THE INSTITUTE OF MEDICINE GUIDANCE ON CRISIS STANDARDS OF CARE

Dan Hanfling, MD John Hick, MD Steve Cantrill, MD

Emergency Management Summit March 4, 2010

CRISIS STANDARDS OF CARE: THE NEED AND FOUNDATIONAL ELEMENTS

Dan Hanfling, MD

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Catastrophic Disasters in United States

1865	Steamship *Sultana*	Mississippi River	1,547 deaths
1871	Forest fire	Peshtigo, WI	1,182
1889	Flash flood	Johnstown, PA	2,200+
1900	Hurricane	Galveston, TX	5,000+
1904	Steamship *General Slocum*	East River, NY	1,021+
1928	Hurricane	Okeechobee, FL	2,000+
2001	Al-Queda Attacks	NYC/Wash DC	3,000
2005	Hurricane Katrina	Gulf Coast/MS/LA	1,000+

Courtesy of NDMS

Accused Doctor Said to Have Faced Chaos at New Orleans Hospital

By CHRISTOPHER DREW and SHAILA DEWAN

NEW ORLEANS, July 19 — She arrived at Memorial Medical Center to treat several patients as Hurricane Katrina's winds were gathering and did not leave until days later, when the water and the temperature and the body count had risen beyond endurance.

By the time the ordeal ended, her friends and supporters say, Dr. Anna M. Pou was one of the few doctors left in a hospital that had become a nightmare.

Overheated patients were dying around her, and only a few could be taken away by helicopter, the only means of escape for the most fragile patients until the water receded. Medicines were running low, and with no electricity, patients living on machines were running out of battery power. In the chaos, Dr. Pou was left to care for many patients she did not know.

But did she cross a line during those harrowing days, using lethal injections to kill several patients who were in extreme distress? The attorney general of Louisiana says Dr. Pou did, and on Tuesday recommended that she be prosecuted for murder.

Her supporters, though, say there is another explanation: she was using drugs to try to calm and comfort patients who had nearly reached their limit.

Eugene Myers, a professor at the University of Pittsburgh who helped train Dr. Pou, said that what she had told him shortly after the hurricane sounded heroic.

He said Dr. Pou had told him that she and Lori Budo and Cheri Landry, two nurses who have also been arrested in the case either helped evacuate the last patients or tried to make them comfortable with pain medications.

Dr. Anna M. Pou at her mother's home yesterday in New Orleans. She and two nurses are accused of killing patients at Memorial Medical Center

New York Times July 2006

Who Should Get Influenza Vaccine When Not All Can?

Emanuel, Wertheimer

12 May 2006 *Science* 312 (5775), 584.

"save the most lives" [burning building/emergency]
"women and children first" [Titanic]
"first come, first serve" [ICU/emergency]
"save most quality life years" [cost effectiveness rationing]
"save the worst-off" [organ transplant]
"save those most likely to recover" [PCN for syphilis in WWII]
"save those contributing to the well being of others"
"save those most likely to make society flourish"

AHRQ Documents

- "Altered Standards of Care in Mass Casualty Events" (2005)
- "Providing Mass Medical Care With Scarce Resources: A Community Planning Guide" (2006)
  - Maximize lives saved
    - "Graceful degradation of care" resulting in poor patient outcomes is the option of last resort
  - Be prepared to allocate scarce resources
    - "Engineered degradation of services" must be conducted in the context of effective incident planning and response
  - Recognize that standards will change; protocols for triage will need to be adaptable

Concept of Operations for Triage of Mechanical Ventilation in an Epidemic

John L. Hick, MD, Daniel T. O'Laughlin, MD

Abstract

The recent outbreak of severe acute respiratory syndrome and the growing potential of an influenza pandemic force us to consider the fact that despite great advances in critical care medicine, we lack the capacity to provide intensive care to the large number of patients that may be generated in an epidemic or multisite bioterrorism event. Because many epidemic and bioterrorist agent illnesses involve respiratory failure, me-

Academic Emergency Medicine 2006; Volume13, Number 2: 223-229

RESEARCH

Development of a triage protocol for critical care during an influenza pandemic

Michael D. Christian, Laura Hawryluck, Randy S. Wax, Tim Cook, Neil M. Lazar, Margaret S. Herridge, Matthew P. Muller, Douglas R. Gowans, Wendy Fortier, Frederick M. Burkle, Jr.

∞ See related article page 1393

Abstract

Background: The recent outbreaks of avian influenza ($H5N1$) have placed a renewed emphasis on preparing for an influenza pandemic in humans. Of particular concern in this planning is the allocation of resources, such as ventilators and antiviral medications, which will likely become scarce during a pandemic.

Methods: We applied a collaborative process using best evidence, expert panels, stakeholder consultations and ethical principles to develop a triage protocol for prioritizing access to critical care resources, including mechanical ventilation, during a pandemic.

Results: The triage protocol uses the Sequential Organ Failure Assessment score and has 4 main components: inclusion criteria, exclusion criteria, minimum qualifications for survival and a prioritization tool.

Interpretation: This protocol is intended to provide guidance for making triage decisions during the initial days to weeks of an influenza pandemic if the critical care system becomes overwhelmed. Although we designed this protocol for use during an influenza pandemic, the triage protocol would apply to patients both with and without influenza, since all patients must share a single pool of critical care resources.

CMAJ 2006;175(11):1377-81

mand for intensive care unit (ICU) resources, solely for patients with influenza, would peak at 171% of current ICU bed capacity and 118% of the ventilator capacity. These figures do not take into account the current usage rate of critical care for patients without influenza, which is nearly at 100%. Nor does this model factor in the availability of human resources. Surge response strategies[10] (e.g., scaling back elective procedures, opening additional critical care areas and implementing the use of "mass critical care"[11,12]) will partially mitigate the sudden demand for medical care during an influenza pandemic; however, these strategies will be inadequate to fully address the demands on the health care system.

When resource scarcities occur, the tenets of biomedical ethics and international law dictate that triage protocols be used to guide resource allocation.[13–15] International law requires a triage plan that will equitably provide every person the "opportunity" to survive. However, such a law does not guarantee either treatment or survival.[16] We have developed this triage protocol in an effort to ensure the equitable and efficient use of critical care resources if scarcities occur during an influenza pandemic.

Methods

In December 2004, at the request of the steering committee of the Ontario Health Plan for an Influenza Pandemic (OHPIP), a group of clinicians with expertise in critical care, in-

DRAFT FOR PUBLIC COMMENT
MARCH 15, 2007

Allocation of Ventilators in an Influenza Pandemic: Planning Document

NYS Workgroup on Ventilator Allocation in an Influenza Pandemic
NYS DOH/ NYS Task Force on Life & the Law

Executive Summary:

A powerful strain of avian influenza has generated concern about a possible pandemic, though scientists do not know with certainty whether or when a pandemic will occur. However, the better-prepared New York State is, the greater its chances of

Powell, Tia, Christ, Kelly C., Birkhead, Guthrie S. **Allocation of Ventilators in a Public Health Disaster** DISASTER MEDICINE AND PUBLIC HEALTH PREPAREDNESS 2008 2: 20-26

CHEST

Contents

CHEST | Volume 133 | Number 5 | MAY 2008 Supplement

DEFINITIVE CARE FOR THE CRITICALLY ILL DURING A DISASTER

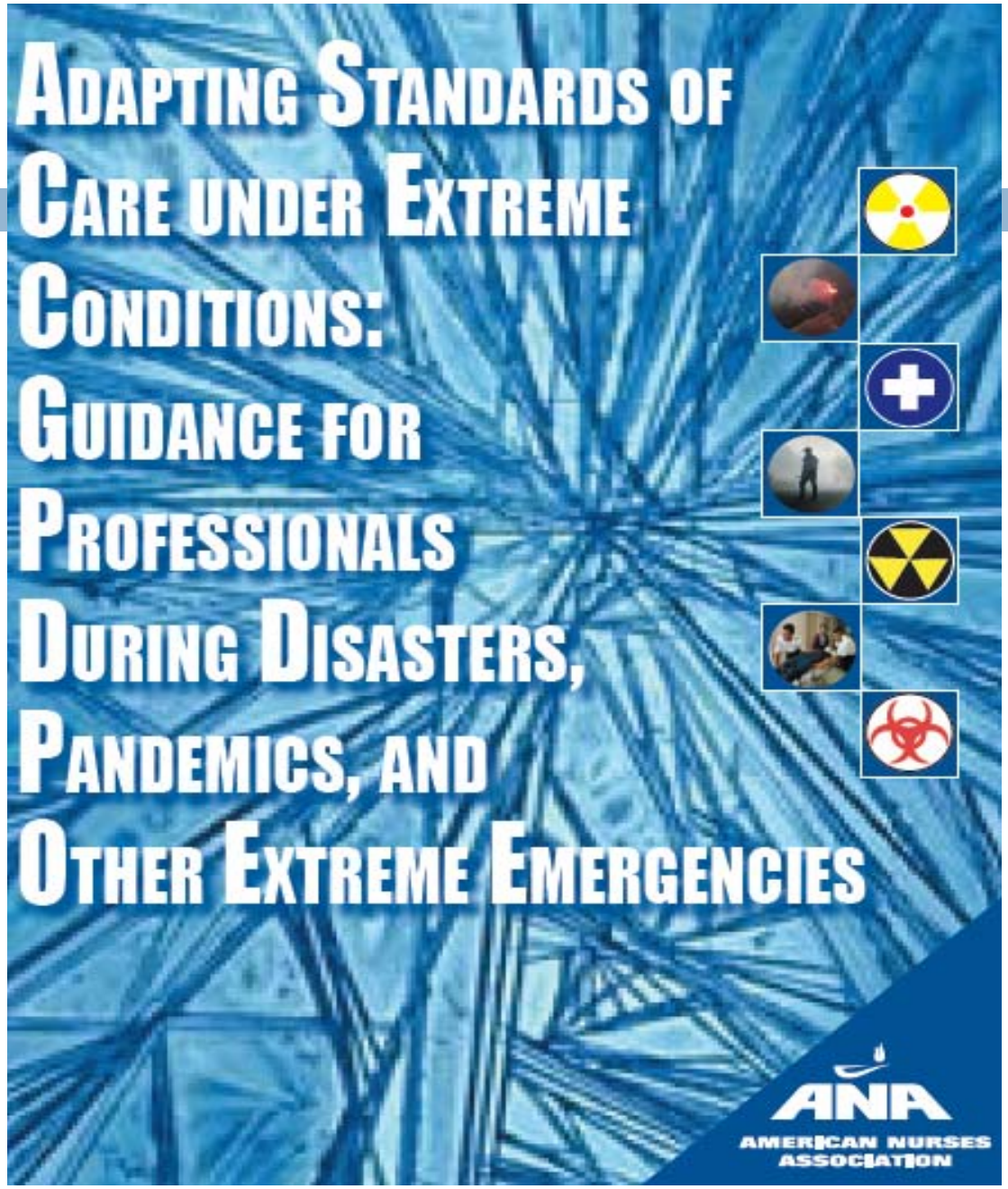
United States Government Accountability Office
GAO
Report to Congressional Requesters

June 2008

EMERGENCY PREPAREDNESS

States Are Planning for Medical Surge, but Could Benefit from Shared Guidance for Allocating Scarce Medical Resources

GAO-08-668


ADAPTING STANDARDS OF CARE UNDER EXTREME CONDITIONS: GUIDANCE FOR PROFESSIONALS DURING DISASTERS, PANDEMICS, AND OTHER EXTREME EMERGENCIES
ANA
AMERICAN NURSES ASSOCIATION

Summary of a Workshop Series

Clare Stroud, Bruce M. Altevogt, Lori Nadig,
Matthew Hougan, *Rapporteurs*

Forum on Medical and Public Health Preparedness for Catastrophic Events

Board on Health Sciences Policy

http://www.nap.edu/catalog/12787.html

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

IOM Regional Workshops on Crisis Standards of Care

- March – May 2009
- 4 meetings: Irvine, Orlando, New York, Chicago
- Objectives:
  - Highlight local, state, and regional efforts under way to establish crisis standards of care policies and protocols
  - Improve regional efforts by facilitating dialogue and coordination among neighboring jurisdictions
- Participants:
  - Federal, state, and local officials
  - Representatives from a wide range of healthcare provider communities
  - Emergency managers
  - Hospital and healthcare administrators

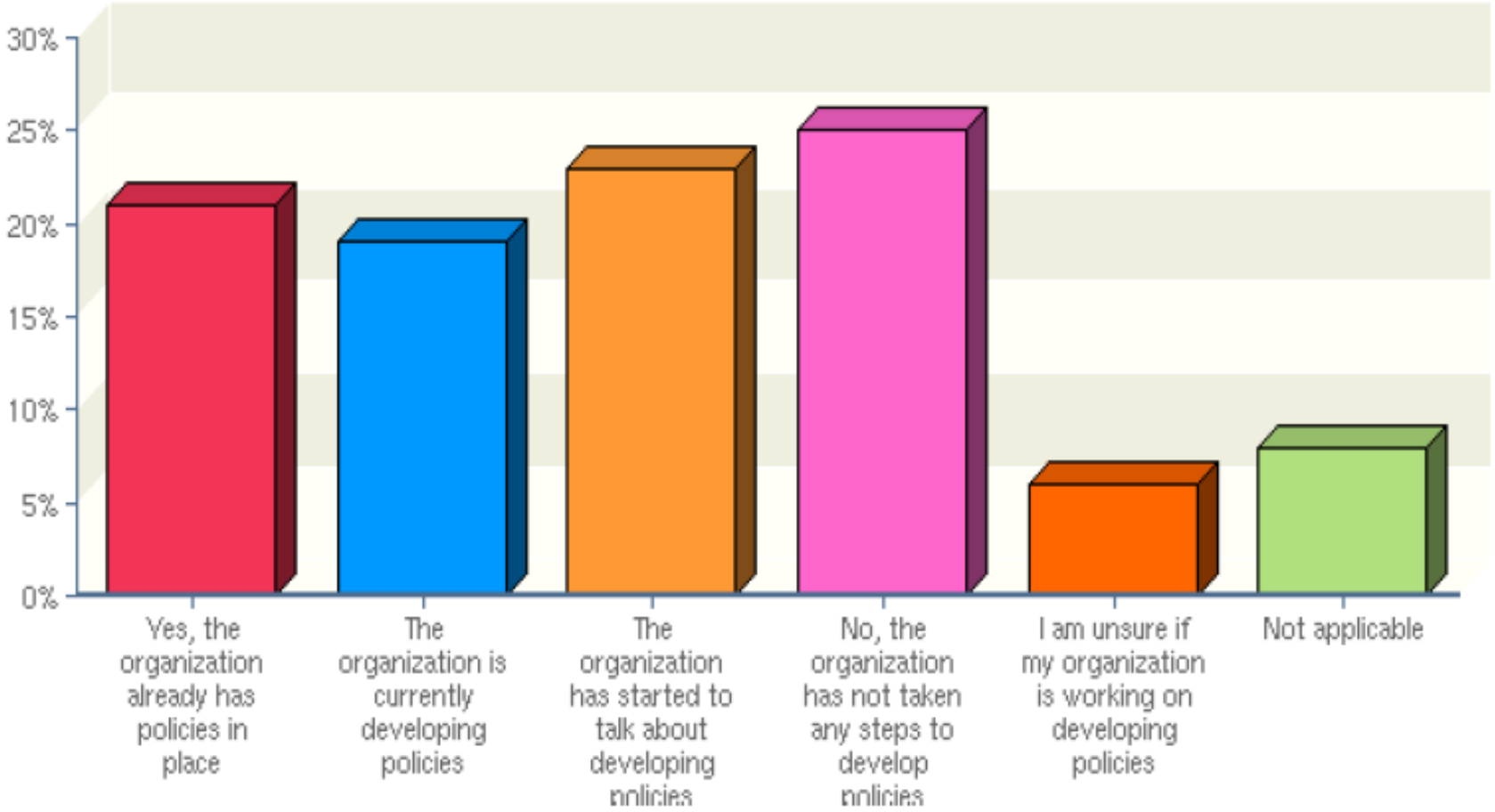
IOM Regional Workshops on Crisis Standards of Care

- Some states, localities, and healthcare institutions have developed, or started to develop, crisis standards of care policies
  - Many others have not; workshop participants cited the difficulty of the medical, legal, and ethical issues as well as a lack of resources

- Areas identified by workshop participants for future work include:
  - Development of consistency within and across regions
  - More evidence-based research
  - Engagement with providers and the community
  - Increased attention to palliative care

- Many of these areas were addressed in the subsequent IOM letter report, released in September 2009

3. Does the organization you represent have policies in place for "standards of care during a mass casualty event"?



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 18, 2009 VOL. 360 NO. 25

Emergence of a Novel Swine-Origin Influenza A (H1N1) Virus in Humans

Novel Swine-Origin Influenza A (H1N1) Virus Investigation Team*

INSTITUTE OF MEDICINE
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September 24, 2009

Nicole Lurie, M.D., M.S.P.H.
Assistant Secretary for Preparedness
and Response
Office of the Assistant Secretary for
Preparedness and Response
Department of Health and Human Services
200 Independence Ave., S.W.
Washington, DC 20201

Dear Dr. Lurie:

On behalf of the Institute of Medicine (IOM) Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations, we are pleased to report our conclusions and recommendations. At the request of the Office of the Assistant Secretary for Preparedness and Response, Department of Health and Human Services, the IOM convened this committee to develop guidance that state and local public health officials and health-sector agencies and institutions can use to establish and implement standards of care that should apply in disaster situations—

Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations

INSTITUTE OF MEDICINE
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When To Adopt Crisis Standards of Care?

If contingency plans do not accommodate incident demands, healthcare practitioners will be faced with:

- severe shortages of equipment, supplies, and pharmaceuticals
- an insufficient number of qualified healthcare providers
- overwhelming demand for services
- lack of suitable resources

Under these circumstances, it may be impossible to provide care according to the conventional standards of care used in non-disaster situations, and, under the most extreme circumstances, it may not even be possible to provide the most basic life-sustaining interventions to all patients who need them.

Crisis Standards of Care

A substantial change in usual healthcare operations and the level of care it is possible to deliver, which is made necessary by a pervasive (e.g., pandemic influenza) or catastrophic (e.g., earthquake, hurricane) disaster.

Crisis Standards of Care

This change in the level of care delivered is justified by specific circumstances and is formally declared by a state government, in recognition that crisis operations will be in effect for a sustained period.

Recommendations

1. Develop Consistent State Crisis Standards of Care Protocols with Five Key Elements

2. Seek Community and Provider Engagement

3. Adhere to Ethical Norms during Crisis Standards of Care

4. Provide Necessary Legal Protections for Healthcare Practitioners and Institutions Implementing Crisis Standards of Care

5. Ensure Consistency in Crisis Standards of Care Implementation

6. Ensure Intrastate and Interstate Consistency Among Neighboring Jurisdictions

CRISIS STANDARDS OF CARE: OPERATIONAL CONSIDERATIONS

John Hick, MD

Emergency Management Summit March 4, 2010

Continuum of Disaster Care

Incident demand / resource imbalance increases →
Risk of morbidity / mortality to patient increases →
← Recovery

	Conventional	Contingency	Crisis
Space	Usual patient care space fully utilized	Patient care areas re-purposed (PACU, monitored units for ICU-level care)	Facility damaged / unsafe or non-patient care areas (classrooms, etc) used for patient care
Staff	Usual staff called in and utilized	Staff extension (brief deferrals of non-emergent service, supervision of broader group of patients, change in responsibilities, documentation, etc)	Trained staff unavailable or unable to adequately cae for volume of patients even with extension techniques
Supplies	Cached and usual supplies used	Conservation, adaptation, and substitution of supplies with occasional re-use of select supplies	Critical supplies lacking, possible re-allocation of life-sustaining resources
Standard of care	Usual care	Functionally equivalent care	Crisis standards of care[1]

Normal operating conditions

Indicator: potential for crisis standards[2]

Trigger: crisis standards of care[3]

Extreme operating conditions

Strategies

- Prepare
- Substitute
- Adapt
- Conserve
- Re-use
- Re-allocate

Supply Strategies

	Conventional	Contingency	Crisis
Prepare	Stockpiled supplies used		
Substitute	Equivalent medications used		
Conserve	Oxygen flow rates titrated	Oxygen only for saturations < 90%	Oxygen only for respiratory failure
Adapt		Anesthesia machine for mechanical ventilation	Bag-valve manual ventilation
Re-Use		Re-use NG tubes and ventilator circuits	Re-use invasive lines
Re-Allocate		Re-allocate oxygen saturation monitors, cardiac monitors from low-risk patients	Re-allocate ventilators

OXYGEN USE STRATEGIES FOR SCARCE RESOURCE SITUATIONS

MINNESOTA HEALTHCARE SYSTEM PREPAREDNESS PROGRAM

POTENTIAL TRIGGER EVENTS:	STRATEGY*	RECOMMENDATIONS
INTERNAL DISRUPTION OF HOSPITAL MEDICAL GAS SYSTEMS INTERNAL SURGE TO HOSPITAL CAPACITY EXTERNAL NOTIFICATION BY GAS SUPPLIER OF DELAYS OR SHORTAGES EXTERNAL NOTIFICATION BY THE MINNESOTA DEPARTMENT OF HEALTH UPON A STATE DECLARATION OF EMERGENCY	CONSERVATION	**1. Monitor Use and Revise Clinical Targets** • Employ oxygen titration protocols to optimize flow or % to match targets for SPO_2 or PaO_2. • Minimize overall oxygen use by optimization of flow. • Discontinue oxygen at earliest possible time. **Starting Example:** / **Initiate O_2** / **O_2 Target** Normal Lung Adults / SPO_2 <89% / SPO_2 90% Infants & Peds / SPO_2 <90% / SPO_2 91-94% COPD History / SPO_2 <88% / SPO_2 90% **Note:** Targets may be adjusted further downward depending on resources available, the patient's clinical presentation, or measured PaO_2 determination.
	CONSERVATION	**2. High-Flow Applications** • Restrict the use of high-flow adult cannula systems (Vapotherm™ type) as these can demand 12 to 40 LPM flows. • Restrict the use of simple and partial rebreathing masks to 10 LPM maximum. • Restrict use of Gas Injection Nebulizers as they generally require oxygen flows between 10 LPM and 75 LPM • Eliminate the use of oxygen-powered venturi suction systems as they may consume 15 to 50 LPM.
	SUBSTITUTION	**3. Oxygen Conservation Devices** • Use Oxymizer™ type cannulas at 1/2 the flow setting of standard cannulas. • Replace simple & partial rebreather mask use with Oxymizer™ cannulas at flowrates of 6-10 LPM.
	CONSERVATION & SUBSTITUTION	**4. Oxygen Concentrators If Electrical Power Is Present** • Use hospital-based or independent home medical equipment supplier oxygen concentrators if available; use to supplement low-flow cannula use, and preserve the primary oxygen supply for more critical applications.
	SUBSTITUTION	**5. Inhaled Medications** • Restrict the use of Small Volume Nebulizers when inhaler substitutes are available. • Restrict continuous nebulization therapy. • Minimize frequency through medication substitution that result in fewer treatments (6h-12h instead of 4h-6h applications).
	CONSERVATION	**6. Air-Oxygen Blenders** • Eliminate the low-flow reference bleed occurring with any low-flow metered oxygen use. This can amount to up to an additional 12 LPM. Reserve air-oxygen blender use for mechanical ventilators using high-flow non-metered outlets (These do not utilize reference bleeds). • Disconnect blenders when not in use.
	RE-USE	**7. Expendable Oxygen Appliances** • Use terminal sterilization or high-level disinfection procedures for oxygen appliances, small & large-bore tubing, and ventilator circuits. Bleach concentrations of 1:10, high-level chemical disinfection, or irradiation may be suitable. Ethylene oxide gas sterilization is optimal, but requires a 12 hour aeration cycle to prevent ethylene chlorhydrin formation with polyvinyl chloride plastics.
	RE-ALLOCATION	**8. Oxygen Re-Allocation Implementation** • Prioritize patients for oxygen administration during severe resource limitations.

Oxygen

*See Patient Care Strategies for Scarce Resource Situations for strategy definitions.

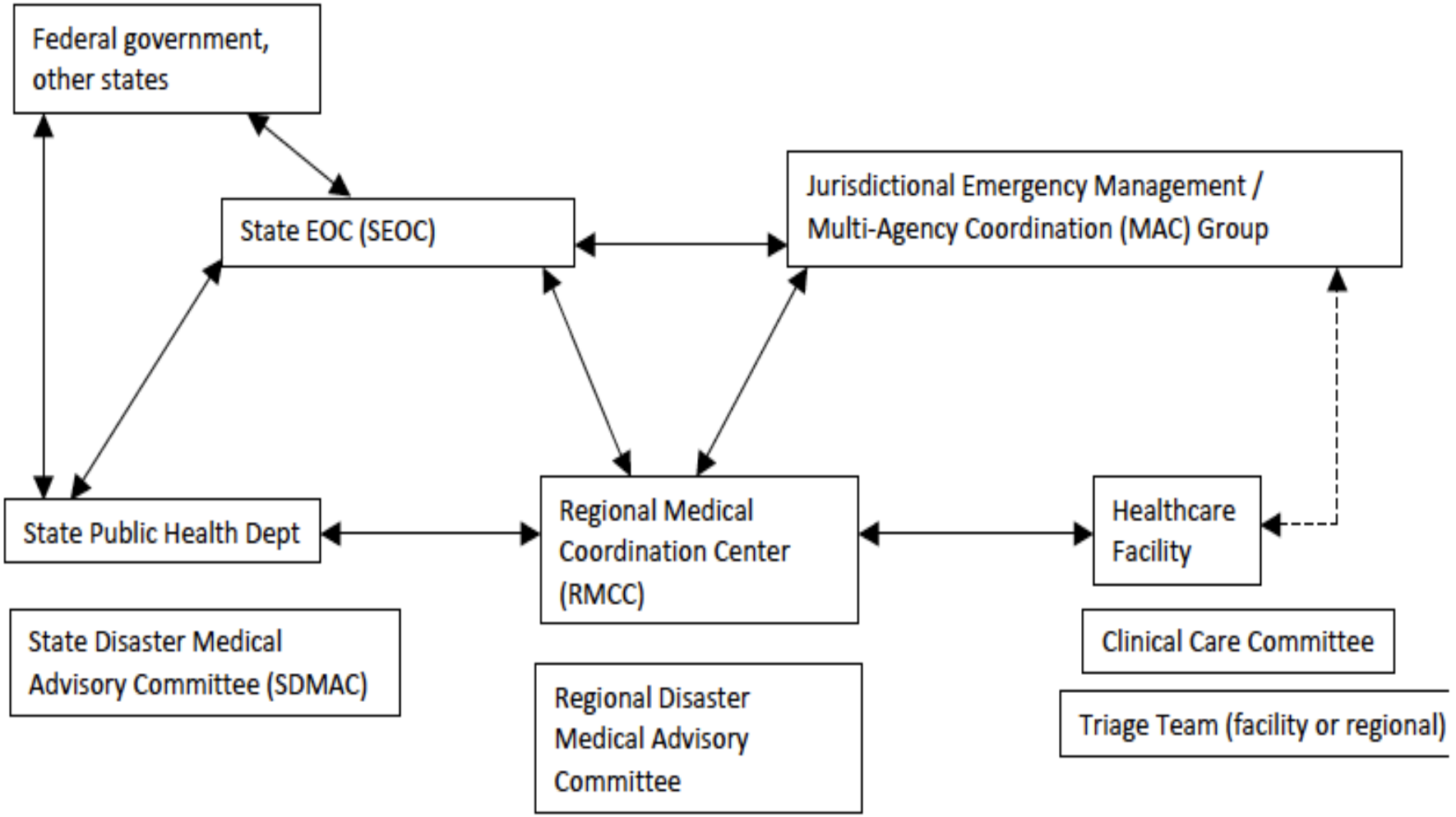
MINNESOTA DEPARTMENT OF HEALTH
OFFICE OF EMERGENCY PREPAREDNESS
www.health.state.mn.us/oep/healthcare

Orville L. Freeman Building / PO Box 64975
625 Robert Street N. / St. Paul MN 55164
TEL: 651 201.5700 / TDD: 651 215.8980

System Components

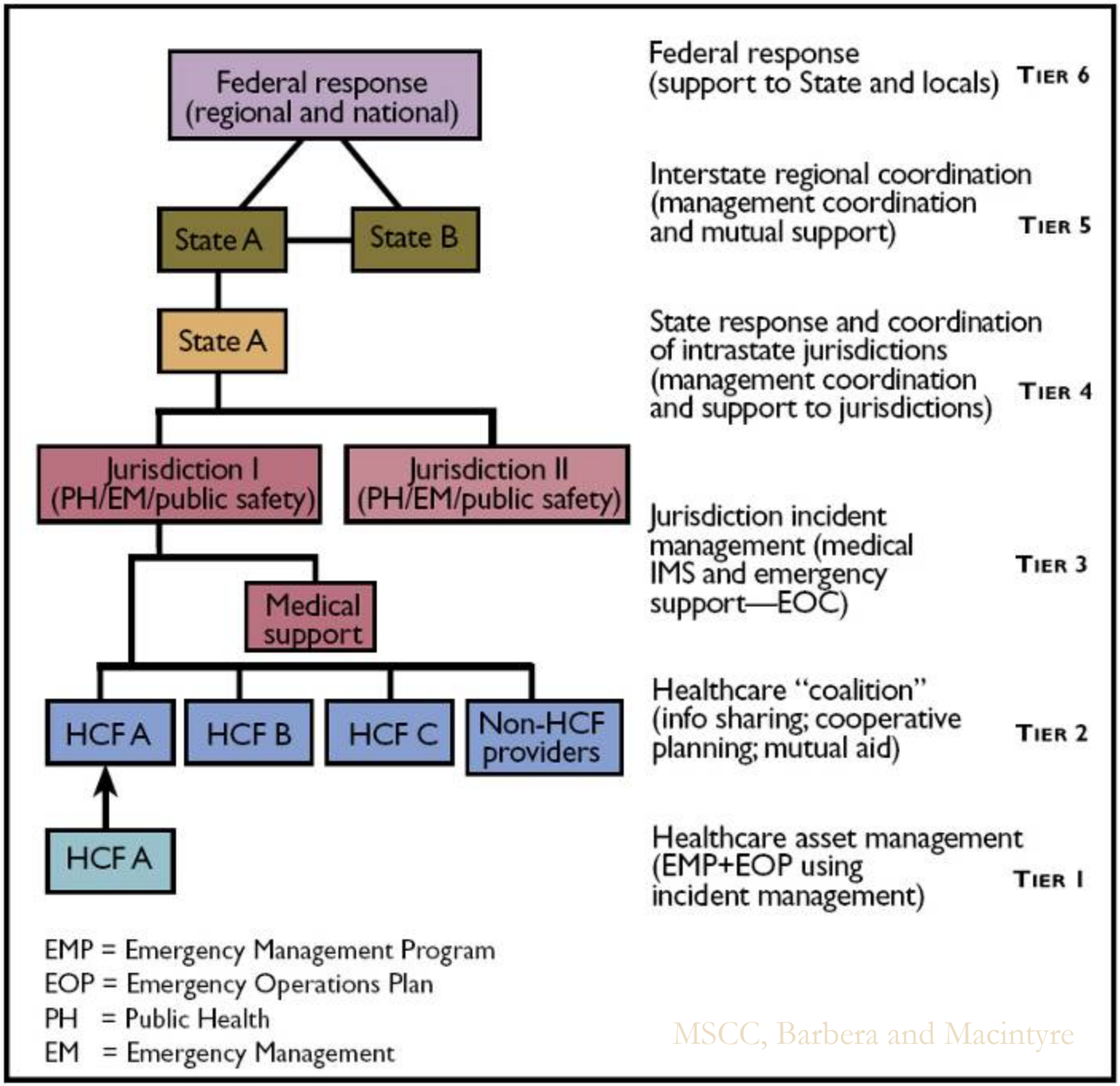
- Command
- Control
- Communication
- Coordination

Coordination Elements



Tiered System

Figure 1-2. MSCC Management Organization Strategy



MSCC, Barbera and Macintyre


SITREPS

Logged in as John Hick

Facilities | Regional Status | Alert Manager | Command Center | Resource Request | Reports

Requests for Resources

Region	Facility	Requested	Request Resource	Quantity	Actions Taken	Fulfillment	Active
West Metro	University of M..iversity Campus	10/24/2008 10:01	ventilator	11		0 of 11 fulfilled	✓
East Metro	United Hospital - St. Paul	10/24/2008 10:00	ventilator	6		0 of 6 fulfilled	✓
West Metro	Unity Hospital - Fridley	10/24/2008 09:59	ventilator	6		0 of 6 fulfilled	✓
West Metro	North Memorial Medical Center	10/24/2008 09:59	ventilator	13		0 of 13 fulfilled	✓
West Metro	Regency Hospita..- Golden Valley	10/24/2008 09:57	ventilator	4		0 of 4 fulfilled	✓
West Metro	Methodist Hospi.. St. Louis Park	10/24/2008 09:56	ventilator	11		0 of 11 fulfilled	✓
West Metro	Children's Hosp..l - Minneapolis	10/24/2008 09:56	ventilator	6		0 of 6 fulfilled	✓
West Metro	Mercy Hospital - Coon Rapids	10/24/2008 09:55	ventilator	8		0 of 8 fulfilled	✓
West Metro	Fairview Southd..ospital - Edina	10/24/2008 09:54	ventilator	6		0 of 6 fulfilled	✓
West Metro	Abbott Northwes..l - Minneapolis	10/24/2008 09:53	ventilator	10		0 of 10 fulfilled	✓
*Demo	*ImageTrend Hospital	09/08/2008 13:55	Ventilators	2		0 of 2 fulfilled	✓
*Demo	*ImageTrend Hospital	08/29/2008 13:25	Motorola Radio	25	Referred to all RHRC	20 of 25 fulfilled	✗
*Demo	*ImageTrend Hospital	08/29/2008 13:14	Cot	1		0 of 1 fulfilled	✓
*Demo	*ImageTrend Hospital	08/29/2008 13:13	Zoll Defibrillator	10		3 of 10 fulfilled	✓
*Demo	*ImageTrend Hospital	08/29/2008 12:56	Zoll Defibrillator	4		4 of 4 fulfilled	✓
*Demo	*ImageTrend Hospital	08/28/2008 13:58	Bandaids	500		500 of 500 fulfilled	✓
*Demo	*ImageTrend Hospital	08/28/2008 12:30	Beekers	10		0 of 10 fulfilled	✓
West Metro	Hennepin County Medical Center	08/28/2008 09:42	ventilators	10		4 of 10 fulfilled	✓
*Demo	*ImageTrend Hospital	08/28/2008 08:14	o negative	2		0 of 2 fulfilled	✓
*Demo	*ImageTrend Hospital	08/28/2008 08:07	Zoll Defibrillator	2		1 of 2 fulfilled	✓
*Demo	*ImageTrend Hospital	08/27/2008 17:34	Zoll Defibrillator	3	Acknowledged	2 of 3 fulfilled	✓

Records 1-21 of 21 | First | << | >> | Last

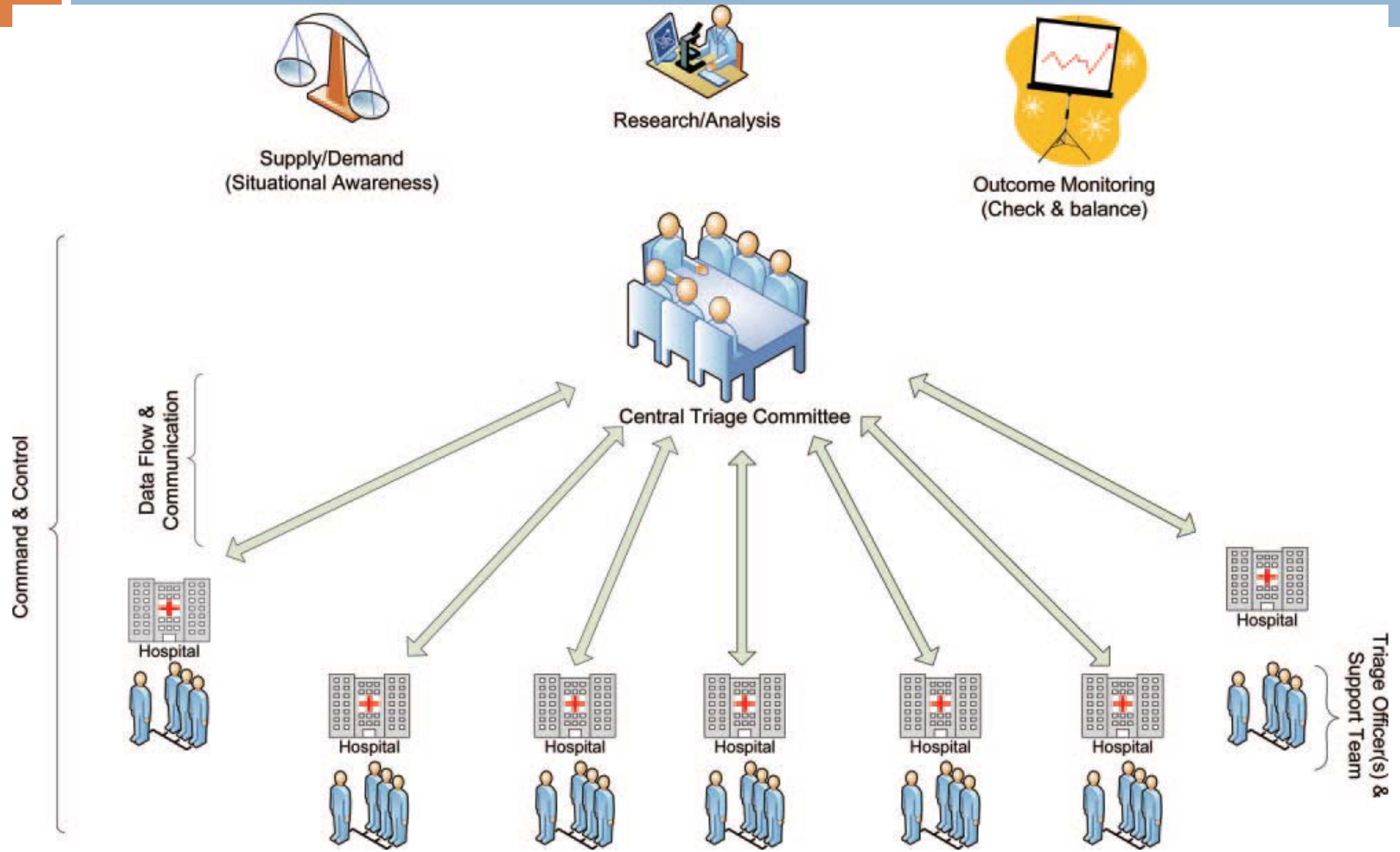
✓ = Active ✗ = Inactive

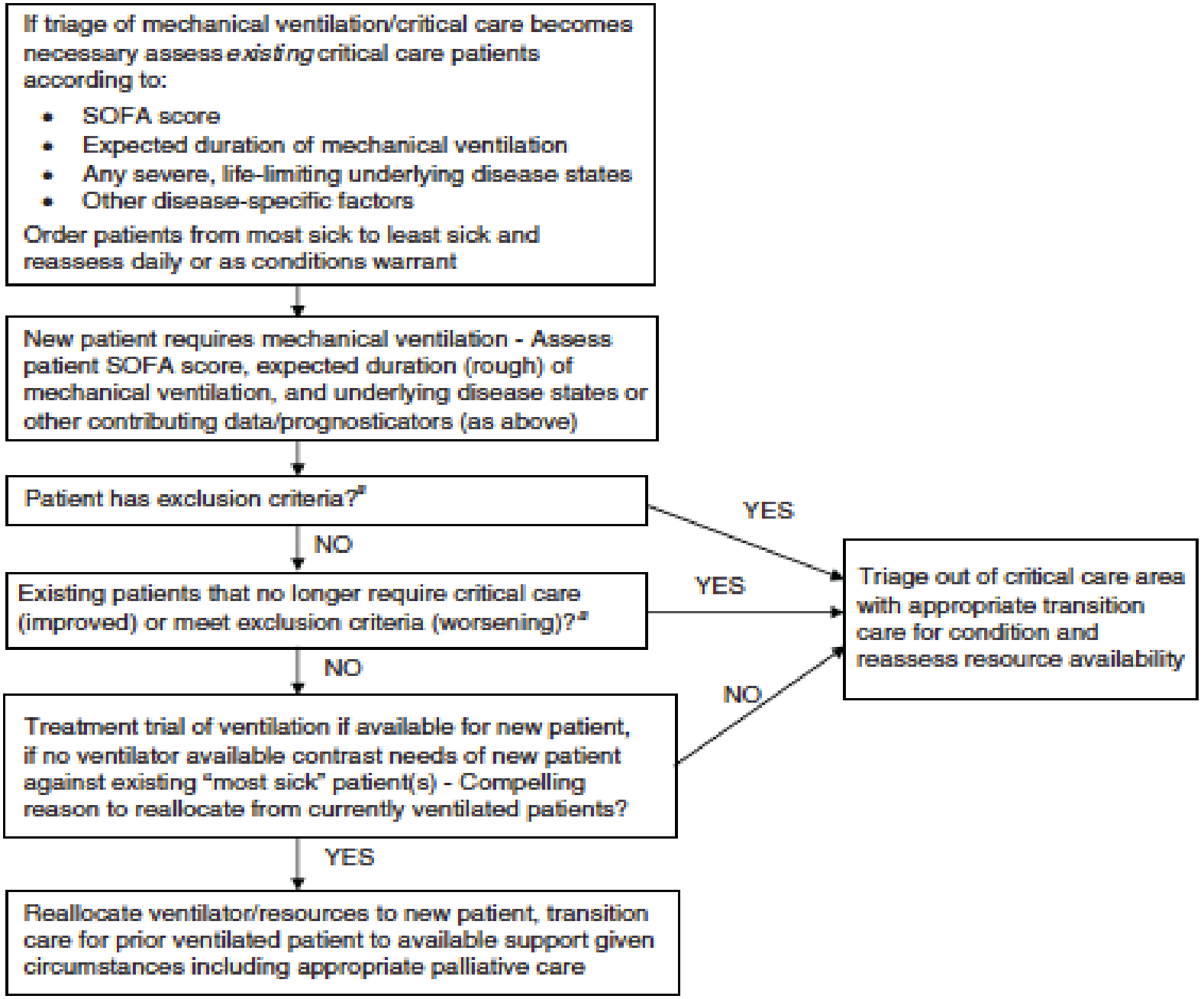
Request a Resource

Incident Triage

	Reactive	Proactive
Incident Type	Early no-notice	Later, or biologic
Situational awareness	Poor	Good
Resources	Highly Dynamic	Relatively static
Shortfalls	Stabilization care	Definitive care
Triage	Primary, Secondary	Tertiary
Decision basis	Clinical assessment	Decision tools
Decision-making	Ad hoc	Structured
Declarations and protections	No	Yes
Regional assistance	Resources	Decisions, resources

Regional Triage




If triage of mechanical ventilation/critical care becomes necessary assess *existing* critical care patients according to:
• SOFA score
• Expected duration of mechanical ventilation
• Any severe, life-limiting underlying disease states
• Other disease-specific factors
Order patients from most sick to least sick and reassess daily or as conditions warrant
New patient requires mechanical ventilation - Assess patient SOFA score, expected duration (rough) of mechanical ventilation, and underlying disease states or other contributing data/prognosticators (as above)
Patient has exclusion criteria?[a]
YES
NO
Existing patients that no longer require critical care (improved) or meet exclusion criteria (worsening)?[a]
YES
NO
Treatment trial of ventilation if available for new patient, if no ventilator available contrast needs of new patient against existing "most sick" patient(s) - Compelling reason to reallocate from currently ventilated patients?
NO
YES
Triage out of critical care area with appropriate transition care for condition and reassess resource availability
Reallocate ventilator/resources to new patient, transition care for prior ventilated patient to available support given circumstances including appropriate palliative care

Operational Issues

- Process for planning vs. process for response
- Response conops:
  - IMS recognizes situation
  - Clinical care committee
  - Triage plan
  - Informational issues
  - Resource requests
  - Personnel management

Clinical Care Committee

- Determine resources and alternative methods / sites of care
- Alter staff responsibilities to increase patient care time
- Reviews outside guidance and makes changes as needed
- Makes recommendations for next operational period for services to be provided and triage criteria to be used

Triage Team

- Small number of staff (? Critical care, other) of equal ‘rank’
- Make allocation decisions based upon clinical information about patients (*not* leaving this to the primary / bedside physician)
- ‘Bed czar’ has ultimate authority to implement recommendations, change bed status, etc.
- Triage team functions for smaller area hospitals and transfer considerations should be defined

STEP TWO: Compared to other patient(s) requiring and awaiting mechanical ventilation, does this patient have significant differences in prognosis or resource utilization in one or more categories below that would justify re-allocation of the ventilator? Factors listed are in order of importance / weight.

	Ventilator re-allocated		Patient keeps ventilator
1. Organ system function*	**High potential for death (SOFA score ≥12)**	**Intermediate potential for death (SOFA score 8-11)**	**Low potential for death (SOFA score ≤ 7)**
2. Duration of benefit / prognosis	a. Poor prognosis based upon epidemiology of specific disease / injury (eg; pandemic influenza) b. Severe underlying disease with poor short-term (e.g., <1 year) prognosis**	a. Indeterminate / intermediate prognosis based upon epidemiology of specific disease / injury b. Severe underlying disease with poor long-term prognosis and/or ongoing resource demand (e.g., home oxygen dependent, dialysis dependent) and unlikely to survive more than 1-2 years.	a. Good prognosis based upon epidemiology of specific disease / injury b. No severe underlying disease
3. Duration of need	Long duration – e.g., ARDS, particularly in setting of pre-existing lung disease (estimate > 7 days on ventilator)	Moderate duration – e.g., pneumonia in healthy patient (estimate 3-7 days on ventilator)	Short duration – flash pulmonary edema, chest trauma, other conditions anticipating < 3 days on ventilator
4. Response to mechanical ventilation	Worsening ventilatory parameters over time***	Stable ventilatory parameters over time	Improving ventilatory parameters over time

* The Sequential Organ Failure Assessment (SOFA) score is the currently preferred assessment tool but other predictive models may be used depending on the situation / epidemiology. Note: SOFA scores were not designed to forecast mortality, and thus single or a few point difference between patients may not represent a 'substantial difference' in mortality, but larger differences and trends can be extremely helpful in determining resource assignment.

** Examples of underlying diseases that predict poor short-term survival include (but are not limited to):
1. Congestive heart failure with ejection fraction < 25% (or persistent ischemia unresponsive to therapy or non-reversible 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

*** Changes in Oxygenation Index over time may provide comparative data, though of uncertain prognostic significance.
OI = MAWP x FiO2 / PaO2
where:
OI = oxygenation index
MAWP=Mean Airway Pressure
FiO2 = inspired oxygen concentration
PaO2 = arterial oxygen pressure
(May be estimated from oxygen dissociation curve if blood gas unavailable.)

Appeals Process

- Clinical appeal
  - Allowed by family or caregiver if clinical information used to base a triage decision has changed (for the better)
  - Reviewed by clinical triage officer / team
- Process appeal
  - Allowed by family member or caregiver if process of applying decision tool or the tool itself is flawed
  - Does NOT affect the clinical decision
  - Reviewed by regional ethical advisory panel

CRISIS STANDARDS OF CARE APPLICATION: SCENARIOS

Steve Cantrill, MD

Emergency Management Summit March 4, 2010

Planning Scenarios

- Support and implementation for Crisis Standards of Care
  - Pandemic Influenza
  - Major Earthquake

Pandemic Influenza

Pandemic Influenza – Planning Examples for Crisis Standards of Care

- State:
  - Multidisciplinary group to advise on ethical, medical, legal, public, EMS and emergency management issues.
    - Recommendations and criteria for implementing:
      - Expansion of scope of practice
      - Declaration public health emergency
      - Improved liability protection for volunteer and non-volunteer healthcare providers
      - Alteration of nurse-patient ratios
      - Stockpiling antivirals, PPE and other supplies

Pandemic Influenza – Planning Examples for Crisis Standards of Care

- State:
  - Multidisciplinary group to advise on ethical, medical, legal, public, EMS and emergency management issues.
    - Draft guidelines for alteration in the healthcare system during a pandemic:
      - ICU admission criteria using Sequential Organ Failure Assessment (SOFA) scoring
      - Criteria for ventilator use/removal
      - EMS transport criteria and EMS approved destinations
    - Development of state-wide monitoring criteria and process

Pandemic Influenza – Planning Examples for Crisis Standards of Care

- Regional:
  - Establish, where appropriate, a Regional Medical Coordinating Center (“Hospital EOC”)
  - Investigate and designate potential locations for alternate care facilities including staffing plans

Pandemic Influenza – Planning Examples for Crisis Standards of Care

- Hospital:
  - Development of criteria for supply substitution, adaptation, conservation, re-use & re-allocation
  - Education of all staff concerning implementation of crisis standards of care, Hospital Incident Command System (HICS), etc
  - Designation of internal alternate care sites, expanded triage areas and potential staffing changes
  - Establish and appoint a Clinical Care

Major Earthquake

- Magnitude 7.8 earthquake
- Mid-afternoon, Southern California
- Extensive structural damage including landslides
- Loss of power
- Loss of highway and major road integrity
- Loss of cellular and landline phone service
- Multiple structure fires

Examples of Hospital Activities for Crisis Standards of Care

- All elective surgeries cancelled
- Assessment of available resources
- Supply conservation initiated (such as oxygen, IV fluids, etc)
- Institution of trauma and burn triage criteria, including triage of expectant patients
- Lean forward towards critical care triage
- Alteration of charting requirements

Examples of Hospital Activities for Crisis Standards of Care

- Implementation of disaster credentialing procedures for physicians and nurses.
- Tetanus vaccination for only high-risk wounds due to limited availability of tetanus toxoid.

Examples of State Activities for Crisis Standards of Care

- Department of Health develops guidance for use of blood products and dialysis and oxygen replenishment
- Emergency Gubernatorial Order authorizing crisis standards of care in affected communities
  - Additional healthcare provider legal protection
  - Allows for establishment of alternate care facilities
  - Interim guidance for tetanus immunization

Resources

- Institute of Medicine report on Crisis Care:
  - www.iom.edu/en/Reports/2009/DisasterCareStandards.aspx
- AHRQ – Providing Mass Casualty Care with Scarce Resources www.ahrq.gov/research/mce/mceguide.pdf
- Chest - May 5, 2008 supplement: //chestjournal.chestpubs.org/content/133/5_suppl/1S.full
- www.health.state.mn.us/healthcare/index.html