

SECTION I: INTRODUCTION

Since September 11, 2001 we have become acutely aware that natural disasters and terrorist events, and the resulting influx of need for services, staff or medical equipment, have the ability to exceed our system's current capacity. Given the potential enormity of these events, expanding our systems ability to handle wide fluctuations in the medical needs of the population will not be feasible. We will need to focus on keeping the health care system functioning and to delivering acceptable quality of care to preserve as many lives as possible. This will mean adjusting the administrative and clinical operations and activities in order to allocate scarce resources to save the most lives in a manner which is:

- Reasonable,
- Inclusive,
- Transparent,
- Open,
- Honest,
- Flexible,
- Ethical

The parameters of the altered standards will need to be well understood by both professionals and the public and allows, to the greatest extent possible, a safe environment for the provision of care by "front line" clinicians.

This process is not meant to replace the decision-making which occurs at the patient level and the determination of whether there is need for clinical intervention. Rather it will provide guidance to the clinician as to whether there are resources available for intervention and treatment. In this manner, the patient-clinician roles remain the same during a mass event.

Viewing a mass event through the lens of pandemic flu provides a very valuable perspective for the work that Vermont accomplished in this project. Pandemic flu is by many accounts the worse case scenario and in that manner is a good case study for the development of the desired planning guidance. Given the extent of illness (among the general population as well as staff) it provides insight into a system which is taxed to the maximum extent. Furthermore, because it is unlikely that an outbreak would be local in nature the assumption that contiguous area resources are unavailable to assist with a pandemic again reinforces a worse case scenario under which to develop these guidelines.

While a pandemic is the most viable scenario under which this planning process can be accomplished, it is also an area for which there has been little work done by states. According to a June 2008 Government Accountability Office (GAO) report Emergency Preparedness: States are Planning for Medical Surge, but Could Benefit from Shared Guidance for Allocating Scarce Medical Resources there is a relative paucity of guidance in this area. Of the twenty states audited for this report only three had completed any types of altered standards of care guidance. It was important to review existing state and federal documents as well as review international approaches such as from those countries affected by SARS.

SECTION II: PLANNING FOR ALTERED STANDARDS OF CARE

The recommendations contained in this report are meant to provide guidance to organizations and agencies planning altered standards of care. The recommendations are meant to be instructive and describe the goals of altered standards of care including altered administrative and operational standards as well as altered clinical standards. It is expected that each organization anticipating to employ altered standards during an emergency engage in an internal planning process to determine how they will meet the recommendations set forth in Section IV. It is the intent of this report to provide this high level direction, however allow organizations to determine their implementation strategies given their expertise, resources, capacity and individualized context of care in their region, population and facility. Below are suggested steps to engaging in a planning process to implement the goals and recommendations contained in this report:

Establish a Planning Team

- Include leaders from each of your business units
- This will form the basis of your planning team

Meet with Team, Introduce Process, Assign Tasks

- Assign senior management with drafting overarching plan content
- Task each business unit leader to complete a detailed inventory process with staff in each business unit
- Have each unit leader identify gaps to be incorporated into Altered Standards Action Plan

Draft the Altered Standards Action Plan

- Review the inventory process from each business unit
- Incorporate information into the Altered Standards Action Plan Template (see Appendix)
- Draft the Action Plan

Finalize Altered Standards Action Plan

- Seek final approval from corporate leadership
- Assure coordination with state and federal requirements and recommendations
- Distribute the plan throughout the organization
- Continuously monitor and update Action Plan

Implement the Plan

- Make a topic of staff meetings, with progress report outs at each meeting
- Train and exercise

Meeting with External Groups

- Meet with government agencies, community organizations and utilities and discuss plans.
 - Fire, Police, EMDs
 - Emergency Medical Services
 - American Red Cross
 - Telephone & Electric Companies
 - Local public health department/AHHR
 - Neighboring businesses
- Involve fire, police and emergency management personnel in exercises of your facility's emergency plan.

SECTION III: KEY PLANNING CONSIDERATIONS

A. Ethical and Guiding Principles to the Development of Scarce Resource Guidance

Defining the principles by which the scarce resource guidance will be developed is paramount to the success of this work. Clinicians, administrators and the public alike will require the assurance that guidance has been developed with a thorough review of ethical issues. During the planning process, organizations should adhere to the following ethical and guiding principles.

1. Guiding Principles, AHRQ Mass Casualty Event Documents

In addition to offering suggestions for a framework for the development of plans to respond to a mass casualty event, the AHRQ expert panel also articulated five principles that should steer the development of such guidelines. Incorporating these five principles will ensure that standards of care are altered sufficiently to respond to issues arising from a mass casualty event such as pandemic flu, these include:

Principle 1: In planning for a mass casualty event, the aim should be to keep the health care system functioning and to deliver acceptable quality of care to preserve as many lives as possible.

Principle 2: Planning a health and medical response to a mass casualty event must be comprehensive, community-based, and coordinated at the regional level.

Principle 3: There must be an adequate legal framework for providing health and medical care in a mass casualty event.

Principle 4: The rights of individuals must be protected to the extent possible and reasonable under the circumstances.

Principle 5: Clear communication with the public is essential before, during, and after a mass casualty event.

2. CDC Ethical Principles of Altered Standards

- **Identification of clear overall goals for pandemic planning** is essential to making difficult choices.
- There is a **commitment to transparency** throughout the pandemic influenza planning and response process. The reasoning behind choices made is fully articulated and the values and principles justifying those decisions are clearly identified and open for examination.
- **Public engagement and involvement** are essential to build public will and trust and should be evidenced throughout the planning and response process.
- Public health officials have a **responsibility to maximize preparedness** in order to minimize the need to make allocation decisions later.
- Sound guidelines should be based on the best available scientific evidence.
- The United States recognizes its membership in the global community, and the pandemic planning process acknowledges the **importance of working with and learning from preparedness efforts globally**.
- **Balancing of Individual Liberty and Community Interests.** Pandemic influenza planning, like other public and community health activities, is a cooperative and shared responsibility that balances community and individual interests.
- **Diversity in Ethical Decision Making.** Given numerous historical examples of abuse of individuals, particularly those who are considered vulnerable, in the name of the public good,

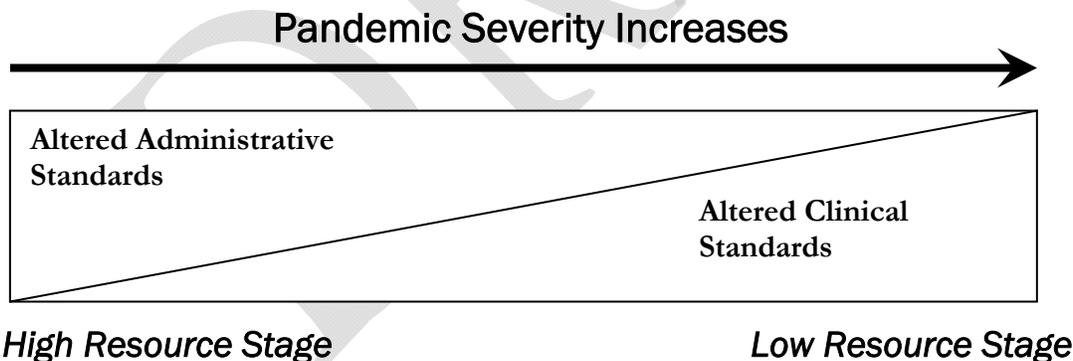
public health officials must adequately acknowledge and respond to strong currents of suspicion and distrust of the healthcare system. Diverse public voices should be involved in determining the need for restrictions and in articulating the ethical justification for these restrictions.

- **Fair Process Approach (Procedural Justice).** We recommend an approach to justice that focuses on the procedures to be followed with the hope that good procedures will lead to fair outcomes. Following are the elements of an ideal procedural justice approach:
 - Consistency in applying standards across people and time (treating like cases alike).
 - Decision makers who are impartial and neutral.
 - Ensuring that those affected by the decisions have a voice in decision making and agree in advance to the proposed process.
 - Treating those affected with dignity and respect.
 - Ensuring that decisions are adequately reasoned and based on accurate information.
 - Communications and processes that are clear, transparent and without hidden agendas.
 - Inclusion of processes to revise or correct approaches to address new information, including a process for appeals and procedures that are sustainable and enforceable.

3. Administrative Changes which Mediate the Availability of Scarce Resources

While the concept of scarce resources is often associated with issues such as changing the scope of practice for certain clinical staff, there are a number of administrative functions, which if altered, may alleviate or delay the need for such clinical changes. As Figure 1 below indicates, it is prudent to think about the types of altered administrative changes that can be put in place early in a pandemic to stretch critical resources and delay the need for clinical altered standards of care. Inevitably, however, as the intensity of the pandemic increases the system will be forced to implement those strategies as well.

Figure 1



4. Altered Clinical Standards of Care

During a disaster or emergency in which there are widespread morbidity and mortality, health care stakeholders will not be able to maintain clinical services in the same way or at the same level as they do in “normal” times. Instead, health care providers will be forced to implement altered standards of care as a way of dealing with shortages of personnel, equipment, supplies and time. During such emergencies the altered standards of care become the accepted community standards of care.

5. Statutory and Regulatory Barriers to Implementing Strategies

Health care providers are not accustomed to having to allocate inadequate personnel, equipment and supplies on the scale they will confront in a pandemic or similar mass casualty event. The prospects of allocation on this scale, understandably, cause profound concern within the health care community because such decisions are inextricably tied to liability. These providers understand that they have a duty to render care in accordance with the applicable standard of care or face liability for malpractice. “Altered” standards of care, which by definition do not meet the “traditional” standard of care, implicate and exacerbate these concerns.

Typically, statutory language regarding emergencies is constructed in two manners. On one hand, statutory language may designate an authority (often the Governor, Health Commissioner or other senior level staff) with broad ranging power during a declared emergency. On the other hand, statutory language may designate an authority with very specific powers. One approach will require that the proper authority is well informed regarding scarce resource issues and is prepared to exercise their power during an emergency to assure recommended practices can be carried out to save the largest numbers of lives given existing resources, the other approach will be to craft language which will be explicitly included in existing statutes. As part of this process a review of the statutory language and the scope of power of that language was reviewed to determine whether additional recommendations requiring legislation were merited.

LEGAL REVIEW AND DISCUSSION INSERTED HERE

SECTION IV: ASSUMPTIONS

As indicated in Section I, pandemic flu is the case scenario under which this report and the associated recommendations have been developed. The associated assumptions under this scenario include:

Assumptions: Pandemic Influenza Impact in Vermont

Though it is difficult to predict: 1) when the next influenza pandemic will occur, 2) its severity and 3) the availability and access to resources (e.g., immunizations, antiviral medications, medical supplies and equipment) that may reduce the impact of the pandemic, the planning process requires the use of a number of assumptions which are based upon an unmitigated outbreak. These assumptions are listed below, with any applicable references noted:

1. Like seasonal influenza, the pandemic influenza virus will be transmitted via close contact (i.e., exposure to large respiratory droplets, direct contact transfer of virus from contaminated hands to the nose or eyes, or exposure to small-particle aerosols in the immediate vicinity of the infectious individual) ;
2. Like seasonal influenza, the average incubation period for pandemic influenza will be 2 days (range 1-4 days);
3. Like seasonal influenza, persons who become ill with pandemic influenza may shed the virus and can transmit infection for up to 1 day before the onset of their illness. Viral

- shedding and the risk for transmission will be greatest during the first 2 days of illness and drops off within 5-7 days (though can be up to 10 days in children);
4. Like seasonal influenza, children will shed the greatest amount of virus and therefore likely to pose the greatest risk for transmission;
 5. Susceptibility to pandemic influenza will be universal;
 6. Risk groups for severe disease and death cannot be predicted with certainty. During seasonal influenza epidemics the very young, the very old and those with chronic diseases are considered at highest risk. However, during the 1918 influenza pandemic young healthy adults also experienced significantly elevated rates of severe disease and death;
 7. The attack rate will be 30%ⁱⁱ (rates will be highest among children and decline with age);
 8. The severity of a pandemic cannot be predicted with certainty. However, for planning purposes knowledge of past influenza pandemics can be used to predict severity. For the purposes of this Plan, a “most-likely” scenario will be assumed. This “most-likely” scenario is one that is more severe than a 1957/68-like influenza pandemic though less severe than a 1918-like pandemicⁱⁱⁱ;
 9. The average proportion of ill persons requiring hospital or outpatient care will be 50%^{iv};
 10. The average proportion of ill persons requiring hospital care will be 4.0%^v;
 11. The average proportion of ill persons that will die will be 1.0%^{vi};
 12. The average proportion of persons hospitalized that will require ICU-level care will be 15%^{vii};
 13. The average proportion of persons hospitalized that will require a ventilator will be 7.5%^{viii};
 14. The average length of non-ICU hospital stay will be 5 days^{ix};
 15. The average length of ICU-stay will be 10 days^x;
 16. The average length of ventilator usage will be 10 days^{xi};
 17. The average proportion of influenza deaths that will occur in a hospital will be 70%^{xii};
 18. Total hospital admissions is the sum of number of ill requiring hospital care and number of deaths occurring in hospital^{xiii};
 19. The weekly distribution of hospital admissions and deaths will follow an approximate normal distribution;^{xiv}
 20. Prior to the peak, the daily percent increase in cases arriving to a hospital compared to the prior day will be 3.0% and after the peak the daily percent decrease in cases arriving to a hospital compared to the prior day will be 3.0%^{xv};
 21. The average length of the influenza pandemic in Vermont will be 12 weeks. This will occur as one wave ^{xvi}
 22. The population of Vermont is 620,000.^{xvii}
 23. The proportion of Vermont’s population that falls within certain age groups are as follows^{xviii}:
 - a. Age 0 – 19 years of age: 25.0%
 - b. Age 20 – 64 years of age: 62.0%

c. Age 65 + years of age: 13.0%

24. During the course of the influenza pandemic 40% of the population will be out of work due to illness, fear, or the need to take care of others, including family members;

25. The seasonality of an influenza pandemic cannot be predicted with certainty, though the largest waves in the U.S. during the 20th century pandemic occurred in the fall and winter^{xix}.

Table 1 represents the **total impact** of an influenza pandemic on Vermont, based on the preceding assumptions:

Table 1 Total Impact of an Influenza Pandemic on Vermont	
Number ill	186,000
Number ill requiring hospital or outpatient care	93,000
Number ill requiring hospital care	7,400
Number ill requiring outpatient care	85,600
Number hospitalized requiring ICU care	1116
Number hospitalized requiring ventilators	555
Number deaths	1860
Number of deaths occurring in hospitals	1302
Number of total hospital admissions	8702

Peak impact, by week and day were calculated using Flu Surge2.0^{xx}, the preceding assumptions and calculations in table 1. The peak impact occurred during week 7 of the 12 week pandemic for all results except for the number of deaths, which peaked during week 8 (table 2).

Table 2 Peak Impact of an Influenza Pandemic on Vermont	
Weekly hospital admissions (week 7)	1305
Peak admissions/day (week 7)	203
Number influenza patients in hospital (week 7)	994
Number of influenza patients in ICU (week 7)	288
Number of influenza patients on ventilators (week 7)	144
Number of influenza deaths (week 8)	279

Number of influenza deaths in hospital (week 8)	195
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Integrate current availability of nursing home beds (currently there are 300 vacancies)

SECTION IV: SCOPE OF PRACTICE ISSUES

Significant discussion and consideration has been given in the development of this report in regards to changes to professional licensing and scope of practice. Many settings anticipate the need to engage health care professionals, family members, and volunteers for tasks which are outside of their scope of practice in order to meet the needs of their communities (given the high staff shortages and increased number of ill patients). According to the National Highway Traffic Safety Administration (NHTSA), National EMS Scope of Practice Model :

“Scope of practice” is a legal description of the distinction between licensed health care personnel and the lay public and among different licensed health care professionals. It describes the authority, vested by a State, in licensed individuals practicing within that State. Scope of practice establishes which activities and procedures represent illegal activity if performed without licensure. In addition to drawing the boundaries between the professionals and the lay person, scope of practice also defines the boundaries among professionals, creating either exclusive or overlapping domains of practice.”

<http://www.nhtsa.gov/staticfiles/DOT/NHTSA/Communication%20&%20Consumer%20Information/Articles/Associated%20Files/EMSScope.pdf>

Having said this NHTSA also recognizes that individuals perform skills or fulfill functions in their work as defined by additional parameters, these include:

- education (has been trained to do the skill or role),
- certification (has demonstrated competence in the skill or role),
- licensing (has legal authority issued by the State to perform the skill or role),
- credentialing (has been authorized by medical director to perform the skill or role).

In considering how an organization plans for changes in scope of practice as defined above, it is important to take into account these four parameters in planning activities. Given the wide array of professions which may be required to perform duties outside their scope of practice, additional criteria are also recommended to be considered. These criteria should be applied for specific tasks and it is not recommended that broad based or unilateral changes in scope of practice are applied. Changes in scope of practice are to be considered given the specific tasks that will need to be accomplished during an emergency with the assumption that the scope of practice eventually returns to the pre-event status. Planning for a specific task to be performed outside the scope of practice, yet within reason to be performed during an emergency should take into consideration whether:

- The professional has proficiency for the required task in another setting (such as a veterinarian).
- The person can be oriented real time/just in time to perform a specific task proficiently
- The procedure can be done under the supervision of someone who is otherwise qualified to do the procedure

- The task can be done by a profession one level below them (for example RN to LPN not MD to RN)

SECTION V: ALTERED STANDARDS OF CARE ACROSS PRIORITY SETTINGS

Each section needs brief introduction

A. E911 Altered Standards of Care

Goal 1: Improve E911 ability to conduct mass event surveillance

- Integrate surveillance data collection into E911 system
- Utilize case definition data points for pandemic flu (see Figure 4)
- Provide surveillance and incident data reports to Department of Health

Goal 2: Expand E911 capacity to manage high call volume and mitigate impact on EMS

- Initiate alternate call handling (see Figure 2 and Figure 3)
- Alter staffing patterns including:
 - Provide remote access to call center
 - Change schedules (12 hours, rotations)
 - Surge number of call handlers
- Investigate alternatives to current PSAP based call handling
- Obtain on-line or verbal triage assistance from health care professionals
- Modify automated answering message for calls waiting in cue

Goal 3: Adequately prepare E911 and dispatch personnel for altered standards of care

- Institute just in time training which may include:
 - Dispatch training
 - Identify entity to develop curriculum
 - Determine how information will be disseminated/trained
 - Assign who will oversee compliance
 - 911 Call tracker training
 - Develop automatic data gathering
 - Data packaging of specific symptoms
 - Patients chief complaint
 - Specific influenza like symptoms
 - Geographic data
 - Provide guidance and train E911 staff regarding care at home
 - http://www.redcross.org/www-files/Documents/pdf/domestic%20programs/pandemic_flu_home_care_brochure.pdf

B. EMS Altered Standards of Care

Goal 1: Maintain an adequate number of Certified EMS personnel

- Relax current re-licensure requirements.
- Credential personnel whose certification lapsed in the last 5 years.
- Accept out of state Nationally registered personnel.
- Allow for first responders to be trained in less than 60 hours.

Goal 2: Maximize the ability to respond to transport needs

- Allow transport to occur with a non-certified driver and EMS personnel.
- Allow for transport using non-ambulance.
- Allow transport to non-emergency department locations.
- Develop alternate staffing schedules (12 hour shifts etc)

Goal 3: Reduce the burden on ambulance transport demand

- Implement a triage protocols (see Figures 2 and 3)

Goal 4: Adequately prepare EMS personnel for altered standards of care

- Institute just in time training which may include:
 - PPE including respiratory
 - Immunization
 - EMS personnel
 - public
 - Decontamination of equipment and vehicles
 - Orientation to altered standards protocols
 - Orientation to triage protocols (see Figures 2 and 3)
 - Orientation to treat and release protocols (see Figure 4 and Figure 5)
 - Orientation to Alternate Care Centers

Goal 5: Maximize the availability of key scarce resources

- Identify key resources which will be in short supply during a pandemic.
- Initiate early in pandemic strategies which will extend the availability of key resources, in order of preference these strategies may include:
 - Prepare - pre-event actions taken to minimize resource scarcity
 - Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl)
 - Adapt - use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation)
 - Conserve - use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen)
 - Re-use - re-use (after appropriate disinfection / sterilization) items that would normally be single-use items
 - Re-allocate - take a resource from one patient and giving it to a patient with a better prognosis or greater need

C. Emergency Department Altered Standards of Care

Goal 1: Manage surveillance, infection control practices and procedures

- Patients are screened for flu outside the emergency department
- Use case definition for flu screening (see Figure 4)
- Potential flu routed to physically proximal but isolated (air handling) area
- Implement early surveillance program

Goal 2: Reduce the burden on emergency department resources

- Plan for reduction in administrative functions and documentation
- Triage diverts patients to other care sites including treat and release (see Figure 5, Figure 6 and Figure 7).
- Establish phone screening and diversion process.
- Establish procedures to lock down of facility to manage triage and patient flow

- Expand capacity by establishing portable triage set up outside emergency department entrance
- Expand capacity through altered staffing patterns
- Consider expanding scope of practice for clinical staff to meet staffing shortages

Goal 3: Maximize the availability of key scarce resources

- Identify key resources which will be in short supply during a pandemic.
- Initiate early in pandemic strategies which will extend the availability of key resources, in order of preference these strategies may include:
 - Prepare - pre-event actions taken to minimize resource scarcity
 - Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl)
 - Adapt – use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation)
 - Conserve – use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen)
 - Re-use – re-use (after appropriate disinfection / sterilization) items that would normally be single-use items
 - Re-allocate – take a resource from one patient and giving it to a patient with a better prognosis or greater need

D. Hospital Altered Standards of Care

Goal 1: Expand hospital capacity to serve additional patients

- Facilitate discharge of patients whose families can care for them at home
 - Develop communication plan with patients and staff relaying key information regarding the facility response and potential needs and expectations from families and volunteers.
- Consider options for discharge of patients to nursing home settings (criteria should be developed for the discharge of a limited number of non-infected high need patients)
- Cancel elective clinical and administrative procedures
- Expand bed capacity, potentially beyond licensed capacity
- Align activities with existing surge capacity planning
- Consider expanding scope of practice for clinical staff to meet staffing shortages

Goal 2: Reduce hospital crowding

- Implement triage protocols and transfer/refer patients to appropriate settings (see Figures 6 and 7)

Goal 3: Maximize the availability of key scarce resources

- Identify key resources which will be in short supply during a pandemic.
- Initiate early in pandemic strategies which will extend the availability of key resources, in order of preference these strategies may include:
 - Prepare - pre-event actions taken to minimize resource scarcity
 - Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl)
 - Adapt – use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation)
 - Conserve – use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen)

- Re-use – re-use (after appropriate disinfection / sterilization) items that would normally be single-use items
- Re-allocate – take a resource from one patient and giving it to a patient with a better prognosis or greater need
- Initiate protocols for ventilator allocation (see Figure 8)

Goal 4: Adequately prepare personnel for altered standards of care

- Institute just in time training which may include:
 - PPE including respiratory
 - Immunization
 - personnel
 - public
 - Decontamination of equipment and space
 - Orientation to altered standards protocols
 - Orientation to Alternate Care Centers
- Cross train staff to be prepared to assume altered roles and responsibilities (medication administration by non nurses, assessment by non physicians etc)

Goal 5: Assure adequate altered standards decision-making infrastructure to support staff and families

- Assign a triage officer and support team to implement and distribute scarce resources.
 - This team will be responsible for determining plans of care for patients and remove responsibility of critical triage decision-making from front line clinicians.
 - Consider inclusion of physician, nurse, administrative officer, palliative care and ethicists
 - Perform retrospective review of the triage team decisions.
- Create an appeals process for patients and their families which promotes and respects:
 - Transparency
 - Justice/fairness
 - Individual autonomy

E. Alternate Care Centers

By nature of their function Alternate Care Centers (ACCs) are in and of themselves altered standards of care. The purpose of including them in this section is to clarify their role as an integral part of the system supporting altered standards versus stand alone facilities. Under the assumptions outlined in this report, ACCs are intended to supply medical care to patients who would otherwise be admitted to a hospital. They are intended to provide an inpatient care role for patients too ill for home but not requiring the level, scope or intensity of health care services that will be scarcely available in a hospital during a pandemic.

The scope of services and interventions available at the ACC should respond to the acuity and needs of ACC patients defined in triage guidelines (see Figure 6 and 7). These services may include but are not limited to:

- O2 administration
- IV therapy and hydration
- Limited pharmacology
- Routing ongoing clinical assessment
- Provision of basic needs (food, shelter, etc)

Such scope of services may be conducive to employing a wide array of health care professionals, some of which may be required to work outside of their scope of practice, staffing patterns should consider high patient to staffing ratios with potential staffing:

- Veterinarians
- School nurses
- Nursing students
- Nursing faculty
- Facility staff (basic needs, admitting, discharge)

While criteria for referral to an ACC is outlined in Figure 6 and 7, it is important to be explicit that ACCs are not considered for:

- Non flu hospital patients who are given early discharge
- Additional bed space for flu patients whose acuity requires hospital care
- Screening centers for the general population

Goal 1: Integrate Alternate Care Centers into the system of care during an emergency

- Refer, redirect or discharge patients to ACCs using common triage guidelines (see Figure 6 and 7)
- Define the relationship between hospitals and ACCs, given the medical oversight needs, bed management and high level of coordination needed between the hospital and ACC, strong consideration should be given to hospital management and staffing of the ACC.

F. Nursing Home Altered Standards of Care

Goal 1: Expand capacity to accept hospital transfers and reduce hospital crowding

- Facilitate discharge patients whose families can care for them at home
 - Develop communication plan with patients and staff relaying key information regarding the facility response and potential needs and expectations from families and volunteers.
- Consider options for discharge of patients to residential care settings
- Cancel elective transfers from nursing homes to hospitals
- Expand bed capacity, potentially beyond licensed capacity

Goal 2: Maximize the availability of key scarce resources

- Identify key resources which will be in short supply during a pandemic.
- Initiate early in pandemic strategies which will extend the availability of key resources, in order of preference these strategies may include:
 - Prepare - pre-event actions taken to minimize resource scarcity
 - Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl)
 - Adapt - use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation)
 - Conserve - use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen)
 - Re-use - re-use (after appropriate disinfection / sterilization) items that would normally be single-use items
 - Re-allocate - take a resource from one patient and giving it to a patient with a better prognosis or greater need

Goal 3: Maximize staffing resources through changes in administrative or programmatic requirements which include but are not limited to the following:

- Alter, delay or eliminate intake and assessment functions
- Suspend socialization and recreation assessments and programs
- Reduce documentation (billing, assessments, other non critical documentation)
- Modification of visiting hours – expand or contract according to barriers and needs
- Suspend care plan modification and update requirements
- Suspend MDS documentation and entry activities
- Initiate charting by exception documentation procedures

Goal 4: Maximize staffing resources through changes in clinical requirements which include but are not limited to the following:

- Modification of physicians orders (in advance or real time) to reduce noncritical clinical activities (bp, weight etc)
- Consider extending admitting or standing physician orders rather than completing reassessments
- Reduce primary care elective visits

Goal 5: Maximize staffing resources through changes in roles and responsibilities of staff, family members and volunteers

- Allow nurses to complete patient assessments and verify via phone with physician as opposed to physician assessment in person
- Allow medication administration by other trained personnel
- Allow family members and volunteers to assist with activities of daily living and housekeeping activities
- Consider expanding scope of practice for clinical staff to meet staffing shortages

Goal 6: Manage infection control practices and procedures

- Isolate, quarantine, and relocate infectious patients within the facility to reduce spread of contagious diseases
- Initiate social distancing practices to reduce mixing of patients including suspension of socialization and recreation activities

Goal 7: Adequately prepare nursing home personnel for altered standards of care

- Institute just in time training which may include:
 - PPE including respiratory
 - Immunization
 - personnel
 - public
 - Decontamination of equipment and space
 - Orientation to altered standards protocols
 - Orientation to Alternate Care Centers
- Cross train staff to be prepared to assume altered roles and responsibilities (medication administration by non nurses, assessment by non physicians etc)

G. Home Health Altered Standards of Care

Goal 1: Expand capacity to respond to increased community needs including hospital discharges.

- Engage and train families in care of clients
- Reorganize staffing responsibilities and schedules
 - For example, shift MCH nurses to higher need areas

Goal 2: Maximize the availability of key scarce resources

A significant vulnerability of home health clients is the fact that many agencies have direct shipment of resources to the client's home. As a result, extending the availability of key resources may not be in the control of the agency, to the extent possible:

- Identify key resources which will be in short supply during a pandemic.
- Initiate early in pandemic strategies which will extend the availability of key resources, in order of preference these strategies may include:
 - Prepare - pre-event actions taken to minimize resource scarcity
 - Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl)
 - Adapt - use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation)
 - Conserve - use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen)
 - Re-use - re-use (after appropriate disinfection / sterilization) items that would normally be single-use items
 - Re-allocate - take a resource from one patient and giving it to a patient with a better prognosis or greater need

Goal 3: Maximize staffing resources through changes in administrative or programmatic requirements which include but are not limited to the following:

- Alter, delay or eliminate intake, assessment and care plan documentation and administrative burdens
- Reduce documentation (billing, assessments, other non critical documentation)
- Suspend, reduce or delay OASIS documentation and entry activities
- Develop triage system to identify the acuity of home health clients and the minimum intervals at which they require care.

Figure 2: EMS and E911 Triage Protocol: Resources Inadequate during the Pandemic - (Over capacity but not overwhelmed)

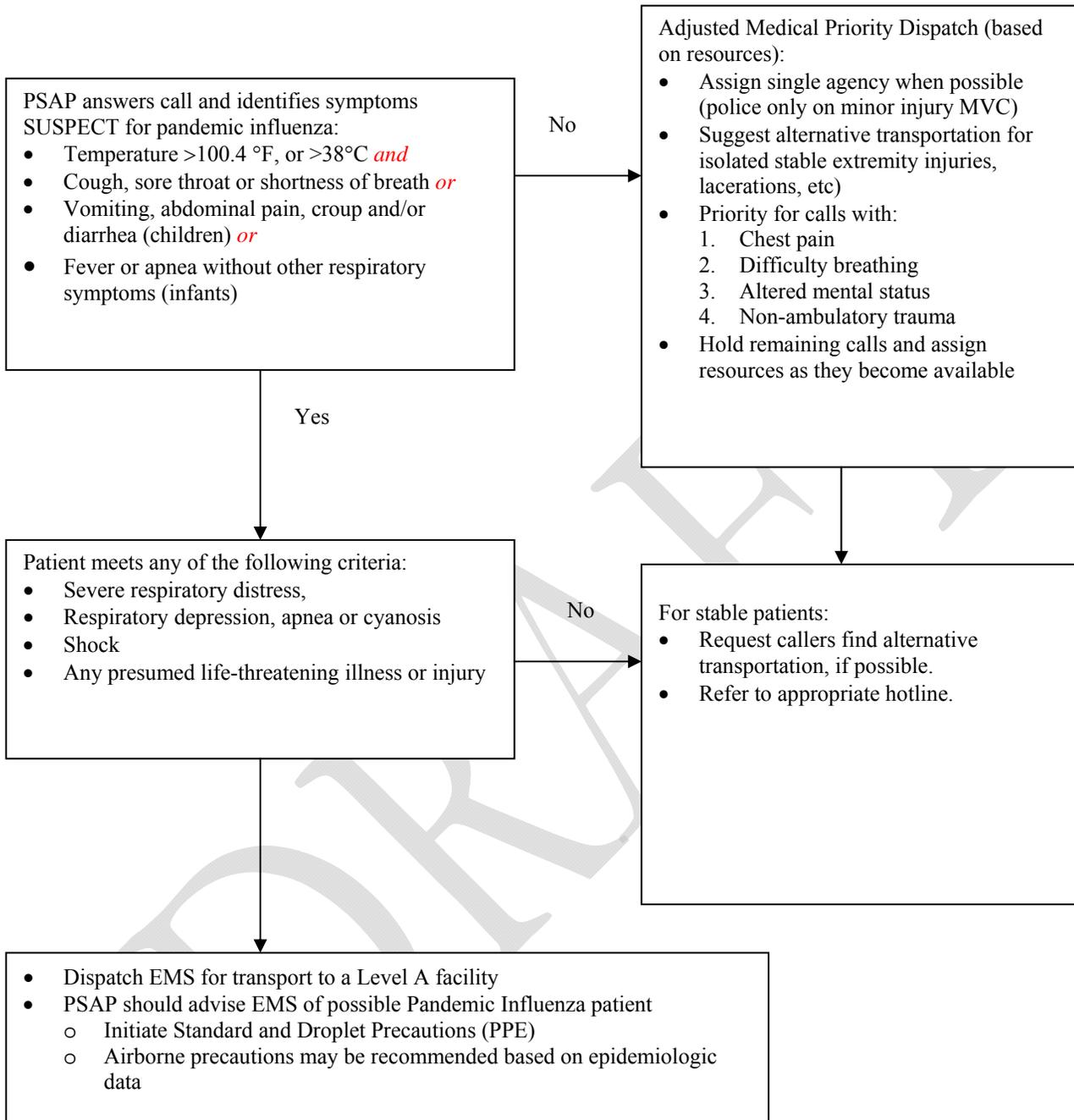


Figure 3: EMS and E911 Triage Protocol: Resources Overwhelmed during the Pandemic

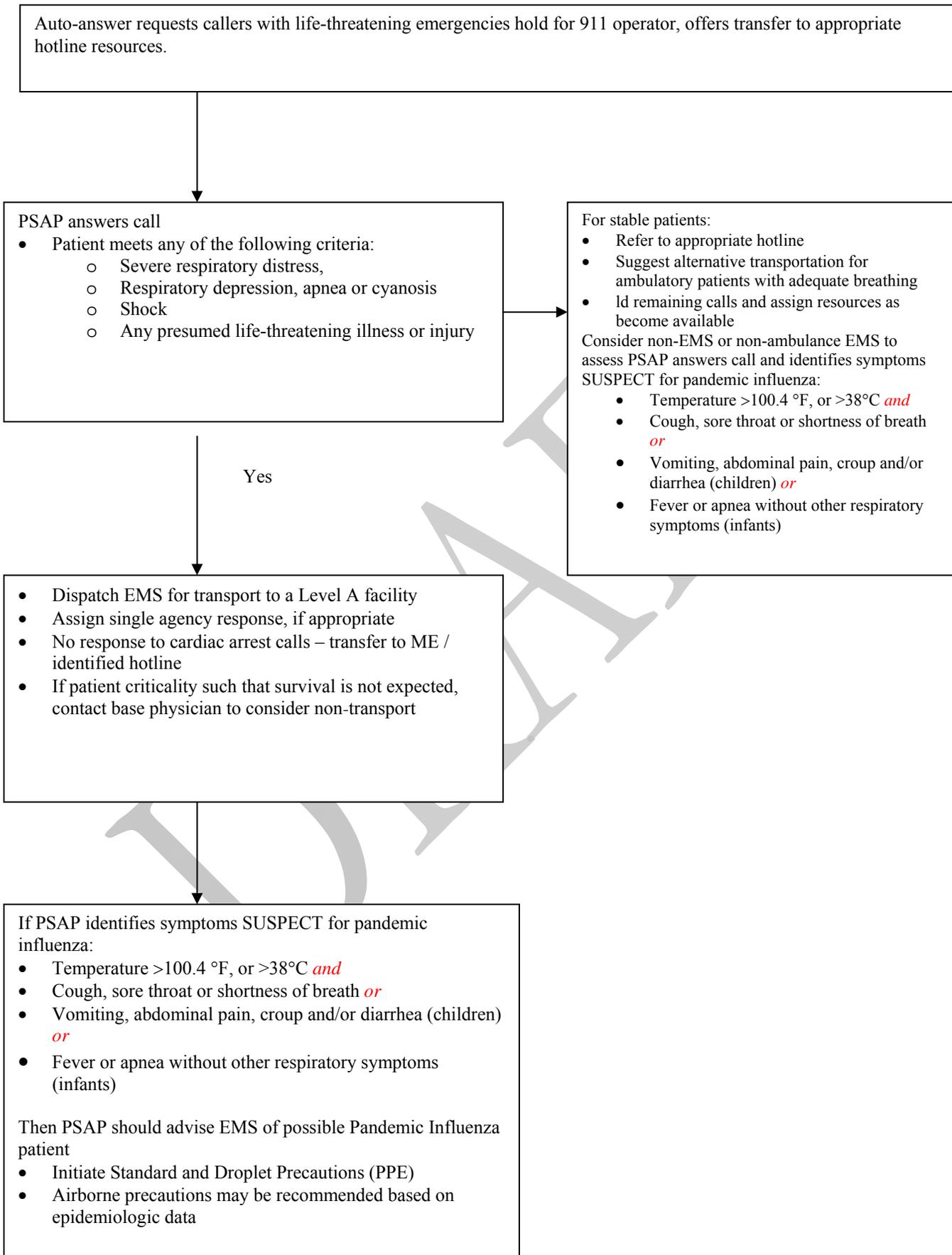


Figure 4: Suspected Influenza Case Definition

Illness with **both** of the following:

- Temperature >100.4 °F, or >38°C **and**
- Cough, sore throat or shortness of breath **or**
- Vomiting, abdominal pain, croup and/or diarrhea (children) **or**
- Fever or apnea without other respiratory symptoms (infants)

Figure 5: Recommended Case Definition for Home Care

Home Care with Telephone Triage and Advice

- Suspected influenza patients without complications and NOT in high-risk group¹
- Most mild illnesses, acute phase
- Most acute minor injuries (trauma)
- Chronic disease management
- Mild dehydration

Figure 6: Adult Triage

Evaluate clinical criteria and score one point for each positive finding below:	
<ul style="list-style-type: none"> • Respiratory rate (RR) > 30 • Shock index >1 (Heart rate/Systolic BP) • O₂ Saturation < 90% (hypoxic) • Altered mental status (e.g., confusion) • Age ≥ 65 	
Compute score:	
<i>Score (Points)</i>	<i>Estimated Mortality (%)</i>
0	<2
1	3-6
2	8-12
≥3	25-32
Determine disposition:	
<i>Score (Points)</i>	<i><u>Disposition (Care Site)</u></i>
0	
Tolerates Oral Rehydration Therapy (ORT) Dehydrated, not tolerating ORT	Home ACC with IV hydration
1	
Age alone or Shock Index >1 due to dehydration (resolved with treatment) <ul style="list-style-type: none"> ○ Tolerates ORT ○ Not tolerating ORT Shock Index > 1 not resolved with hydration Hypoxic or RR > 30 Altered mental status (e.g. confusion)	Home or Self Care Alternate Care Center with IV hydration Hospital Hospital or ACC (depending on need) Hospital
2	
For patients < age 65: <ul style="list-style-type: none"> ○ Hypoxia and RR > 30 alone For patients ≥ age 65: <ul style="list-style-type: none"> ○ Hypoxia or RR > 30 alone ○ Shock Index >1 due to dehydration (resolved with treatment) All other patients with score = 2	Hospital with oxygen Hospital with oxygen Hospital with IV hydration Hospital

> 3	Hospital
<ul style="list-style-type: none"> • Evaluate all patients for secondary bacterial Community Acquired Pneumonia (CAP) or other bacterial complications of influenza. • If appropriate, institute antibiotics by oral route if possible. If unable to tolerate, consider transfer to facility capable of IV antibiotics. • Screen for appropriateness of antiviral therapy as available per CDPHE recommendations¹. 	

Figure 7: Pediatric Triage

Evaluate clinical criteria²:			
<ul style="list-style-type: none"> • Abnormal breath sounds, Stridor • Tachypnea for age (Table 1) • Increase work of breathing (retractions, nasal flaring, head bobbing) or apnea • O₂ Saturation < 90% at 5,280 feet (hypoxic) or equivalent local values, cyanosis • Shock signs: delayed end organ perfusion (such as delayed capillary refill) plus tachycardia for age (Table 2) • Altered Mental Status • Age < 2 months 			
Determine age-based respiratory rate (RR) ³:			
<i>Age Group</i>	<i>Normal RR (breaths/min.)</i>	<i>Mild-Moderate Tachypnea (breaths/min.)</i>	<i>Severe Tachypnea (breaths/min.)</i>
Infant (<1year)	30-60	60-70	>70
Toddler (1-3 years)	24-40	40-50	>50
Preschooler (4-5 years)	22-34	35-45	>45
School age (6-12 years)	18-30	25-35	>35
Adolescent (13-18 years)	12-20	20-30	>30
Determine age-based heart rate (HR)⁴:			
<i>Age Group</i>	<i>Normal HR (beats/min.)</i>	<i>Mild-Moderate Tachycardia (beats/min.)</i>	<i>Severe Tachycardia (beats/min.)</i>
Infant (<1 year)	110-180	180-200	>200
Toddler (1-3 years)	100-150	150-170	>170
Preschooler (4-5 years)	60-140	140-160	>160
School age (6-12 years)	60-120	120-140	>140
Adolescent (13-18 years)	60-100	100-120	>120

¹ CDPHE Pandemic Influenza Plan, Attachment 5b www.cdph.state.co.us/pandemic

² Eitel DR, et al. The Emergency Severity Index Triage Algorithm Version 2 Is Reliable and Valid. *Acad Emerg Med.* 2003 Oct; 10 (10).

³ Roback MG, Teach SJ. Pediatric Resuscitation: A Practical Approach. *American College of Emergency Physicians.* 2005 Oct.

⁴ Pediatric Advanced Life Support- Provider Manual. American Academy of Pediatrics and the American Heart Association. 2006.

Determine disposition:	
<i>Severity of Symptoms</i>	<u><i>Disposition (Care Site)</i></u>
Mildly Ill	
<ul style="list-style-type: none"> Alert, active No stridor Minimal to no retractions RR normal to mild-moderate tachypnea No hypoxia or cyanosis No signs of shock Feeding well, minimal to no signs of dehydration 	Home with instructions
Moderately Ill	
<ul style="list-style-type: none"> Alert, consoles Stridor with agitation, not at rest (comfortable) Minimal to moderate retractions Mild-moderate tachypnea Hypoxia- not severe (pulse-oximetry 80-90% room air at 5,280 feet), no cyanosis Mild tachycardia without signs of shock Decrease feeding or mild dehydration 	ACC with ORT or IV hydration <i>or</i> Hospital with oxygen or IV hydration
Severely Ill	
<ul style="list-style-type: none"> Fussy, difficult to console, altered mentation Stridor at rest Moderate to severe retractions, nasal flaring, head bobbing Severe tachypnea Cyanosis or hypoxia (pulse-oximetry <80% room air at 5,280 feet) Episodes apnea Moderate to severe tachycardia and/or clinical signs of shock Poor feeding, moderate to severe signs of dehydration Symptoms and age < 2 months 	Hospital
<ul style="list-style-type: none"> Evaluate all patients for secondary bacterial CAP or other bacterial complications of influenza. Children as opposed to adults can present with upper airway or croup like symptoms All patients should have pulse-oximetry Attempt nasal suction on all infants and young children with respiratory distress or decrease feeding Attempt rehydration and initial antibiotics by oral method in the mildly or moderately ill child. Those that are severely ill or unable to tolerate oral antibiotics should be transferred to a facility capable of IV fluids and antibiotics Screen for appropriateness of antiviral therapy as available per CDPHE recommendations²¹. 	

Figure 8: Critical Care Triage and Allocation of Ventilators (Adults)

This protocol is intended to provide guidance for making triage decisions during the initial days to weeks of an influenza pandemic if the healthcare system becomes overwhelmed. Since all patients will

share in the same pool of scarce resources, *the triage protocol would apply to patients both with and without influenza*. The guidance applies to patients already in a hospital.

Mechanical Ventilator Triage (Adults)

Patients with non-influenza illnesses and injuries that need mechanical ventilation will continue as normal but without the usual available resources. Usually, hospitals maintain a sufficient number of ventilators to meet current health care demands. At times of peak demand (e.g., respiratory/ influenza season), hospitals will supplement their inventory by renting additional ventilators and potentially by accessing the Strategic National Stockpile. During a pandemic influenza event, ventilators will become a scarce resource. The increased number of patients during a pandemic will likely exceed the number of ventilators even after being supplemented with rentals.

Vermont will follow a stepwise application of a system to allocate ventilator resources during a pandemic. This will allow for the calibration of the triage criteria as the pandemic evolves. Usage of adult ventilators is based on weight; thus, the typical definition of an “adult” (persons 18 years of age or older) doesn’t apply here. These guidelines apply to adult ventilators for persons weighing more than 88 lbs or 40 kg and generally above 12 years in age; therefore, infants and young children are exempt from ventilator triage.

The following guidance is an adapted approach for rationing critical care beds and the use of ventilators during a pandemic⁵. When critical care beds and ventilators are at risk of becoming depleted, Tier 1 criteria will be employed in order to maximize resources for those most in need. If Tier 1 isn’t sufficient to aid in allocation Tier 2 criteria will be employed in addition to the criteria in Tier 1. Finally, if criteria in Tiers 1 and 2 aren’t sufficient then Tier 3 criteria can either be added or Tier 3 criteria can be employed alone. The GEEERC and ultimately the governor must approve every modification or addition of these triage criteria.

Tier 1: Do not offer and if started, withdraw ventilatory support for patients with any one of the following:

1. Respiratory failure requiring intubation with persistent hypotension (systolic blood pressure <90 mm Hg for adults) unresponsive to adequate fluid resuscitation after 6–12 hours of therapy and signs of additional end-organ dysfunction (e.g., oliguria (very small amount of urine), mental status changes, cardiac ischemia (lack of oxygen in the heart muscle))
2. Failure to respond to mechanical ventilation (no improvement in oxygenation or lung compliance) and antibiotics after 72 hours of treatment for a bacterial pathogen (timeline may be modified based on organism-specific data)
3. Laboratory or clinical evidence of greater than or equal to four organ systems failing
 - a. Pulmonary – Arteries (adult respiratory distress syndrome, ventilatory failure, refractory hypoxemia or severe chronic lung disease with FEV in 1 second of < 25%)
 - b. Cardiovascular – Heart (left ventricular dysfunction, hypotension, new ischemia)
 - c. Renal – Kidneys (hyperkalemia, diminished urine output despite adequate fluid resuscitation, increasing creatinine level, dialysis dependant)
 - d. Hepatic – Liver (transaminase greater than two times upper limit of normal, increasing bilirubin or ammonia levels or Model of End-stage Liver Disease score > 20)

⁵ Hick, JL and O’Laughlin, DT; *Concept of Operations for Triage of Mechanical Ventilation in an Epidemic*. [Acad Emerg Med. 2006 Feb;13\(2\):195-8.](#)

- e. Neurologic – Nervous System (altered mental status not related to volume status, metabolic, or hypoxic source, stroke or severe, irreversible neurologic event/condition with high expected mortality)
- f. Hematologic – Blood (clinical or laboratory evidence of disseminated intravascular coagulation)

Tier 2: Do not offer and if started withdraw ventilatory support for patients with respiratory failure requiring intubation with the following conditions (in addition to those in Tier 1):

Patients with pre-existing system compromise or failure including:

1. Known congestive heart failure with ejection fraction <25% (or persistent ischemia unresponsive to therapy and pulmonary edema)
2. Acute renal failure requiring hemodialysis (related to illness)
3. Severe chronic lung disease including pulmonary fibrosis, cystic fibrosis, obstructive or restrictive diseases requiring continuous home oxygen use before onset of acute illness
4. Acquired immunodeficiency syndrome (AIDS), other immunodeficiency syndromes at stage of disease susceptible to opportunistic pathogens (e.g., CD4 <200 for AIDS) with respiratory failure requiring intubation
5. Active malignancy (cancer) with poor potential for survival (e.g., metastatic malignancy, pancreatic cancer)
6. Cirrhosis with ascites, history of variceal bleeding, fixed coagulopathy, or encephalopathy
7. Acute hepatic failure with hyperammonemia
8. Irreversible neurologic impairment that makes patient dependent for personal care (e.g., severe stroke, congenital syndrome, persistent vegetative state)
9. Severe burn: body surface area >40%, severe inhalation injury

Tier 3: Apply specific protocols developed by the GEEERC and/or utilize SOFA scores.

1. Restriction of treatment based on disease-specific epidemiology and survival data for patient subgroups (may include age-based criteria) per GEEERC recommendations.
2. Expansion of pre-existing disease classes that will not be offered ventilatory support per GEEERC recommendations and governor approval.
3. Applying Modified Sequential Organ Failure Assessment²⁶ scoring to the triage process and establishing a cutoff score above which mechanical ventilation will not be offered.

Hospital Pandemic Critical Care Triage by Modified SOFA Score (Adults and Pediatrics)

The Sequential Organ Failure Assessment (SOFA)⁶, a physiologically based scoring system that predicts critical care outcomes will be utilized to triage critical care beds. SOFA was developed in 1994 to quantify the severity of patients' illness, based on the degree of organ dysfunction. The SOFA scoring system takes into account the time course of a patient's condition during the entire ICU stay and allows for reassessment at given points in time. This enables physicians to follow the evolving disease process and recommend/make decisions on the most current patient information.

Grissom and colleagues⁷ develop a modified SOFA scoring system that focused on limiting the number of laboratory tests needed to perform risk stratification by replacing the arterial blood gas with an oxygen saturation measurement, deleting coagulation testing, and replacing the bilirubin

⁶ Vincent JL et al. The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction / failure. *Intensive Care Med.* 1996;22:707-710

⁷ Grissom CK, Orme JF, Jensen RL, et al. A modified sequential organ failure assessment score to predict mortality in critically ill patients. Program and abstracts of the Society of Critical Care Medicine (SCCM) 37th Critical Care Congress; February 2-6, 2008; Honolulu, Hawaii. Abstract 36.

measurement with a crude evaluation of the presence or absence of jaundice. Grissom and coworkers determined that the traditional SOFA and modified SOFA tools performed equally well at predicting mortality; therefore, this is the scoring system Colorado will use.

Instructions for the application of the triage protocol to determine a patient's need for critical care during an influenza pandemic⁸

1. Assess whether the patient meets the inclusion criteria (Patients who may benefit from admission to critical care and primarily focuses on respiratory failure, since the provision of ventilatory support is what fundamentally differentiates the ICU from other acute care areas.
 - If yes, proceed to step 2
 - If no, reassess patient later to determine whether clinical status has deteriorated
2. Assess whether the patient meets the exclusion criteria (Patients who have a poor prognosis despite care in an ICU, patients who require resources that simply cannot be provided during a pandemic and patients with advanced medical illnesses whose underlying illness has a poor prognosis with a high likelihood of death, even without their current concomitant critical illness.)
 - If no, proceed to step 3
 - If yes, assign a “blue” triage code; *do not* transfer the patient to critical care; continue current level of care or provide palliative care as needed
3. Proceed to triage tool. *The triage protocol applies to all patients undergoing assessment for possible critical care and not only those with influenza-like symptoms.*

Detailed inclusion and exclusion criteria used in the triage protocol for critical care during an influenza pandemic

Inclusion criteria⁹

The patient is allowed admission or transfer to critical care if A or B is present:

A. Requirement for invasive ventilatory support (one or more of the following)

- Refractory hypoxemia ($\text{SpO}_2 < 90\%$ on non-rebreather mask)
- Respiratory acidosis ($\text{pH} < 7.2$)
- Clinical evidence of impending respiratory failure
- Inability to protect or maintain airway

B. Hypotension (systolic blood pressure < 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 aggressive volume resuscitation requiring vasopressor or inotrope support that cannot be managed in ward setting

Exclusion criteria

The patient is excluded from admission or transfer to critical care if any of the following is present:

- A. Severe trauma with a revised trauma score of < 2 ¹⁰
- B. Severe burns of patient with any two of the following:
 - Age > 60 yr
 - $> 40\%$ of total body surface area affected

⁸ Adapted from Christian MD, Hawryluck L, Wax RS, et al. *Development of a triage protocol for critical care during an influenza pandemic. Canadian Medical Association Journal* 2006; 175(11): 1377-81

⁹ This is not an exhaustive list and may change based upon the severity of the pandemic.

¹⁰ Champion HR, Sacco WJ, Copes WS, Gann DS, Gennarelli TA, Flanagan ME. A revision of the Trauma Score. *J Trauma*. 1989;29(5):623-629.

- Inhalation injury
 - Anticipated survival rate of <50% (Patients identified as “Low” or worse on Triage Decision Table for Burn Victims)
- C. Cardiac arrest
- Unwitnessed cardiac arrest
 - Witnessed cardiac arrest, not responsive to electrical therapy (defibrillation or pacing)
 - Recurrent cardiac arrest
- D. Known severe dementia, medically treated and requiring assistance with activities of daily living
- E. Do Not Resuscitate/Do Not Intubate (DNR/DNI)
- F. Advanced untreatable neuromuscular disease (e.g., amyotrophic lateral sclerosis, end stage multiple sclerosis, etc.) requiring assistance with activities of daily living or requiring chronic ventilatory support
- G. Metastatic malignant disease
- H. Advanced and irreversible immuno-compromise
- I. Severe and irreversible neurologic event or condition with persistent coma and Glasgow Coma Score of <6
- J. End-stage organ failure meeting the following criteria¹¹:
- Heart –*
- NYHA class III heart failure¹² (Moderate) – Marked limitation of physical activity. Comfortable at rest but less than ordinary activity causes fatigue, palpitations or dyspnea.
 - NYHA Class IV heart failure³¹ (Severe) – Unable to carry out physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased.
- Lungs -*
- Chronic Obstructed Pulmonary Disease (COPD) with forced expiratory volume in one second (FEV1) < 25% predicted, baseline
 - Chronic PaO₂ < 55 mm Hg, or secondary pulmonary hypertension
 - Cystic fibrosis with postbronchodilator FEV1 < 30% or baseline PaO₂ < 55 mm Hg
 - Pulmonary fibrosis with VC or TLC < 60% predicted, baseline PaO₂ < 55 mm Hg, or secondary pulmonary hypertension
 - Primary pulmonary hypertension (idiopathic pulmonary hypertension) with NYHA class III or IV heart failure, right atrial pressure > 10 mm Hg, or mean pulmonary arterial pressure > 50 mm Hg
- Liver - Pugh score > 7, when available¹³*
- K. Age > 85 yr
- L. Elective palliative surgery
- M. Known chromosomal or untreatable disorders that is uniformly fatal within the first two years of life.

Table 8 - Scoring criteria for the Modified Sequential Organ-Failure Assessment (SOFA) score¹⁴

¹¹ SpO₂ = oxygen saturation measured by pulse oximetry, FIO₂ = fraction of inspired oxygen, FEV1 = forced expiratory volume in 1 second, PaO₂ = partial pressure of arterial oxygen, VC = vital capacity, TLC = total lung capacity

¹² New York Heart Association. The stages of heart failure – NYHA classification. Heart Failure Society of America Web site. http://www.abouthf.org/questions_stages.htm. Published 2002. Updated September 28, 2006. Accessed December 5, 2007.

¹³ Pugh RNH, Murray-Lyon M, Dawson JL, Pietroni MC, Williams R. Transection of the oesophagus for bleeding oesophageal varices. Br. J. Surg. 1973; 60(8): 646-649

¹⁴ Adapted, with permission, from Ferreira FL, Bota DP, Bross A, et al. *Serial evaluation of the SOFA score to predict outcome in critically ill patients.* JAMA 2001; 286: 1754-8. Copyright © 2001, American Medical Association. All rights reserved.

MSOFA Scoring Guidelines					
Variable	Score*				
	0	1	2	3	4
SpO ₂ /FIO ₂ ratio** or Nasal cannula or mask O ₂ required to keep SpO ₂ >90%	SpO ₂ /FIO ₂ >400 or Room air SpO ₂ >90%	SpO ₂ /FIO ₂ 316-400 or SpO ₂ >90% at 1-3 L/min	SpO ₂ /FIO ₂ 231-315 or SpO ₂ >90% at 4-6 L/min	SpO ₂ /FIO ₂ 151-230 or SpO ₂ >90% at 7-10 L/min	SpO ₂ /FIO ₂ <150 or SpO ₂ >90% at >10 L/min
Bilirubin level, mg/dL (μmol/L)	< 1.2 (< 20)	1.2–1.9 (20–32)	2.0–5.9 (33–100)	6.0–11.9 (101–203)	> 12 (> 203)
Hypotension†	None	MABP < 70	Dop ≤ 5	Dop > 5 Epi ≤ 0.1 Norepi ≤ 0.1	Dop > 15 Epi > 0.1 Norepi > 0.1
Glasgow Coma score	15	13–14	10–12	6–9	< 6
Creatinine level, mg/dL	< 1.2	1.2–1.9	2.0–3.4	3.5–4.9 or urine output <500 mL in 24 hours	> 5 or urine output <200 mL in 24 hours

*Patients can receive a total score of 20 (5 categories with a total of 5 points for each category); any patient with a score of ≥ 11 is excluded from critical care or mechanical ventilation.

** SpO₂/FIO₂ ratio: SpO₂ = Percent saturation of hemoglobin with oxygen as measured by a pulse oximeter and expressed as % (e.g., 95%); FIO₂ = Fraction of inspired oxygen; e.g., ambient air is 0.21

†MABP = mean arterial blood pressure in mm Hg (diastolic + 1/3(systolic - diastolic))

Dop= dopamine in micrograms/kg/min

Epi = epinephrine in micrograms/kg/min

Norepi = norepinephrine in micrograms/kg/min

Initial Assessment

Triage code	Criteria	Action or Priority
Blue	Exclusion criteria met or SOFA score > 11*	<ul style="list-style-type: none"> • Manage medically • Provide palliative care as needed • Discharge from critical care
Red	SOFA score ≤ 7 or single-organ failure	Highest Priority
Yellow	SOFA score 8–11	Intermediate Priority
Green	No significant organ failure	<ul style="list-style-type: none"> • Defer or discharge • Reassess as needed

The "minimum qualifications for survival" form the third component of the triage protocol. These qualifications represent a ceiling on the amount of resources that can be expended on any one person. The minimum qualifications for survival dictate reassessment at 48 and 120 hours, as well as an ongoing cut-off ceiling if a patient ever has a SOFA score greater than 11 or any other exclusion criteria. The key component of the minimum qualifications for survival is the attempt to identify at an early stage, patients who are not improving and who are likely to have a poor outcome. In day-to-day practice, it may take days or weeks of intensive care before this poor outcome occurs. During a pandemic, several other patients could have had their lives saved during this time.

48-hour Assessment

Triage code	Criteria	Action or Priority
Blue	Exclusion criteria met or SOFA score > 11 or SOFA score stable at 8 – 11 with no change	<ul style="list-style-type: none"> • Provide palliative care • Discharge from critical care
Red	SOFA score < 11 and decreasing	Highest Priority
Yellow	SOFA score stable at < 8 with no change	Intermediate Priority
Green	No longer dependant on ventilator	Discharge from critical care

120-hour Assessment

Triage code	Criteria	Action or Priority
Blue	Exclusion criteria met or SOFA score > 11 or SOFA score < 8 with no change	<ul style="list-style-type: none"> • Provide palliative care • Discharge from critical care
Red	SOFA score < 11 and decreasing progressively	Highest Priority
Yellow	SOFA < 8 with minimal decrease (< 3-point decrease in past 72h)	Intermediate Priority
Green	No longer dependant on ventilator	Discharge from critical care

ⁱ Interim guidance on planning for the use of surgical masks and respirators in health care settings during an influenza pandemic. Available at: <http://www.pandemicflu.gov/plan/healthcare/maskguidancehc.html>.

ⁱⁱ The attack rate is defined as the proportion of a population that will get ill. This rate is the same as that published in *the United States Department of Health and Human Services (DHHS) Pandemic Influenza Plan, November 2005* as well as with that agreed to by other DHHS Region I states in December 2006.

ⁱⁱⁱ For more information see page 18 of the *United States Department of Health and Human Services (DHHS) Pandemic Influenza Plan, November 2005*.

^{iv} Agreed to by other DHHS Region I states.

^v *ibid.*

^{vi} *ibid.*

^{vii} *United States Department of Health and Human Services (DHHS) Pandemic Influenza Plan, November 2005* and Zhang X, Meltzer MI, Wortley P. Flu Surge2.0: a manual to assist state and local public health officials and hospital administrators in estimating the impact of an influenza pandemic on hospital surge capacity (Beta test version). Centers for Disease Control and Prevention, U.S. DHHS; 2005.

^{viii} *ibid.*

^{ix} Zhang X, Meltzer MI, Wortley P. Flu Surge2.0: a manual to assist state and local public health officials and hospital administrators in estimating the impact of an influenza pandemic on hospital surge capacity (Beta test version). Centers for Disease Control and Prevention, U.S. DHHS; 2005.

^x *ibid.*

^{xi} *ibid.*

^{xii} *ibid.*

^{xiii} *ibid.*

^{xiv} Zhang X, Meltzer MI, Wortley P. Flu Surge2.0: a manual to assist state and local public health officials and hospital administrators in estimating the impact of an influenza pandemic on hospital surge capacity (Beta test version). Centers for Disease Control and Prevention, U.S. DHHS; 2005.

^{xv} *ibid.*

^{xvi} 12 weeks is one of three options presented in the Flu Surge2.0 software (6 and 8 weeks are the others). Flu Surge2.0 also assumes that the pandemic will occur in one wave. At present, there is no national or regional agreement on the average length of a pandemic or on the number of waves associated with the pandemic. Therefore, this assumption is subject to change.

^{xvii} 2005 population estimate rounded to nearest 10,000th place. U.S. Census Bureau. Abstracted from www.census.gov on December 10, 2006.

^{xviii} Derived from 2004 population estimates for Vermont. U.S. Census Bureau. Abstracted from www.census.gov on December 10, 2006.

^{xix} *United States Department of Health and Human Services (DHHS) Pandemic Influenza Plan, November 200.*

^{xx} Zhang X, Meltzer MI, Wortley P. Flu Surge2.0: a manual to assist state and local public health officials and hospital administrators in estimating the impact of an influenza pandemic on hospital surge capacity (Beta test version). Centers for Disease Control and Prevention, U.S. DHHS; 2005. Though there are only three default attack rates used in Flu Surge2.0 (15, 25 and 35%) which are used to calculate the total number of deaths and hospital admissions, the number of hospital admissions and deaths were changed to reflect the calculations noted above.