Hospital Crisis Standards of Care

Resource Reference Cards

Oklahoma State Department of Health

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The Federal Office for Civil Rights enforces Section 1557 of the Affordable Care Act and Section 504 of the Rehabilitation Act which prohibit discrimination on the basis of disability in HHS funded health programs or activities. These laws, like other civil rights statutes OCR enforces, remain in effect. As such, persons with disabilities should not be denied medical care on the basis of stereotypes, assessments of quality of life, or judgments about a person's relative "worth" based on the presence or absence of disabilities. Decisions by covered entities concerning whether an individual is a candidate for treatment should be based on an individualized assessment of the patient based on the best available objective medical evidence.

Document Overview

This document identifies core clinical strategies for scarce resource situations and acts as a decision support tool. It is designed to facilitate a structures approach to resource shortfalls at a healthcare facility. It assumes an incident management is implemented and that key personnel are familiar with ethical frameworks and processes that underline these decisions.

Each facility will have to determine the most appropriate steps to take to address specific shortages. It is advised key staff of each facility become familiar with this card set to aid with event preparedness and in anticipation of coping mechanisms to each core category situation outlined in the cards.

Each core category has a resource reference card that includes practices and resources that form the basis for medical and critical care. The cards examine the demands of a specific subset of patients or a specific resource likely to require specialized responses during a major incident. These cards may contain content specific to the State of Oklahoma that may not be applicable in other areas due to differences in resource availability or vulnerability.

Further, during an incident, the Oklahoma State Department of Health (OSDH) may update or change this guidance document. Changes will be shared with the healthcare coalitions. Web links listed are examples and may not be the best source of information available. Their listing does not imply endorsement by OSDH.

Potential Trigger Events

- Mass Casualty Incident (MCI)
- Infrastructure damage/loss
- Pandemic/Epidemic
- Supplier shortage
- Recall/Contamination of product
- Isolation of facility due to access problems (i.e. ice / flooding / etc.)

How to Use

1. **RECOGNIZE SHORTFALL:** Once a shortfall has been recognized and the hospital has activated necessary incident management plans and personnel, the following questions or information should first be assessed:
    a. Determine the degree of shortfall,
    b. Identify expected demand, and
    c. Assess how long the impact may occur.
2. **ASSESS RESOURCE AVAILABILITY:** Assess ability to acquire additional resources by reaching out to partners and response systems such as:
    a. Vendors,
    b. Partner/Parent Organizations, or
    c. The Regional Health Care Coalition.
3. **REFER TO REFERENCE CARDS:** Once it's determined additional resources are not available:
    a. Review the reference cards to identify the category of resource,
    b. Refer to the specific recommendations on the card, and
    c. Decide on strategies listed within this document to implement as appropriate for the facility and the situation.
4. **SHARE INFORMATION:** Assure a regional approach by routinely updating the health care coalition response entity of the strategies implemented.

5. **CONDUCT ROUTINE REASSESSMENT:** Continue routine updates to the health care coalition to ensure no new regional options exist for re-supply or patient transfer; and review current strategies each operational period to update actions as needed based on changing situations.

General Core Strategies

Below, in order of preference, are general core strategies to be employed during, or in anticipation of a resource situation:

- **PREPARE:** pre-event actions taken to minimize resource scarcity (e.g. stockpile medications);
- **SUBSTITUTE:** use an essentially equivalent device/drug/personnel for one that would usually be available (e.g. morphine for fentanyl);
- **ADAPT:** use a device/drug/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, canceling elective surgeries to preserve Personal Protective Equipment and availability of mechanical ventilation);
- **RE-USE:** re-use items that would normally be single use items AFTER appropriate disinfection/sterilization;
- **RE-ALLOCATE:** restrict or prioritize use of resources to those patients with a better prognosis or greater need.

Capacity Definitions

Conventional capacity - The spaces, staff, and supplies used are consistent with daily practices within the institution. These practices are typically adequate for a major mass casualty incident within the immediate area of the facility even one that triggers activation of the facility emergency operations plan.

Contingency capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is functionally equivalent to usual patient care practices. These practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster that puts strain on the system or region (when the demands of the incident exceed community resources).

Crisis capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care (Hick et al, 2009) and typically occur with a national or global event such as the COVID-19 response.

OXYGEN

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

<table>
<tr><th>RECOMMENDATIONS</th><th>STRATEGY</th><th>CONVENTIONAL</th><th>CONTINGENCY</th><th>CRISIS</th></tr>
<tr><td>Inhaled Medications
Restrict the use of Small Volume Nebulizers when inhaler substitutes are available.
If low on oxygen, restrict continuous nebulization therapy.
Minimize frequency through medication substitution that results in fewer treatments (6h-12h instead of 4h-6h applications); use med air if available instead of O2.</td><td>Substitute & Conserve</td><td></td><td></td><td></td></tr>
<tr><td>High-Flow Applications
Restrict the use of high-flow cannula systems 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.</td><td>Conserve</td><td></td><td></td><td></td></tr>
<tr><td>Air-Oxygen Blenders
Eliminate the low-flow reference bleed occurring with any low-flow metered oxygen blender use. This can amount to an additional12 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.</td><td>Conserve</td><td></td><td></td><td></td></tr>
<tr><td>Oxygen Conservation Devices
Use reservoir cannulas at 1/2 the flow setting of standard cannulas.
Replace simple and partial rebreather mask use with reservoir cannulas at flowrates of 6-10 LPM.</td><td>Substitute & Adapt</td><td></td><td></td><td></td></tr>
<tr><td>Oxygen Concentrators if Electrical Power Is Present
Use hospital-based or independent home medical equipment supplier oxygen concentrators if available to provide low-flow cannula oxygen for patients and preserve the primary oxygen supply for more critical applications.</td><td>Substitute & Conserve</td><td></td><td></td><td></td></tr>
<tr><td>Monitor Use and Revise Clinical Targets
Employ oxygen titration protocols to optimize flow or % to match targets for SPO2 or PaO2.
Minimize overall oxygen use by optimization of flow.
Discontinue oxygen at earliest possible time.
<table>
<tr><th>Starting Example</th><th>Initiate O2</th><th>O2 Target</th><th rowspan="4">Note: Targets may be adjusted further downward depending on resources available, the patient’s clinical presentation, or measured PaO2 determination.</th></tr>
<tr><td>Normal Lung Adult</td><td>SPO2 <90%</td><td>SPO2 90%</td></tr>
<tr><td>Infants and Peds</td><td>SPO2 <90%</td><td>SPO2 90-95%</td></tr>
<tr><td>Severe COPD History</td><td>SPO2 <90%</td><td>SPO2 83-90%</td></tr>
</table></td><td>Conserve</td><td></td><td></td><td></td></tr>
<tr><td>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 chlorohydrin formation with polyvinyl chloride plastics. May identify offsite partners to assist as needed.</td><td>Re-use</td><td></td><td></td><td></td></tr>
<tr><td>Oxygen Re-Allocation
Prioritize patients for oxygen administration during severe resource limitations.</td><td>Re-Allocate</td><td></td><td></td><td></td></tr>
</table>

STAFFING

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Staff and Supply Planning • Assure facility has process & supporting policies for disaster credentialing & privileging- including degree of supervision required, clinical scope of practice, mentoring and orientation, and verification of credentials. • Encourage employee preparedness planning (www.ready.gov and other resources). • Cache adequate personal protective equipment (PPE) and support supplies. • Educate staff on institutional disaster response. • Educate staff on community, regional and state disaster plans and resources. • Develop facility plans addressing staff's family / pets or staff shelter needs.	Prepare			
Focus Staff Time on Core Clinical Duties • Minimize meetings and relieve administrative responsibilities not related to event. • Reduce documentation requirements. • Cohort patients to conserve PPE & reduce staff PPE donning/doffing time & frequency; use primary & associate care giving. • Restrict or Cancel elective appointments and procedures.	Conserve			
Use Supplemental Staff • Bring in equally trained staff based on facility's credentialing and privileging plans (i.e. burn or critical care nurses, Disaster Medical Assistance Team [DMAT], other health system or Federal sources). • Equally trained staff from administrative positions (nurse managers). • Request activation of the Oklahoma Medical Reserve Corps.	Substitute			
• Adjust personnel work schedules (longer but less frequent shifts, etc.) If this will not result in skill / PPE compliance deterioration. • Use family members / lay volunteers to provide basic patient hygiene and feeding- releasing staff for other duties.	Adapt			
Focus Staff Expertise on Core Clinical Needs • Personnel with specific critical skills should concentrate on those skills; specify job duties that can be safely performed by other medical professionals. • Have specialty staff oversee larger numbers of less-specialized staff and patients (for example, a critical care nurse oversees the intensive care issues of 9 patients while 3 medical/surgical nurses provide basic nursing care to 3 patients each). • Limit use of laboratory, radiographic, and other studies, to allow staff reassignment and resource conservation. Reduce availability of non-critical laboratory, radiographic, and other studies.	Conserve			
Use Alternative Personnel to Minimize Changes to Standard of Care • Use less trained personnel with appropriate mentoring and just-in-time education (e.g., healthcare trainees or other health care workers, Oklahoma Medical Reserve Corps, retirees). • Use less trained personnel to take over portions of skilled staff workload for which they have been trained. • Provide just-in-time training for specific skills. • Cancel sub-specialty appointments, endoscopies, etc. and divert staff to emergency duties including in-hospital or assisting public health at external clinics/screening/dispensing sites.	Adapt			

NUTRITIONAL SUPPORT

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Food • Maintain hospital supply of inexpensive, simple to prepare, long-shelf life foodstuffs as contingency for at least 96 hours without resupply, with additional supplies according to hazard vulnerability analysis (e.g., grains, beans, powdered milk, powdered protein products, pasta, and rice). Access existing or devise new emergency menu plans. • Maintain hospital supply of at least 30 days of enteral and parenteral nutrition components and consider additional supplies based on institution-specific needs. Review vendor agreements and their contingencies for delivery and production, including alternate vendors. Note: A 30-day supply based on usual use may be significantly shortened by the demand of a disaster.	Prepare			
Water • Stock bottled water sufficient for drinking needs for at least 96 hours if feasible (for staff, patients and family/visitors),or assure access to drinking water apart from usual supply. Review vendor agreements for potential water sources. • Ensure there is a mechanism in place to verify tap water is safe to drink. Infants: assure adequate stocks of formula and encourage breastfeeding.	Prepare			
Staff/Family/Pets • Plan to feed additional staff, patients, and family members of staff/patients including therapy animals and pets in select situations (ice storm as an example of a short-term incident, an epidemic as an example of a long-term incident).	Prepare			
Planning • Work with stakeholders to encourage home users of enteral and parenteral nutrition to have contingency plans and alternate delivery options. Home users of enteral nutrition typically receive delivery of 30 days supply and home users of parenteral nutrition typically receive a weekly supply. Anticipate receiving supply requests from home users during periods of shortage. Work with vendors regarding their plans for continuity of services and delivery. • Identify alternate sources of food supplies for the facility should prime vendors be unavailable (including schools and restaurants, which may be closed during epidemics). Consider additional food supplies at hospitals that do not have food service management accounts. • Determine if policy on family provision of food to patients is in place, and what modifications might be needed or permitted in a disaster.	Prepare			
• Liberalize diets and provide basic nutrients orally, if possible. Total parenteral nutrition (TPN) use should be limited and prioritized for neonatal and critically ill patients.	Substitute			
• Non-clinical personnel serve meals and may assist preparation. • Follow or modify current facility guidelines for family donation of meals to patients. • Anticipate and have a plan for the receipt of food donations. If donated food is accepted, it should be nonperishable, prepackaged, and in single serving portions.	Adapt			
• Collaborate with pharmacy and nutrition services to identify patients appropriate to receive parenteral nutrition support vs. enteral nutrition. Access premixed TPN/PPN solutions from vendor if unable to compound. Refer to Centers for Disease Control (CDC) Fact Sheets and American Society for Parenteral and Enteral Nutrition (ASPEN) Guidelines. Substitute oral supplements for enteral nutrition products if needed.	Substitute & Adapt			
• Eliminate or modify special diets temporarily. • Use blenderized food and fluids for enteral feedings rather than enteral nutrition products if shortages occur. Examples: 1. The Oley Foundation: Making Your Own Food for Tube Feeding http://oley.org/page/HomeTF_BlenderFoods/Home-Tube-Fedding-with-Blenderized-Foods-.htm 2. Klein, Marsha Dunn, & Suzanne Evans Morris. Homemade Blended Formula Handbook. Tucson: Mealtime Notions LLC, 2007	Adapt			

MEDICATION ADMINISTRATION (pg1)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS		STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Cache/Increase Supply Levels • Examine formulary to determine commonly used medications & classes that will be in immediate/high demand. • Patients should have at least 30-day supply of home medications and obtain 90-day supply if pandemic, epidemic, or evacuation is imminent. • Increase supply levels, partner with community pharmacies, and cache critical medications, particularly for low-cost items and analgesics. • Key examples include:		Prepare			
Analgesia	morphine, other narcotic and non-narcotic (non-steroidals, acetaminophen) class-injectable and oral (narcotic conversion tool at: www.globalrph.com/narcoticonv.htm)				
Sedation	Particularly benzodiazepine (lorazepam, midazolam, diazepam) injectables				
Anti-infection	narrow and broad-spectrum antibiotics for pneumonia, skin infections, open fractures, sepsis (e.g.: cephalosporins, quinolones, tetracyclines, macrolides, aminoglycosides, clindamycin, etc.), select antivirals				
Pulmonary	Metered dose inhalers (albuterol, inhaled steroids), oral steroids (dexamethasone, prednisone)				
Behavioral Health	Haloperidol, other injectable and oral anti-psychotic, common anti-depressants, antiolytics				
Other	Sodium bicarbonate, paralytics, induction agents (etomidate, propofol), proparacaine/tetracaine, atropine, pralidoxime, epinephrine, local anesthetics, insulin, common oral anti-hypertensive and diabetes medications				
Use Equivalent Medications • Obtain medications from alternate supply sources (pharmaceutical representatives, pharmacy caches).		Substitute			
Pulmonary	Metered dose inhalers instead of nebulized medications				
Analgesia/Sedation	-Consider lorazepam for propofol substitution (and other agents in short supply) -ICU analgesia/sedation drips Morphine 4-10mg then 2mg/h and titrate / re-bolus as needed Usual 3-20mg/h; lorazepam 2-8mg or midazolam 1-5mg IV load then 2-8mg/h drip				
Anti-infection	-Examples: cephalosporins, gentamicin, clindamycin substitute for unavailable broad-spectrum antibiotic -Target therapy as soon as possible based upon organism identified	Substitute			
Other	Beta blockers, diuretics, calcium channel blockers, ace inhibitors, anti-depressants, anti-infectives				
Reduce Use During High Demand • Restrict use of certain classes if limited stocks likely to run out restrict use of prophylactics after low risk wounds, etc.) • Decrease dose; consider using smaller doses of medications in high demand/likely to run out (reduce doses of medications allowing blood pressure or glucose to run higher to ensure supply of medications adequate for anticipated duration of shortage) • Allow use of personal medications (inhalers, oral medications) in hospitals • Do without – consider impact if medications not taken during shortage (statins, etc.)		Conserve			

MEDICATION ADMINISTRATION (pg2)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Modify Medication Administration • Emphasize oral, nasogastric, subcutaneous routes of medication administration • Administer medications by gravity drip rather than IV pump if needed: *IV drip rate calculation – drops/minute= amount to be infused x drip set/time (minutes)(drip set= qttsImL- 60, 7 0,etc..* • Rule of 6: pt wgt (kg) x 6 = mg drug to 100ml fluid = 1mcg / kg / min for each 1 mL / hour NOTE: For example, see http://www.gaems.net/download/drugcalc.pdf	Adapt			
• Suspend 72-hour tubing changes • Consider use of select medications beyond expiration date • Consider use of veterinary medications when alternative treatments are not available	Adapt			
Restrict Allocation of Select Medications • Allocate limited stocks of medications with consideration of regional/state guidance and available epidemiological information (e.g.: anti-viral medications such as olseltamivir)	Re-Allocate			
• Allocate limited stock to support other re-allocation decisions (ventilator use, etc.)	Re-Allocate			

HEMODYNAMIC SUPPORT & IV FLUIDS (pg1)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Cache Additional Intravenous (IV) Cannulas, Tubing, Fluids, Medications, and Administration Supplies	Prepare			
Use Scheduled Dosing and Drip Dosing When Possible • Reserve IV pump use for critical medications such as sedatives and hemodynamic support	Conserve			
Massive Invasive Monitoring • Substitute other assessments (e.g., clinical signs, ultrasound) of central venous pressure (CVP) • When required, assess CVP intermittently via manual methods using bedside saline manometer or transducer moved between multiple patients as needed, or by height of blood column in CVP line held vertically while patient supine	Conserve			
Emphasize Oral Hydration Instead of IV Hydration When Possible • Patients should have at least 30-day supply of home medications and obtain 90-day supply if pandemic, epidemic, or evacuation is imminent. • Examine formulary to determine commonly used medications & classes that will be in immediate/high demand. • Increase supply levels or cache critical medications, particularly for low-cost items and analgesics. • Key examples include: **Oral Rehydration Solution**: -Oral rehydration solution: 1-liter water (5 cups) + 1 tsp salt + 8 tsp sugar, add flavor (e.g., ½ cup orange juice, other) as needed -Rehydration for moderate dehydration 50-100mL / kg over 2-4 hours **Pediatric Hydration**: Pediatric maintenance fluids (supplement for each diarrhea or emesis) -4 mL/kg/h for first 10kg of body weight (40 mL/h for 1st 10kg) -2 mL/kg/h for second 10kg of body weight (20mL/h for 2nd 10kg = 60 mL/h for 20kg child) -1mL/kg/h for each kg over 20kg (example – 40 kg child = 60mL/h plus 20mL/h = 80mL/h) NOTE: Clinical (urine output, etc.) and laboratory (BUN, urine specific gravity) assessments and electrolyte correction are key components of fluid therapy and are not specifically addressed by these recommendations. NOTE: For further information and examples, see http://rehydrate.org, https://www.cdc.gov/disasters/disease/diarrheaguidelines.html, and http://www.ped.med.utah.edu/cai/howto/IntravenousFluidOrders.pdf	Substitute			
Provide Nasogastric Hydration Instead of IV Hydration When Practical • Patients with impediments to oral hydration may be successfully hydrated and maintained with nasogastic (NG) tubes • For fluid support, 8-12F (pediatric: infant 3.5F, <2yrs 5F) tubes are better tolerated than standard size tubes	Substitute			
Substitute Epinephrine for Other Vasopressor Agents • For hemodynamically unstable patients who are adequately volume-resuscitated, consider adding 6mg epinephrine (6mL of 1:1000) to 1000mL NS minidrip tubing and titrate blood pressure	Substitute			
Cleaning of Devices • Cleaning for all devices should precede high-level disinfection or sterilization • High-level disinfection for at least twenty minutes for devices in contact with body surfaces (including mucous membranes); glutaraldehyde peroxide 6%, or bleach (5.25%) diluted 1:20 (2500 ppm) are acceptable solutions. NOTE: chlorine levels reduced if stored in polyethylene containers – double bleach concentration to compensate) • Sterilize devices in contact with bloodstream (e.g., ethylene oxide sterilization for CVP catheters)	Re-Use			

HEMODYNAMIC SUPPORT & IV FLUIDS (pg2)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Intraosseous / Subcutaneous (hypodermoclysis) Replacement Fluids • Consider as an option when alternative routes of fluid administration are impossible/unavailable • Intraosseous before percutaneous **Intraosseous** • Intraosseous infusion is not generally recommended for hydration purposes, but may be used until alternative routes are available. Intraosseous infusion requires pump or pressure bag. Rate of fluid delivery is often limited by pain of pressure within the marrow cavity. This may be reduced by pre-medication with lidocaine 0.5mg/kg slow IO push.	Re-Use			
Consider Use of Veterinary and Other Alternative Source for Intravenous Fluids & Administration Sets	Adapt			

MECHANICAL VENTILATION / EXTERNAL OXYGENATION (pg 1)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Increase Hospital Stocks of Ventilators and Ventilator Circuits, ECMO or Bypass Circuits	Prepare			
Access Alternative Source for Ventilators / Specialized Equipment • Obtain specialized equipment from vendors, healthcare partners, regional, state, or Federal stockpiles via usual emergency management processes and provide just-in-time training and quick reference materials for obtained equipment.	Conserve			
Decrease Demand for Ventilators • Increase threshold for intubation/ventilation unless contraindicated for underlying disease process. • Restrict or cancel elective procedures that require post-operative intubation. • Restrict or cancel elective procedures that utilize anesthesia machines. • Use non-invasive ventilator support when possible unless contraindicated for underlying disease process. .	Conserve			
Re-use Ventilator Circuits • Appropriate cleaning must precede sterilization. • If using gas (ethylene oxide) sterilization, allow full 12 hours aeration cycle to avoid accumulation of toxic byproducts on surface. • Use irradiation or other techniques as appropriate.	Re-use			
Use Alternative Respiratory Support Technologies • Use transport ventilators – especially for stable patients without complex ventilation requirements. • Use anesthesia machines, with appropriate alarms if available, for mechanical ventilation as appropriate/capable. • Use bi-level (BiPAP) equipment to provide mechanical ventilation, CPAP for infants unless contraindicated for underlying disease process.	Adapt			
• Consider bag-valve ventilation as temporary measure while awaiting definitive solution/equipment (as appropriate to situation – extremely labor intensive and may consume large amounts of oxygen).	Adapt			

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MECHANICAL VENTILATION / EXTERNAL OXYGENATION (pg 2)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS

Assign Limited Ventilators to Patients Most Likely to Benefit if No Other Options Are Available

Step 1 of 5: Assess patient's short-term prognosis using SOFA Scoring Table or other disease-specific parameters appropriate to situation

SOFA SCORING TABLE

Organ System	Score=0	=1	=2	=3	=4
Respiratory PaO2/FiO2	≥ 400	300-399	200 - 299	100 -199 with resp. support	<100 with resp. support
Hematologic Platelets	> 150	100-150	50-99	20-49	<20
Hepatic Bilirubin (mg/dL)	< 1.2	1.2 - 1.9	2.0 - 5.9	6.0 - 11.9	≥ 12.0
Cardiovascular Hypotension	None	Mean Arterial Pressure < 70 mmHG but no vasocactive agent use	Use of vaso-active agents (mcg/kg/min) Dopamine <5 or any Dobutamine	Use of vaso-active agents (mcg/kg/min) Dopamine 5 - 15 or Epi ≤ 0.1 or Nor-Epi ≤ 0.1	Use of vaso-active agents (mcg/kg/min) Dopamine > 15 or Epi > 0.1 or Nor-Epi > 0.1
Central Nervous System Glasgow Coma Score	15	13 - 14	10 - 12	6 - 9	< 6
Renal Creatinine (mg/dL)	< 1.2	1.2 - 1.9	2.0 - 3.4	3.5 - 4.9	≥ 5.0

Re-allocate

SOFA Score Equivalency Table for Mortality Prediction

SOFA Score Equivalent	Mortality if Initial Score	Mortality if Highest Score
0-1	0.0%	0.0%
2-3	6.4%	1.5%
4-5	20.2%	6.7%
6-7	21.5%	18.2%
8-9	33.3%	26.3%
10-11	50.0%	45.8%
12-14	95.2%	80.0%
>14	95.2%	89.7%

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MECHANICAL VENTILATION / EXTERNAL OXYGENATION (pg 3)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS

Assign Limited Ventilators to Patients Most Likely to Benefit if No Other Options Are Available (con't)

Step 2 of 5: Assess patient's prognosis of long-term survival, reviewing medical co-morbidities

Examples of Major Comorbidities (associated with significantly decreased long-term survival)	**Examples of Severely Life-Limiting Comorbidities (commonly associated with survival <1 year)**
• Moderate Alzheimer's disease or related dementia • Malignancy with a <10 year expected survival • New York Heart Association Class II heart failure • Moderately severe chronic lung disease (e.g. COPD, IPF) • End-stage renal disease in patients <75 • Severe multi-vessel CAD • Cirrhosis with history of decompensation	• Severe Alzheimer's disease or related dementia • Cancer being treated with only palliative interventions • New York Heart Association Class IV heart failure and evidence of frailty • Severe chronic lung disease plus evidence of frailty • End-stage renal disease in patients ≥75 • Severe multi-vessel CAD • Cirrhosis with MELD score ≥20, ineligible for transplant

Step 3 of 5: Based on prognosis of survival, calculate a total score using the multi-principle allocation framework (short-term + long-term prognosis score "[range 1-8]).

Multi-principle Score to Allocate Ventilators during a Public Health Emergency

Specifications	**Points Assigned**			
	1	**2**	**3**	**4**
Prognosis for short-term survival (using SOFA or another parameters equivalent mortality prediction)	SOFA score <6	SOFA score 6-8	SOFA score 9-11	SOFA score ≥12
Prognosis for long-term survival	--	Major comorbid conditions with substantial impact on long-term survival	--	Severely life-limiting conditions; death likely within 1 year

Step 4 of 5: Assign a priority for allocation based on multi-principle score

Priority Allocation Groups

Level of Priority (color code)	**Priority from multi-principle score**
HIGHEST PRIORITY	Total Score 1-3
INTERMEDIATE PRIORITY	Total Score 4-5
LOWEST PRIORITY	Total Score 6-8

Re-allocate

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MECHANICAL VENTILATION / EXTERNAL OXYGENATION (pg 4)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Step 5 of 5: Assign available ventilators or re-allocate in use ventilators first to highest priority groups, remaining ventilators to intermediate priority group, then remaining ventilators to lowest priority group. • All allocation of mechanical ventilation should be considered as a therapeutic trial (determination of length to be determined by each facility based upon underlying disease process and community demand for resource) and discussed with patient and their family/caregiver prior to initiating mechanical ventilation if possible. • All patients will be considered eligible for mechanical ventilation, though priority will be given to those with highest short- and long-term survival prognosis. • For resolving "ties" between patients in the same priority group when there are not enough ventilators for all patients within the group, consider other factors in allocation. Factors recognized by the CDC and other institutions as ethical in decision-making around resource allocation include life-cycle and instrumental value/reciprocity principles. The life-cycle principle recognizes equal opportunity for each person to move through the various stages of life. This principle gives prioritization to individuals who are yet to experience all of life's stages. Additionally, instrumental value recognizes the key role that certain individuals play in protecting public health and maintaining societal functioning. This principle focuses on this individual's skills, not on their perceived social worth. In a pandemic, this principle would include prioritization for essential personnel such as first responders, healthcare workers or vaccine developers. The principle of reciprocity recognizes some prioritization for those who have put themselves in harm's way in order to serve others. If there are still ties after these principles are applied, a lottery (random allocation) should be used to break the tie. ***Decision on resource allocation should not consider the following factors: race/ethnicity, gender, sexual orientation, disability, perceptions of quality of life, insurance status, or broad social worth.*** • After ventilator allocation, patients should be allowed a therapeutic trial of mechanical ventilation—the duration of this trial will depend on the clinical characteristics of the underlying disease. In general, patients should be given the full duration of the trial, however, for patients experiencing a precipitous decline or a highly morbid complication which portends very poor prognosis, the ventilator may be reallocated before the end of the therapeutic trial. • There should be periodic reassessment of the ongoing utility of the assigned resource after this therapeutic trial, which should consider recalculation of severity of illness scores, inclusion of new complications, and treating clinician's input. • Patients showing improvement on reassessment after a therapeutic trial should continue with mechanical ventilation until the next assessment. • If at reassessment after a therapeutic trial, there are other patients who need mechanical ventilator support but have not been allocated this resource, patients who have experienced clinical deterioration during their therapeutic trail should have mechanical ventilation withdrawn (and reallocated to other patients). This should be disclosed to the patient and their family along with psychosocial support provided, and patients should be provided palliative care. • If at reassessment after a therapeutic trial, there are other patients who need mechanical ventilator support but have not been allocated this resource, patients who have had no clinical change during their therapeutic trial may be considered for removal of mechanical ventilator support. This decision depends on their expected trajectory and the priority of other patients who are in need of mechanical ventilator support.	Re-allocate			

BLOOD PRODUCTS (pg 1)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	HEALTHCARE FACILITY	BLOOD CENTER	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
All Blood Products	• Increase donations if required, and consider local increase in frozen reserves • Increase O positive and negative levels • Consider maintaining a frozen blood reserve if severe shortage • Increase recruitment for specific product needs		✓	Prepare			
	• Consider adjustments to donor HGB/HCT eligibility		✓	Adapt			
	• Relax travel deferrals for possible malaria and BSE (bovine spongiform encephalitis)*		✓	Prepare			
Packed Red Blood Cells	• Use cell-saver and auto-transfusion to degree possible	✓		Re-use			
	• Limit 0 negative use to women of child-bearing age • Use 0 positive in emergent transfusion in males or non-child bearing females to conserve 0 negative	✓		Conserve			
	• Change donations from whole blood to 2x RBC apheresis collection if specific shortage of PRBCs		✓	Adapt			
	• More aggressive crystalloid resuscitation prior to transfusion in shortage situations (blood substitutes may play future role)	✓		Conserve			
	• Long-term shortage, collect autologous blood pre-operatively and consider cross-over transfusion	✓		Conserve			
	• Enforce lower hemoglobin triggers for transfusion (for example, HGB 7)	✓		Conserve			
	• Consider limiting high-consumption elective surgeries (select cardiac, orthopedic, etc.)	✓		Conserve			
	• Consider use of erythropoietin (EPO) for chronic anemia in appropriate patients	✓		Adapt			
	• Further limit PRBC use, if needed, to active bleeding states, consider subsequent restrictions including transfusion only for end-organ damage, then to shock states only	✓		Re-allocate			
	• Consider Minimum Qualifications for Survival (MQS) limits on use of PRBCs (for example, only initiate for patients that will require < 6 units PRBCs and/or consider stopping transfusion when > 6 units utilized). Specific MQS limits should reflect available resources at facility.	✓		Re-allocate			
	• Reduce or waive usual 56-day inter-donation period* based upon pre-donation hemoglobin		✓	Adapt			
	• Reduce weight restrictions for 2x RBC apheresis donations according to instruments used and medical director guidance*		✓	Adapt			
Fresh Frozen Plasma	• Though not true substitute, consider use of fibrinolysis inhibitors or other modalities to reverse coagulopathic states (tranexamic acid, aminocaproic acid, activated coagulation factor use, or other appropriate therapies)	✓		Substitute			
	• Consider reduction in red cell: FFP ratios in massive transfusion protocols in consultation with blood bank medical staff	✓		Conserve			
	• No anticipatory use of FFP in hemorrhage without documented coagulopathy	✓		Conserve			
	• Obtain FDA variance to exceed 24 collections per year for critical types*		✓	Adapt			

**FDA approval/variance required via American Association of Blood Banks (AABB)*

BLOOD PRODUCTS (pg 2)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	HEALTHCARE FACILITY	BLOOD CENTER	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Platelets	• Though not true substitute, consider use of desmopressin (DDAVP) to stimulate improved platelet performance in renal and hepatic failure patients	✓		Substitute			
	• May use leukoreduced whole blood pooled platelets (and, if required, consider non-leukoreduced whole blood pooled platelets)		✓	Adapt	*Leukoreduced*		*Non-leukoreduced*
	• Convert less needed ABO Whole Blood to Apheresis		✓	Adapt			
	• Transfuse platelets only for active bleeding, further restrict to life-threatening bleeding if required by situation	✓		Conserve			
	• No prophylactic use of platelets	✓		Conserve			
	• Accept female donors without HLA antibody screen		✓	Adapt			
	• Accept female donors for pooled and stored platelets		✓	Adapt			
	• Apply for variance of 7 day outdate requirement *		✓	Adapt			
	• Consider a 24-hr hold until the culture is obtained and immediate release for both Pool and stored platelets.		✓	Adapt			
	• Obtain FDA variance to allow new Pool and Store sites to ship across state lines*		✓	Adapt			
	• Reduce pool sizes to platelets from 3 whole blood donations		✓	Adapt			

**FDA approval/variance required via American Association of Blood Banks (AABB)*

RENAL REPLACEMENT THERAPY (pg 1)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Command, Control, Communication, Coordination	**General Preparedness Information** Compared to other critical care interventions, hemodialysis offers equipment availability, expansion capacity, and care coordination that greatly reduces the risk of contingency and crisis care, at least in our geographic area. <u>Disaster dialysis challenges generally result from:</u> • Lack of clean water source (each hemodialysis requires about 160 liters ultra-clean water) • Relocation of dialysis-dependent patients to a new area (evacuation of nursing home, flood zones, etc.) thereby resulting in lack of supplies • Increase in patients requiring dialysis (crush syndrome, unusual infections) <u>Outpatient</u> • Primary providers are DaVita and Fresenius – both have extensive contingency plans to increase capacity and relocate patients (including toll-free numbers to access dialysis services) • Renal Network 13 (multi-state renal planning, quality, and emergency preparedness) has database of all dialysis patients in the state/region and assists coordination activities (www.network13.org) <u>Inpatient</u> • Most facilities lease inpatient services via contract with above or other agencies; some have own nurses and program. – facility plans should account for contingency use of alternate services/leasing services <u>Patient Preparedness</u> • Patients should have a disaster plan - including specific food set aside for up to 72 hours. Note that shelters are unlikely to have foods conducive to renal dietary needs (low sodium, etc.) • Personal planning guidance is available at: http://www.kidney.org/atoz/pdf/disaster_preparedness.pdf	Prepare			
	Shortage of Renal Replacement Therapy (RRT) Resources • Affected facility should contact involved/affected dialysis provider companies and organizations as expert consultants1Consider adjustments to donor HGB/HCT eligibility	Prepare			
Space	**Relocated Patients Requiring Outpatient Dialysis** • Contact usual patient provider network to schedule at new facility – refer patients to 'hotlines' as needed	Substitute			
	Excess Patients Requiring Dialysis • Transfer patients to other facilities capable of providing dialysis • Consider moving patients to facilities with in-house water purification if water is an issue for multiple inpatients requiring dialysis.	Substitute			
	• Consider moving other inpatient or outpatient dialysis staff and equipment to facilities requiring increased dialysis capacity.	Adapt			
Staff	**Dialysis Staff Shortages** • Non-dialysis nursing staff may assist with "routine" elements of dialysis nursing (e.g., taking VS, monitoring respiratory and hemodynamic status, etc.)	Substitute			
	• Dialysis nursing staff to supervise non-dialysis nursing staff providing some dialysis functions • Dialysis techs may be used to supervise dialysis runs if dialysis staff deficit is critical issue (would be unlikely aside from a pandemic or other situation affecting staff)	Adapt			
Specia	**Community Planning** • Medical needs of re-located renal failure patients are substantial; planning on community level should incorporate their medication and dietary needs during evacuation and sheltering activities.	Prepare			

RENAL REPLACEMENT THERAPY (pg 2)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Supplies	**Water Supply** • Quantify water-purifying machines available for bedside dialysis machines • Identify facilities providing high-volume services purify their own and pipe own water to specific rooms in the dialysis unity, intensive care, etc. • Identify water-purifying and dialysis machines to be obtained through lease agreements	Prepare			
	Water Contamination • Consider alternative sources of water	Prepare,			
	• Consider transferring stable inpatients to outpatient dialysis centers for dialysis treatments and vice versa	Substitute & Adapt			
	Power Outage or Shortage • Consider transferring stable patients to outpatient dialysis center for dialysis treatments and vice versa • Consider transferring inpatients to other hospitals • Consider transfer of outpatients to other facilities for care until issue resolved	Substitute & Adapt			
	Dialysis Catheters, Machines, Reverse Osmosis, and/or Other Supply Shortages NOTE: Dialysis catheters and tubing are inexpensive, relatively interchangeable, & supplied by several manufacturers • Stock adequate dialysis tubing sets and venous access catheters for at least thirty days usual supply • Identify provider network and other sources of supplies and machines	Prepare			
	• Transfer machines/supplies between outpatient centers and hospitals, or between hospitals	Substitute			
Triage	**Insufficient Resources Available for All Patients Requiring Dialysis** • Change dialysis from 'scheduled' to 'as needed' based on clinical and laboratory findings (particular hyperkalemia and impairment of respiration) – parameters may change based on demand for resources.	Conserve			
	• Conceivable (but extraordinary, given outpatient dialysis machine resources) situations may occur where resources are insufficient to the point that some patients may not be able to receive dialysis (for example, pandemic when demand nationwide exceeds available resources) – access to dialysis should be considered as part of the critical care intervention prioritization (see Mechanical Ventilation Strategies for Scarce Resource Situations)	Re-allocate			
Treatment Risk & Progression	**Crush Injury Syndrome** • Initiate IV hydration and crush injury protocols in the prehospital environment to prevent/treat rhabdomyolysis	Conserve			
	Mode of Dialysis • Consider restricting hemodialysis only for inpatient care (avoid continuous renal replacement therapy (CRRT) and peritoneal dialysis (PD)	Substitute			
	Increased Demand on Resources • Shorten duration of dialysis for patients that are more likely to tolerate it safely • Patients to utilize their home medication and follow dietary plans to help increase time between treatments, if necessary	Conserve			
Transportation	**Transportation Interruptions** • Dialysis patients may require alternate transportation to assure ongoing access to dialysis treatment • Chronic patients should coordinate with their providers/dialysis clinics first for transportation and other assistance during service/transportation interruptions • Emergency management and/or the health sector may have to supplement contingency transportation to dialysis during ice storms or other interruptions to transportation	Prepare & Adapt			

[1]*The major national dialysis corporations have extensive experience contending with disaster; their input during any anticipated or actual incident is imperative to optimize the best patient care in Oklahoma.*

[2]*See Staffing in the Core Clinical Strategies for Scarce Resource Situation cared set.*

PALLIATIVE CARE (pg 1)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Orientation to Specialty and Goals

NOTE:

This card provides a focused description of palliative care management principles in disaster situations. These principles are relevant to all patients, as well as those who may receive palliative care as their only intervention due to demand on the health care system relative to their prognosis.

Specialty Description:

Palliative care has a goal of providing the best possible quality of life for people facing the pain and stress of a serious, but not necessarily terminal, medical condition. It can be appropriate for patients of any age and at any stage of an illness - from diagnosis on - and can be provided along with treatments for the medical condition.

Index for Palliative Care

Principles of Palliative Care

- Palliative care should be provided to **ALL** patients.
- In a subset of patients, it may be the only care that is able to be provided due to the patient's prognosis and available resources.
- Focuses on human contact and comfort in addition to medical care.
- Increases the physical and mental well-being of the patient.
- Is not abandonment or euthanasia, and does not aim to hasten death (though in some cases, the doses required to relieve severe symptoms may indirectly contribute to the dying process; however, this meets the ethical criteria for the double-effect principle where indirect harm is permissible in the service of a greater good).
- Relieves symptoms and provides physical comfort measures such as control of pain, nausea, dyspnea, temperature regulation, and positioning.
- Assures respectful care, reassurance, and emotional and social support as possible.
- Cultural Diversity may have impact on acceptance of palliative care offerings.

Disaster Considerations

- Symptom support should be maintained in hospital and non-hospital environments - this will involve planning by outpatient entities such as hospice care, pharmacies, medical equip-ment providers as well as inpatient entities such as palliative care hospital-based programs.
- For existing hospice patients, the spectrum of care should be defined.
- For those designated to receive only palliative care key considerations are:
  - Expected survival - hours, days, or weeks - this helps to guide needs, referrals, and resources.
  - Required interventions - this helps guide location of care and support planning.
  - Basis for designation - if the decision for palliative care is based on the lack of a single resource, there must be a plan for re-assessment if the patient's condition improves or more resources become available (i.e., would they qualify to receive additional treatment if more resources become available and how are they contacted/monitored) - see triage tree on Palliative Care page 5.
- Home health and other agencies will need to prioritize services relative to hospice patients during a disaster (as this can have significant impact on patient/family/agency planning).
- Supportive measures should be offered that maintain comfort, but do not prolong the dying process:
  - If death is inevitable, there may be no point in providing intravenous fluids
  - **If death is not certain, other forms of support may be very reasonable as other resources become available.**

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PALLIATIVE CARE (pg 2)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS

Planning Resources	**Communications and Coordination**
	• General palliative care resources and fact sheets:
	• Palliative Care Network of Wisconsin (PCNOW) Fast Facts www.mypcnow.org
	• General recommendations for home care/family-based care and infectious prevention:
	  ○ Home Care Guide: Providing Care
	• ICU care
	  ○ Improving Palliative Care in the ICU ()PAL-ICU project)
	• General resources in palliative care and non-pharmacologic intervention:
	  ○ American Academy of Hospice and Palliative Medicine
	  ○ Center to Advance Palliative Care www.capc.org
	  ○ UpToDate-What's new in Palliative Care
		Prepare			

Planning / Communications and Coordination	Key Organization • Center For Advancement For Palliative Care(https://www.capc.org/) • Inpatient palliative care programs: Palliative care MD on 24-hour pager for most facilities/systems. • Hospice programs: Majority of State has hospice program coverage and most programs usually have hospice MD on 24-hour pager - check with hospital health systems main contact/referral phone line.	Prepare			
Communications & Coordination	**Communications and Coordination** • Close coordination between hospitals, home care agencies, and public health is required prior to and during disasters in which increased home care and at-home palliative and hospice services are expected. • Communications, including printed materials and a mechanism for ongoing situational awareness, are required during contingency and crisis events - this may involve conference calls or other means of keeping stakeholder agencies informed and up-to-date.	Prepare / Adapt			
	Communications with Families and Patients • Review healthcare goals and advance care planning in the context of the current situation - proxy designations, advance directives, http://www.okpolst.org/. • Interventions able to be offered may not fulfill all of the preferences expressed in those directives. • Describe palliative support as a quality of life and aggressive symptom management framework that is not related to hastening death or euthanasia. • Incorporate relevant cultural variables into palliative care plans. • Proactively provide families and patients with up-to-date information on the resources in shortage and any relevant triage criteria/processes being used, as well as any necessary infection prevention measures.	Prepare / Adapt			
	• Explain the basis of triage decisions and any re-assessment or potential options. Re-frame goals of care with patient and family. • Maintain hope despite changes in treatment/goals - factors that often decrease hope include feeling de valued, abandoned or isolated ("there is nothing more that can be done"), lack of direction and goals, and unrelieved pain and discomfort.	Prepare / Adapt			

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PALLIATIVE CARE (pg 3)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Space	**Inpatient space** - In crisis situations there may be a large number of patients that are receiving palliative care only - cohorted spaces may be an option for these patients. These areas should be: • Comfortable - the maximal physical comfort should be provided to patients and families and the environment and equipment should be as comfortable as possible given the resources available. • Private - as much privacy as possible should be planned for the patients and families.	Adapt			
	Outpatient space - Facilities should have plans in place with home health care agencies as well as plans for family provision of palliative care. This may include: • Home care/hospice agencies should prioritize services to those with the most limited support or more intensive support needs during a disaster (e.g., prioritize services to those requiring intravenous fluids or medications, oxygen, or other high-intensity therapies - if these can be maintained during the disaster). • Phone banks and other indirect support services for families and patients.	Conserve / Adapt			
	Transitions • When inpatients are receiving palliative care as their only treatment, they must be cared for in a space appropriate to their remaining life expectancy (i.e., patients with hours to live would not be moved, and patients with days or weeks remaining would be moved to another inpatient area or to home/outpatient care). • Access to pre-printed information for families guiding them in the provision of comfort care including: ○ Analgesia and other medication dosing per physician or other instructions. ○ General information about prevention of decubitus ulcers and maintenance of comfort. ○ The dying process, what to expect, and what to plan for. ○ Resources that the family can use in case of questions or problems. • Assure that appropriate infection prevention precautions are accounted for (e.g. droplet precautions).	Substitute/ Adapt/ Conserve			
Supplies	**Supplies:** There is no substitute for pre-event stockpiling of medications to treat key symptoms. Every disaster will require significant quantities of analgesics. The availability of adequate pain and symptom relief should be a key area of disaster planning.	Prepare			
	Inpatient and Outpatient: • Anticipate the need for additional stocks of medications to provide analgesia and symptom relief for all patients. Inexpensive but critical medications to stockpile include: ○ Oral non-opioid analgesics (also valuable as anti-pyretics) ○ Opioid analgesics ○ Benzodiazepines ○ Anti-psychotics ○ Anti-emetics ○ Steroids ○ Diuretics • Outpatient pharmacies should anticipate the need for increased supplies of these agents and support palliative care dosing of these agents that may be in excess of usual recommendations. • Avoid stockpiling or hoarding in the setting of increased demand.	Adapt			

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PALLIATIVE CARE (pg 4)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

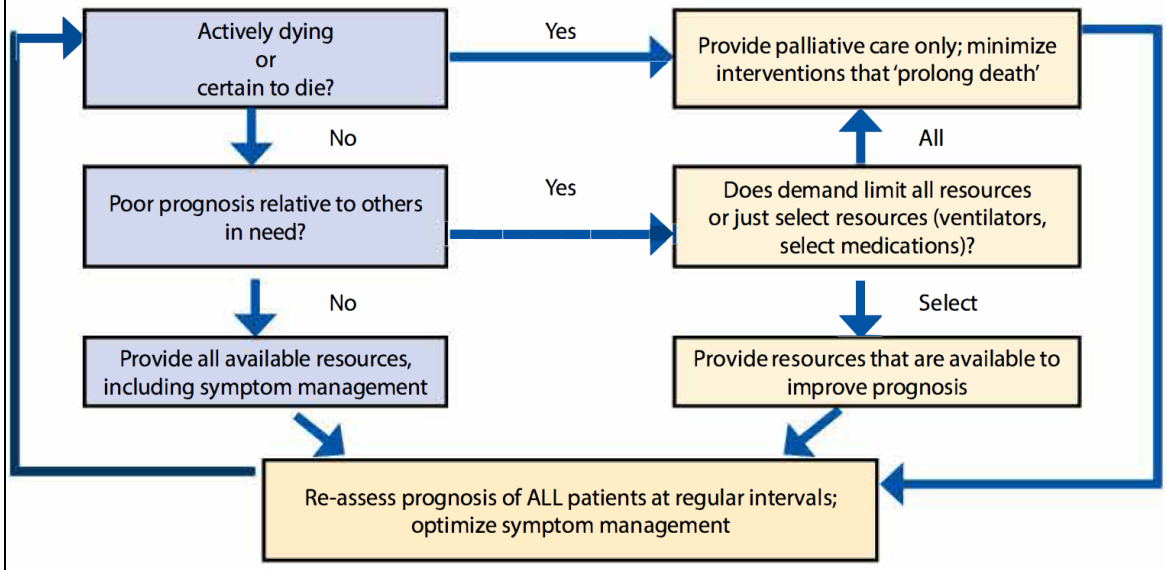
CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Staff	**Staff:** • Physician and nursing staff expected to provide disaster palliative care should receive pre-incident palliative care training. • Staff that do not regularly provide palliative care, but could be called upon in a disaster, should receive pre-incident training and orientation to facility resources. • The facility should identify subject matter experts within their facility/area and obtain their input into palliative care planning. During a response, these experts can provide input on strategies and tactics, as well as provide overall clinical guidance and expertise.	Prepare			
	• Faith-based and other community resources for non-clinical support may be critical assets for those receiving care at home. • Spiritual resources should be made available to both patient and family if desired and feasible. • Just-in-time training should be provided to nursing and physician staff as required to acquaint them with palliative care priorities, medication dosing, and other issues.	Conserve / Adapt / Substitute			
	• Hospice agencies should have plans to adjust staff roles and triage services provided in response to increased demand. • In case palliative care areas are activated, support these areas with staff that are comfortable with medication administration that can be supervised by staff with more experience. Precise recommendations on staffing are difficult as the needs of the patients can vary greatly, but every attempt should be made to provide adequate personnel to meet the comfort needs of patients - this may involve tiered use of professional and non-professional staff. • Additional staff may have to be drawn from other institutions or fields, or from the Medical Reserve Corps (e.g., to provide broader support to homecare). These staff will also require just-in-time training • Regionally, palliative care teams that can support a facility in crisis or support additional outpatient care may be advantageous.	Conserve / Adapt / Substitute			

Special	**Special:**
	When triage to 'palliative care only' in disasters is not by patient choice, management of expectations and transitions is critical to the physical and mental well-being of patient, family, and providers.
	• Consider availability of resources for:
	  ○ Social work/family resources.
	  ○ Spiritual support.
	  ○ Psychological support for patients and their families.
	  ○ Discharge and/or death support and planning.
	  ○ Family/caregiver accommodations.
	  ○ Psychological support for staff.
		Prepare			

(continued on next page)

PALLIATIVE CARE (pg 5)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS
Triage	**Triage:** • The need for palliative care should be anticipated in all disaster scenarios. • Triage decisions may be required in minutes (multiple burn victims), over hours (many trauma victims), or over days or weeks (pandemic). • When it is clear that the volume of patients and current level of resources will require prioritizing some patients to palliative care only, triage criteria should be developed whenever possible and a formal triage team put in place (proactive measures may not be possible in the early phase of an incident, but should be implemented as soon as possible). • Location for palliative care should be optimized given the constraints of the incident - patients may be triaged to home, to other facilities, to inpatient units, or to other locations. • Triage is dynamic. As resources allow, it is critical to re-triage patients so that they may receive resources that have become available. Predicted prognosis does not equate with actual outcome in many cases. (See triage tree below). **Triage Tree - Resource-dependent palliative care considerations**  	Conserve Re-allocate Adapt			

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PALLIATIVE CARE (pg 6)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

CATEGORY	RECOMMENDATIONS	STRATEGY	CONVENTIONAL	CONTINGENCY	CRISIS

Treatment	**Provide Symptomatic Management**
	• Do not under-estimate the psychological impact on patients, caregivers and family of these situations. All of these persons may require medical and non-medical treatment for anxiety, grief, complicated grief, post-traumatic stress disorder and mental health issues due to the stress of these events.
	• Treatment with appropriate doses of medication is important - see the opiate dosing references below as an example, but after initial doses, titrate to appropriate symptom relief as required, rather than to any specific recommended dose of medication.
	• Adapt with the medications and resources that are available.
	• Web resource for treatment: https://www.capc.org/.
	• 'WHO ladder' for pain relief:
	  ○ For mild pain (unless contraindicated) use aspirin, acetaminophen or nonsteroidal anti-inflammatory agents.
	  ○ If pain persists (mild to moderate) add oxycodone, hydrocodone, or similar oral opioids.
	  ○ If pain is not controlled, increase the opioid dose (may consider oral hydromorphone or morphine).
	  ○ Add adjuvant medications to medication regimen as possible/needed to reduce opioid requirements.
	• The patient's report of pain is the standard assessment tool to gauge if the pain management regime is adequate.
	• Pediatric and unresponsive/non-verbal patients require alternate methods of assessment of non-verbal cues of distress.
	• Numerical distress or visual/analog scales can provide standardized assessment.
	• Adjuvant medical (anti-depressants, etc.) and non-medical treatments (acupuncture, etc.) may be valuable - expert consultation should be obtained in disasters where a longer timeframe allows these treatments to be implemented.
	• Provision of non-medical comforts (company, quiet environment or music, pillows, etc.) is a critical component of palliative care and should be optimized according to patient needs.
		Prepare/ Adapt			

	Opioid • Oral morphine is the standard opioid from which potencies and conversion ratios are based for most other opioid medications. • Opioids can be given by almost every possible route - oral, sublingual, intravenous, intranasal, intramuscular, rectal, or subcutaneous. • Pain equivalence tables can vary. Incomplete cross-tolerance exists when converting between different opioids - consider dose reductions of 25 - 50% for initial doses when switching drugs (depending on clinical circumstances). • Opioids typically do not have ceiling effects for analgesia. Limitations are usually related to side effects or intolerances. • Patients with sustained-release opioid needs usually require a short-acting opioid for breakthrough pain as well as for dose-finding for long-acting opioid dose adjustments. Short-acting breakthrough dose should typically be 10-15 % of total 24-hour daily requirement of the sustained-release opioid. • When dosing with opioids, remember common side effects and treat accordingly (e.g., constipation, nausea, pruritis, confusion, sedation). Respiratory depression is a rare event related to opioid dosing and usually occurs in the context of multiple drug class utilization, and other underlying chronic clinical conditions. • Fentanyl transdermal patches require good adipose stores to be effective, as the real physiologic reservoir is underlying adipose tissue. If patients are thin, think of other opioid options. • Best opioids to consider in the face of renal insufficiency include methadone, fentanyl, and dilaudid. • Breakthrough dose: ½ to ½ of the 12-hour dose or 10-15 % of the 24-hour dose (if >3 breakthrough doses per 24-hr period consistently required, consider retitration of dose).				

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PALLIATIVE CARE (pg 7)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

<table>
<tr><th>CATEGORY</th><th>RECOMMENDATIONS</th><th>STRATEGY</th><th>CONVENTIONAL</th><th>CONTINGENCY</th><th>CRISIS</th></tr>
<tr><td>Treatment</td><td>Opioid (con’t)
• Titrating dosage, may use the following guideline: (Pain scores from 1-10 with 10 being worst imaginable):
<table><tr><td>Pain >7</td><td>Increase dose by 50% to 100%</td></tr><tr><td>Pain 4 – 7</td><td>Increase dose by 25% to 50%</td></tr><tr><td>Pain <4</td><td>Increase dose by 25% if indicated/desired</td></tr></table>• Once a patient has 2 or fewer breakthrough doses and a steady state of medication has been reached, then a continuous release equianalgesic opioid may be initiated. Always start with an instant release before switching to continuous release.
Note: continuous release opioids do not have mg/mg equivalence (e.g. a patient requiring 60mg of morphine elixir each day would not be started on 60 mg of MS Contin as an equivalent dose).
• Switch from fixed combination acetaminophen/opioids to a single entity opioid when acetaminophen dose >2000 mg/day or as weight appropriate.
• Avoid fixed dose combination analgesics in pediatric patients when possible to allow more effective titration and avoid excess acetaminophen dosing.
• Consider use of methadone where available particularly for outpatient management of pain.</td><td>Prepare/ Adapt</td><td></td><td></td><td></td></tr>
<tr><td>Tracking</td><td>Tracking
Assure that patients referred to home care (formally or informally) are tracked by public health and the appropriate agencies.</td><td>Prepare</td><td></td><td></td><td></td></tr>
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PALLIATIVE CARE (pg 8)

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Key Symptoms and Treatments		
Symptom	**Pharmacologic Options**	**Additional Strategies**
Pain	Acetaminophen Pain or fever 650 mg rectal suppository As needed every 4-6 hours: Morphine sulfate Pain, dyspnea, Liquid: morphine 20mg/mL concentrate PO 2.5mg-5mg every 2 hours as needed, titrated to effect; Oxycodone 2.5mg-5mg PO q2 PRN, can be given rectally Hydromorphone IR tablet 2mg - PO or rectally	Integrative therapies, acupuncture, hypnosis, interventional techniques, music therapy, heat/cold therapy, supportive caring
Dyspnea	Opioids and oxygen are standard therapy, additional agents of benefit may include benzodiazepines, bronchodilators, and nebulized furosemide (20 mg IV solution with 3 ml normal saline every 4 hours as needed)	Treat underlying cause, oxygen, direct air from fan onto face; integrative therapies, hypnosis.
Nausea	Serotonin antagonists (ondansetron), substance P antagonists (apprepitant), dopamine antagonists (procholorperazine), butyrophenones (haloperidol), corticosteroids, benzodiazepines, atypical antipsychotics (olanzapine), cannabinoids, anti-histamines (meclizine) , anticholinergics (scopolamine), substituted benzamide (metoclopramide) Example, Ondansetron ODT tabs Nausea and vomiting 4mg tablet 1-2 tablets orally q8 when needed for nausea or Prochlorperazine 25mg suppository 1 suppository every 12 hours as needed.	Treat underlying cause; consider interventional options depending on underlying cause (e.g., small bowel obstruction consider nasogastric tube), integrative therapies, hypnosis, acupuncture, music therapy, supportive caring. Consider constipation as possible etiology if on chronic opioids.
Anxiety	Benzodiazepines, atypical antipsychotics, cannabinoids, anti-depressants Example, Lorazepam Liquid: 2mg/mL concentrate PO/SL 0.5mg-1mg every 4 hours as needed: Tablet: 1mg tablet can be given PO or rectally	Treat underlying cause, spiritual support, supportive caring, integrative therapies, hypnosis, relaxation techniques, music therapy
Agitation / Delirium	Haloperidol, atypical anti psychotics, sedatives Example, Haloperidol Liquid: 2mg/mL concentrate PO/SL 0.5mg-1mg every 4-6 hours as needed; Can be titrated to more frequent dosing; Tablet: 1mg tablet can be given PO or rectally	Provide quiet, dark environment, hydration, support sleep hygiene, minimize stimulation, consider calming soft music Identify specific underlying cause if possible: • Benzodiazepine paradoxical agitation - consider discontinuing • Opioid neurotoxicity - consider opioid rotation • Steroid psychosis - consider dose change or elimination • Opioid withdrawal - consider tapering doses
Constipation	Docusate sodium, sennosides, polyethylene glycol, lactulose, magnesium citrate, bisacodyl, glycerin, enemas example Bisacodyl 10mg suppository as needed	Treat underlying conditions, hydration, consider subcutaneous methylnaltrex-one for chronic opioid-induced constipation - ensure no mechanical obstruction re: risk of perforation (risk higher in patients on steroids)
Diarrhea	Loperamide 2 mg tablets if not contraindicated. Other interventions according to cause.	Determine underlying cause and potential therapies
Secretion control	Sublingual atropine; 1 % eye drops 2-3 drops every 3-4 hours as needed; glycopyrolate (IV 0.4 mg every 4-6 hours, oral 2 mg every 8 hours or appropriate weight-based dose); scopolamine patch	Education for family regarding: death rattle, reposition in bed, very gentle suction +/-, mouth care
Skin breakdown/protection		Treat underlying cause, gentle repositioning, supportive pads, air mattress, specialty beds
Active dying	Aggressive supportive care depending needs. Do not prolong dying process' with on-going therapies such as transfusions, IV fluids, artificial nutrition, anti-biotics. Stop medications that have no bearing on symptom support management. Focus on the 'patient as person' - not on clinical indicators. Oxygen does not offer symptom benefit for actively dying patients and oxygen delivery devices can be uncomfortable and cause sensations of claustrophobia.	Supportive care of family, education about dying process, spiritual support, psychosocial support, company, listening, storytelling, silence, companionship. Discontinue monitors and vital signs documentation.

DOSE CONVERSION TABLE FOR SELECTED OPIOIDS

(Consider dose reduction between opioid in view of incomplete cross tolerance)

Hydromorphone IV (mg/day)	Hydromorphone PO (mg/day)	Morphine IV (mg/day)	Morphine PO (mg/day)	Fentanyl* Transdermal (mcg/hr)	Oxycodone PO (mg/day)
2.5	12.5	17	50	25	30
5	25	33	100	50	65
7.5	37.5	50	150	75	100
10	50	67	200	100	130
12.5	62.5	83	250	125	165
15	75	100	300	150	200
17.5	87.5	117	350	175	230
20	100	133	400	200	265
22.5	112.5	150	450	225	300
25	125	167	500	250	330
27.5	137.5	183	550	275	360
30	150	200	600	300	400

* Transdermal Fentanyl absorption and response may vary depending on amount of adipose tissue present (i.e. better absorbed in patients with more adipose tissue, worse absorption in thin patients). Also, consider dose reduction (e.g. 25%) if transitioning from transdermal patch to oral opioid equivalent.