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

Table Top Exercise



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.



Questions to Think About

1. Who makes the decisions in your hospital?

- ▶ Regarding rank order for care
- ▶ Regarding resource allocation

2. What is your current approach to sorting patients?



Exercise Scenario I

It is May 2012 and the CDC and WHO have identified a new influenza strain that has:

- ▶ documented person to person transmission
- ▶ all ages susceptible
- ▶ high infectivity and virulence
- ▶ unknown projected mortality rate



Exercise Scenario I

- ▶ Your hospital is experiencing unavailability of critical resources and cannot access these resources from other sources.
- ▶ The hospital is unable to refer patients to another facility because other facilities cannot receive the referred patients.
- ▶ The hospital internal emergency operations plan has been activated.



Exercise Scenario I

- ▶ You have been assigned by your hospital to place in rank order the next 10 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.**



Discussion

- ▶ What criteria did you use to rank your patients?
- ▶ Did you treat children differently than adults?
- ▶ Did you consider reallocating any resources currently in use in the hospital?
- ▶ If you were the hospital incident commander what information would you like to help make decisions regarding resource allocation?



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

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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">• Respiratory Failure• Hypoxia Criteria for circulatory support <ul style="list-style-type: none">• Shock• Volume Depletion



Clinical Management Decision Process for the Individual Patient

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



Clinical Management Decision Process for the Individual Patient

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



Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
		0	1	2	3	4	5	
Save the most lives	<p>Best prognosis for short term survival</p> <p>SOFA score</p>	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	<p>Priority to those who have not lived through life's stages</p> <p>Age in years</p>	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	<p>Criteria for ventilatory support</p> <ul style="list-style-type: none">• Respiratory Failure• Hypoxia <p>Criteria for circulatory support</p> <ul style="list-style-type: none">• Shock• Volume Depletion



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_2 less than or equal to 55 mm Hg
- ▶ SpO_2 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	<p>Baseline severe and irreversible chronic neurological condition</p> <p>Acute severe neurologic event with minimal chance of functional neurologic recovery</p> <p>Severe acute trauma with a Revised Trauma Score of less than 2</p> <p>Burns with a predicted hospital mortality of greater than 50%</p>



Clinical Management Decision Process for the Individual Patient

ACTION	ADDITIONAL INFORMATION
<p data-bbox="170 468 942 582">5. Determine Sequential Organ Failure Assessment (SOFA) Score</p> <p data-bbox="490 661 568 704">and</p> <p data-bbox="166 789 896 986">Calculate Multi-principled Critical Care Resource Allocation Score (MCCRAS)</p>	<p data-bbox="977 768 1798 1029">When determining rank order, scores should be ordered lowest to highest with resource allocation beginning with the lowest score.</p>



Sequential Organ Failure Assessment (SOFA) Score

Variables used to determine the SOFA score are:

- ▶ Glasgow Coma Score
- ▶ Hypotension
- ▶ $\text{PaO}_2/\text{FiO}_2$
- ▶ 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	<p>Best prognosis for short term survival</p> <p>SOFA score</p>	SOFA 5 or less	SOFA 6-9	SOFA 10-13	SOFA 14-17	SOFA 18-21	SOFA 22-24	_____



Clinical Management Decision Process for the Individual Patient

Multi-principled Critical Care Resource Allocation Score (MCCRAS)

PRINCIPLE	RATIONALE	POTENTIAL SCORE						ROW SCORE
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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)

- ▶ *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 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	—



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						ROW SCORE
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Maximizing most life-years	Best prognosis for long-term survival <i>Comorbidities</i>	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	_____
TOTAL SCORE Minimum total score = 0 Maximum total score = 15								_____

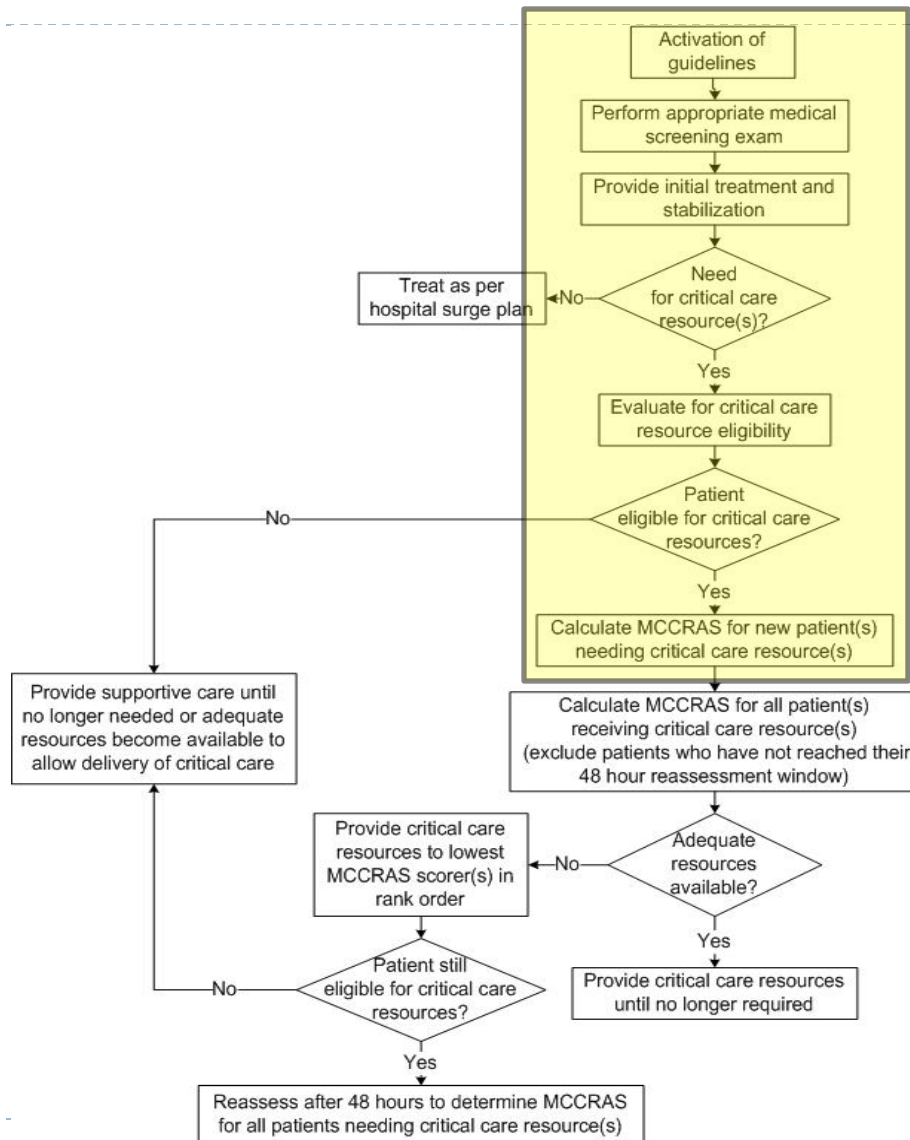
Clinical Management Decision Process for the Individual Patient

Multi-principled Critical Care Resource Allocation Score (MCCRAS)

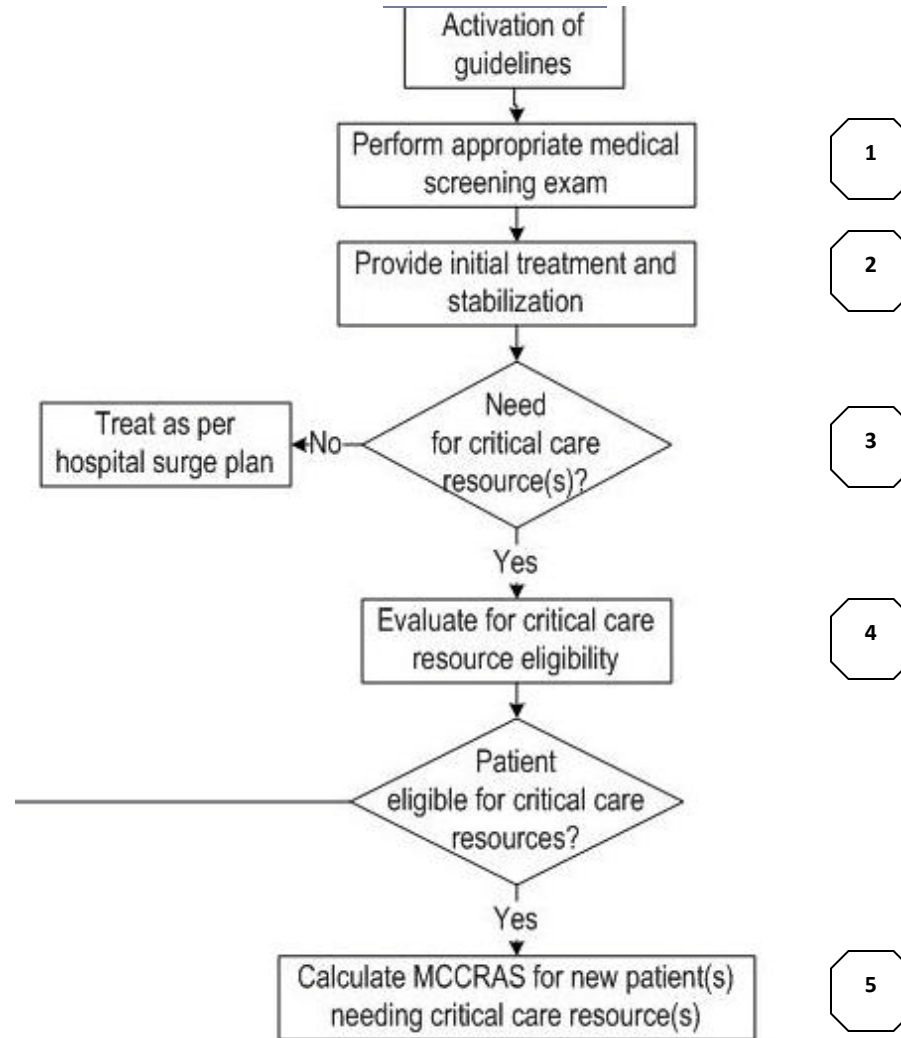
ACTION	ADDITIONAL INFORMATION
6. Provide MCCRAS to the hospital emergency operations center for determination of allocation of critical care resources	All patients to be assessed for eligibility and rescored after 48 hours



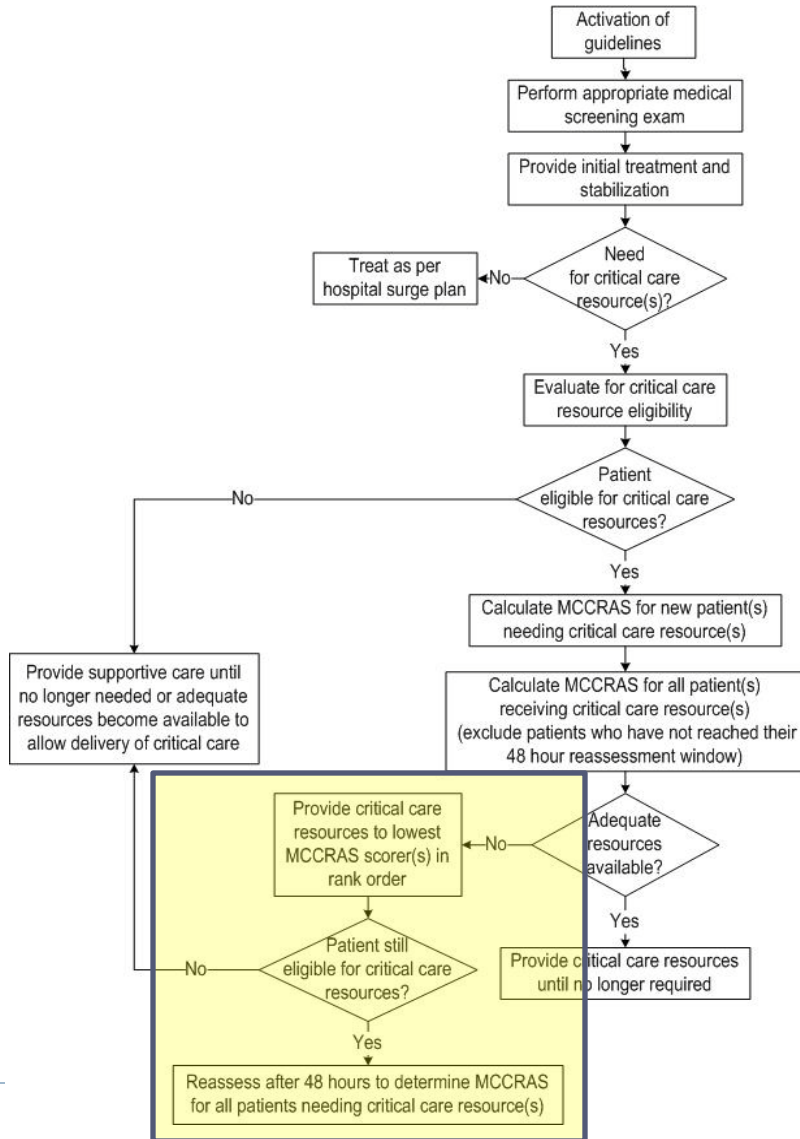
Hospital Resource Management Decision Algorithm



Hospital Resource Management Decision Algorithm



Hospital Resource Management Decision Algorithm



Hospital Resource Management Guidelines Operational Framework

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



Summary

- ▶ 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.



Exercise Scenario 2

It is May 2012 and the CDC and WHO have identified a new influenza strain that has:

- ▶ documented person to person transmission
 - ▶ all ages susceptible
 - ▶ high infectivity and virulence
 - ▶ unknown projected mortality rate
-



Exercise Scenario 2

- ▶ Your hospital is experiencing unavailability of critical resources and cannot access these resources from other sources.
- ▶ The hospital is unable to refer patients to another facility because other facilities cannot receive the referred patients.
- ▶ The hospital internal emergency operations plan has been activated.



Exercise Scenario 2

- ▶ You have been assigned by your hospital to place in rank order the next 30 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.**



Exercise Evaluation

Please complete the:

- ▶ Post Exercise Survey
- ▶ After Action Feedback



MCCRAS Comparison

PATIENT NUMBER	SCORE
1	3
2	12
3	0
4	8
5	7
6	10
7	0
8	9
9	4
10	1



MCCRAS Comparison

PATIENT NUMBER	SCORE
11	5
12	6
13	6
14	11
15	11
16	13
17	6
18	2
19	2
20	3



MCCRAS Comparison

PATIENT NUMBER	SCORE
21	5
22	7
23	6
24	1
24	8
26	9
27	8
28	13
29	10
30	4

