18-21	SCRA 22-24	_____
<b>Opportunity to live through phases of life</b>	Priority to those who have not lived through this stage <b>Age</b> in years	*Age < 12	Age 13-39	Age 40-49	Age 50-69	Age 70-89	Age 90 or greater	_____
<b>Maximizing most life-years</b>	Best prognosis for long term survival <b>Comorbidity</b>	No co-morbid conditions	1-2 mild impact on long term survival	3-4 moderate impact on long term survival	5-6 severe impact on long term survival	7-8 profound impact on long term survival	9-10 likely death within 1 year	_____
<b>TOTAL SCORE</b> Minimum total score = 0 Maximum total score = 15								_____

### Clinical Management Decision Process for the Individual Patient

#### Multi-principled Critical Care Resource Allocation Score (MCCRAS)

ACTION	ADDITIONAL INFORMATION
6. Provide MCCRAS to the hospital emergency operations center for determination of allocation of critical care resources	All patients to be assessed for eligibility and rescored after 48 hours



### **Hospital Resource Management Guidelines Operational Framework**

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If two patients needing critical care resources have the same MCCRAS:

- ▶ the patient with the lowest score in the “life years lived” category will be given priority to receive the critical care resource

If both patients have the same “life years lived” score:

- ▶ a random selection system will be used to allocate the critical care resource
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### **Summary**

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- ▶ Determining who should receive resources during a disaster is a difficult decision.
  - ▶ It is hoped that these guidelines will better guide your decision making.
  - ▶ You will now have an opportunity to exercise these guidelines in a table top drill.
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Clinical Management Decision Process for the Individual Patient		
ACTION		ADDITIONAL INFORMATION
1	Perform appropriate medical screening exam	
2	Provide initial treatment and stabilization	
3	Determine need for critical care resources (ventilatory and/or circulatory support)	<p><b>Criteria for Ventilatory Support</b></p> <ul style="list-style-type: none"> <li>Respiratory Failure - Refractory hypoxemia (SpO<sub>2</sub> less than 90% on non-rebreather mask or FIO<sub>2</sub> greater than 0.85), respiratory acidosis (pH less than 7.2), clinical evidence of impending respiratory failure, inability to protect or maintain airway.</li> <li>Hypoxia - ABG PO<sub>2</sub> less than or equal to 55 mm Hg or SpO<sub>2</sub> is less than or equal to 88%, awake and at rest on room air.</li> </ul> <p><b>Criteria for Circulatory Support</b></p> <ul style="list-style-type: none"> <li>Shock - Systolic blood pressure less than 90 mm Hg or relative hypotension with clinical evidence of shock (altered level of consciousness, decreased urine output or other evidence of end organ failure) refractory to volume resuscitation requiring vasopressor or inotrope support that cannot be managed in ward setting.</li> <li>Volume Depletion - Evidenced by orthostatic hypotension, commonly defined as a reduction in systolic blood pressure of 20 mmHg or greater, or a reduction in diastolic blood pressure of 10 mmHg or greater, within 3 min of undergoing orthostatic stress not resolved with 40 ml/kg of an isotonic intravenous solution and unable to take adequate fluids by mouth.</li> </ul>
4	Evaluate for critical care resource eligibility	<p><b>Defer patient from receiving critical care resources if he/she has any of the following:</b></p> <ol style="list-style-type: none"> <li>Baseline severe and irreversible chronic neurological condition with and without persistent coma or vegetative state (physician judgment)</li> <li>Acute severe neurologic event with minimal chance of functional neurologic recovery, such as traumatic brain injury, severe hemorrhagic stroke, hypoxic ischemic brain injury, and intracranial hemorrhage (physician judgment)</li> <li>Severe acute trauma with a Revised Trauma Score of less than 2 (anticipated mortality of greater than 50%)</li> <li>Burns with a predicted hospital mortality of greater than 50% based on the FLAMES score or comparable scoring system</li> </ol>
5	Determine Sequential Organ Failure Assessment (SOFA) Score  Calculate Multi-principled Critical Care Resource Allocation Score (MCCRAS)	<p>Independent of the initial value, an increase in the SOFA score during the first 48 hours of ICU admission predicts a mortality rate of at least 50%.</p> <p>When determining rank order, scores should be ordered lowest to highest with resource allocation beginning with the lowest score.</p>
6	Provide MCCRAS to the hospital EOC for determination of allocation of critical care resources	All patients to be assessed for eligibility and rescored after 48 hours

Multi-principled Critical Care Resource Allocation Score (MCCRAS)								
PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Save the most lives	Best prognosis for short term survival <b>SOFA score</b>	SOFA 5 or less	SOFA 6-9	SOFA 10-13	SOFA 14-17	SOFA 18-21	SOFA 22-24	_____
Opportunity to live through phases of life	Priority to those who have not lived through life's stages <b>Age in years</b>	*Age 0-12	Age 13-20	Age 21-40	Age 41-60	Age 61-80	Age 81 or greater	_____
Maximizing most life-years	Best prognosis for long-term survival <b>Comorbidities</b>	No comorbid conditions	Likely limited impact on long-term survival	Likely moderate impact on long-term survival	Likely significant impact on long-term survival	Likely profound impact on long-term survival	Likely death within 1 year	_____
<b>TOTAL SCORE</b> Minimum total score = 0 Maximum total score = 15								_____

**Comorbidities that may impact long term survival include:**

1. Known severe dementia medically treated and requiring assistance with activities of daily living
2. Advanced untreatable neuromuscular disease (such as ALS, end-stage MS, or SMA) requiring assistance with activities of daily living or requiring chronic ventilatory support
3. Incurable metastatic malignant disease
4. Individuals whose weight exceeds 3 times their ideal body weight (BMI > 60 kg/m<sup>2</sup>)
5. Second and third trimester pregnancy
6. New York Heart Association (NYHA) Functional Classification System for Congestive Heart Failure Class III or IV (moderate severe)
7. End stage liver disease with a PUGH SCORE >7
8. End stage pulmonary disease meeting the following criteria:
  - a. Chronic Obstructive Pulmonary Disease (COPD) with Forced Expiratory Volume in one second (FEV1) < 25% predicted baseline, PaO2 <55 mm Hg, or severe secondary pulmonary hypertension
  - b. Cystic fibrosis with post-bronchodilator FEV1 <30% or baseline PaO2 <55 mm Hg
  - c. Pulmonary fibrosis with VC or TLC < 60% predicted, baseline PaO2 <55 mm Hg, or severe secondary pulmonary hypertension
  - d. Primary pulmonary hypertension with NYHA class III or IV heart failure (g), right atrial pressure >10 mm Hg, or mean pulmonary arterial pressure >50 mm Hg
9. End stage renal disease with a glomerular filtration rate of less than 60 mL/min/1.73m<sup>2</sup> [CKD3 (Moderate)] for 3 months.
10. DNR orders with consideration of underlying disease process.

### MCCRAS Post Exercise Survey

**Do not** put your name on this survey; this is an anonymous survey of your perspective on today's table top exercise experience. Please read each question carefully.

What is today's date? \_\_\_\_\_

1. Approximately how many years have you been a licensed health care provider? # \_\_\_\_\_
2. Prior to today, have you participated in a hospital emergency situation exercise where the patient needs for critical care resources exceeds supply?  
Yes      No
3. Prior to today, have you participated in an actual hospital emergency situation where the patient needs for critical care resources exceeds supply?  
Yes      No
4. Prior to today, have you ever heard of the Multi-principled Critical Care Resource Allocation Score (MCCRAS)?  
Yes      No

*Based on your experience of today's disaster mass casualty triage exercise answer the following questions.*

5. PRIOR TO this exercise, how confident do you feel in using the MCCRAS during when routine critical care resources are not available?  
Very confident     Confident     Somewhat Confident     Not Confident
6. NOW that the exercise is completed, how confident do you feel in using the MCCRAS when routine critical care resources are not available?  
Very confident     Confident     Somewhat Confident     Not Confident
7. PRIOR TO this exercise, I felt that:
  - the MCCRAS approach is easier to use than my current disaster triage protocol
  - the MCCRAS approach is similar to my current disaster triage protocol
  - the MCCRAS approach is more difficult to use than my current disaster triage protocol
8. NOW that the exercise is completed, I feel that:
  - the MCCRAS approach is easier to use than my current disaster triage protocol
  - the MCCRAS approach is similar to my current disaster triage protocol
  - the MCCRAS approach is more difficult to use than my current disaster triage protocol

## MCCRAS Exercise After Action Feedback

Today's Date: _____				
1. The Hospital Resources Management Guidelines Operational Framework is useful	Strongly Disagree		Strongly agree	
	1	2	3	4 5
2. The Multi-Principled Critical Care Resource Allocation Score (MCCRAS) approach is impartial	Strongly Disagree		Strongly agree	
	1	2	3	4 5
3. The ineligibility requirements to defer patients from receiving critical care resources are just	Strongly Disagree		Strongly agree	
	1	2	3	4 5
4. The method of determining comorbidity is rational	Strongly Disagree		Strongly agree	
	1	2	3	4 5
5. The MCCRAS is easy to calculate	Strongly Disagree		Strongly agree	
	1	2	3	4 5
6. The MCCRAS is non-discriminatory towards all types of patients such as pediatric and special needs populations	Strongly Disagree		Strongly agree	
	1	2	3	4 5
7. Would you recommend statewide adoption of these Clinical Management Guidelines for Health Care Providers When Routine Critical Care Resources Are Not Available?	Yes		No	
<b>Any additional comments?</b>				