PATIENT CARE
STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Acknowledgement: These protocols are adopted by the Alaska Department of Health and Social Services from the Minnesota Department of Health Emergency Preparedness & Response Patient Care Strategies Protocol for Scarce Resource Situations, version 5.0, April 2019.

Alaska Department of Health and Social Services
Division of Public Health
Rural and Community Health Systems Section
http://dhss.alaska.gov

PO Box 110616
350 Main St., Suite 530
Juneau, AK 99811-0616
Tel: 907-465-3140

Table of Contents

Core Clinical Strategies for Scarce Resource Situations

Core clinical categories are practices and resources that form the basis for medical and critical care.

Summary Card		Page ii
Oxygen	Section 1	Pages 1-2
Staffing	Section 2	Pages 1-2
Nutritional Support	Section 3	Pages 1-2
Medication Administration	Section 4	Pages 1-2
Hemodynamic Support and IV Fluids	Section 5	Pages 1-2
Mechanical Ventilation	Section 6	Pages 1-2
Blood Products	Section 7	Pages 1-2

Resource Reference and Triage Cards

Resource cards address the unique system response issues required by specific patient groups during a major incident. Some of this information is specific to the State of Minnesota's resources and processes.

Renal Replacement Therapy Resource Cards	Section 8	Pages 1-4
Pediatrics Resource Cards	Section 9	Pages 1-4
Pediatrics Triage Card	Section 9	Pages 5-6
Palliative Resource Cards	Section 10	Pages 1-10

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Summary Card

Alaska Health Care Preparedness Program

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 (flooding, etc)

How to use this card set:

1. Recognize or anticipate resource shortfall.
2. Implement appropriate incident management system and plans; assign subject matter experts (technical specialists) to problem.
3. Determine degree of shortfall, expected demand, and duration; assess ability to obtain needed resources via local, regional, or national vendors or partners.
4. Find category of resource on index.
5. Refer to specific recommendations on card.
6. Decide which strategies to implement and/or develop additional strategies appropriate for the facility and situation.
7. Assure consistent regional approach by informing public health authorities and other facilities if contingency or crisis strategies will continue beyond 24h and no regional options exist for re-supply or patient transfer; activate regional scarce resource coordination plans as appropriate.
8. Review strategies every operational period or as availability (supply/demand) changes.

Core strategies to be employed (generally in order of preference) during, or in anticipation of a scarce resource situation are:

Prepare - pre-event actions taken to minimize resource scarcity (e.g., stockpiling of medications).
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 – 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 spaces and practices are used during a major mass casualty incident 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 spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (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).

This card set is designed to facilitate a structured approach to resource shortfalls at a health care facility. It is a decision support tool and assumes that incident management is implemented and that key personnel are familiar with ethical frameworks and processes that underlie these decisions (for more information see Institute of Medicine 2012 Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response). Each facility will have to determine the most appropriate steps to take to address specific shortages. Pre-event familiarization with the contents of this card set is recommended to aid with event preparedness and anticipation of specific resource shortfalls. The cards do not provide comprehen-sive guidance, addressing only basic common categories of medical care. Facility personnel may determine additional coping mechanisms for the specific situation in addition to those outlined on these cards.

The content of this card set was originally developed by the Minnesota Department of Health (MDH) Science Advisory Team in conjunction with many subject matter experts whose input is greatly appreciated, and adapted for AKHSS. This guidance does not represent the policy of AKHSS. Facilities and personnel implementing these strategies in crisis situations should assure communication of this to their health care and public health partners to assure the invocation of appropriate legal and regulatory protections in accord with State and Federal laws. This guidance may be updated or changed during an incident by the AKHSS. The web links and resources listed are examples, and may not be the best sources of information available. Their listing does not imply endorsement by AKHSS. This guidance does not replace the judgment of the clinical staff and consideration of other relevant variables and options during an event.

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OXYGEN

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Alaska Health Care Preparedness Program

RECOMMENDATIONS	*Strategy*	*Conventional*	*Contingency*	*Crisis*
Inhaled Medications • Restrict the use of oxygen-driven nebulizers when inhalers or air-driven substitutes are available. • Minimize frequency through medication substitution that results in fewer treatments (6h-12h instead of 4h-6h applications).	*Substitute & Conserve*			
High-Flow Applications • Restrict the use of high-flow cannula systems as these can demand flow rates in excess of 40 LPM. • 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. • Place patients on ventilators as soon as possible to avoid prolonged use of bag-valve ventilation at high oxygen flow rates	*Conserve*			
Air-Oxygen Blenders • Eliminate the low-flow reference bleed occurring with any low-flow metered oxygen blender use. This can amount to an additional 12 LPM. Reserve air-oxygen blender use for mechanical ventilators using high-flow non-metered outlets. (These do not utilize reference bleeds). • Disconnect blenders when not in use.	*Conserve*			
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.	*Substitute & Adapt*			
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.	*Substitute & Conserve*			
Monitor Use and Revise Clinical Targets • Employ oxygen titration protocols to optimize flow or % to match targets for SpO_2 or PaO_2. • Minimize overall oxygen use by optimization of flow. • Discontinue oxygen at earliest possible time. **Starting Example** / **Initiate O_2** / **O_2 Target** Normal Lung Adults / SpO_2 <90% / SpO_2 90% Infants & Peds / SpO_2 <90% / SpO_2 90-95% Severe COPD History / SpO_2 <85% / SpO_2 90% **Note**: Targets may be adjusted further downward depending on resources available, the patient's clinical presentation, or measured PaO_2 determination.	*Conserve*			
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.	*Re-use*			
Oxygen Re-Allocation • Prioritize patients for oxygen administration during severe resource limitations.	*Re-Allocate*			

Resource: Considerations for Oxygen Therapy in Disasters. This ASPR TRACIE fact sheet provides information on the types of oxygen therapy and the types of oxygen supplies generally available, as well as various oxygen storage methods.

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STAFFING

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	***Strategy***	***Conventional***	***Contingency***	***Crisis***
Staff and Supply Planning • Assure facility has process and supporting policies for disaster credentialing and privileging - including degree of supervision required, clinical scope of practice, mentoring and orientation, electronic medical record access, 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. • Implement efficient medical documentation methods appropriate to the incident. • Cohort patients to conserve PPE and reduce staff PPE donning/doffing time and frequency.	*Conserve*			
Use Supplemental Staff • Bring in equally trained staff (burn or critical care nurses, Disaster Medical Assistance Team [DMAT], other health system or Federal sources). • Equally trained staff from administrative positions (nurse managers).	*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 (ventilator, burn management) 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 (e.g., 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. • Limit availability/indications for non-critical laboratory, radiographic, and other studies. • Reduce documentation requirements. • Restrict elective appointments and procedures.	*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., health care trainees or other health care workers, Alaska Responds 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 most sub-specialty appointments, screening endoscopies, etc. and divert staff to emergency duties including in-hospital or assisting public health at external clinics/screening/dispensing sites.	*Adapt*			

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NUTRITIONAL SUPPORT

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Alaska Health Care Preparedness Program

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/disaster 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. Potential water sources include food and beverage distributors. • Consider weight and dispensing issues if using 5 gallon bottles. • 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 • Plan to feed additional staff, patients, and family members of staff/patients in select situations (ice storm as an example of a short-term incident, an epidemic as an example of a long-term incident). • Consider having staff bring own food if practical to do so.	*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 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 provision of food/feeding by family members of patients. • Anticipate and have a plan for the receipt of food donations. If donated food is accepted, it should be non-perishable, prepackaged, and preferably 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.	*Adapt*			

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MEDICATION ADMINISTRATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Alaska Health Care Preparedness Program

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Cache/Increase Supply Levels * • Patients should have at least 30 days supply of home medications and obtain 90 day supply if pandemic, epidemic, or evacuation is imminent. • Examine formulary to determine commonly-used medications and classes that will be in immediate/high demand. This may involve coordination with insurance companies/pharmacies • Increase supply levels or cache critical medications - particularly for low-cost items and analgesics. • Key examples include: **Analgesia** • Morphine, other narcotic and non-narcotic (non-steroidals, acetaminophen) class - injectable and oral (narcotic conversion tool at http://www.globalrph.com/narcoticonv.htm). **Sedation** • Particularly benzodiazepine (lorazepam, midazolam, diazepam) injectables, ketamine, and anti-psychotic agents . **Anti-infective** • Narrow and broad spectrum antibiotics for pneumonia, skin infections, open fractures, sepsis (e.g.: cephalosporins, quinolones, tetracyclines, macrolides, clindamycin, penam class and extended spectrum penicillins, etc.), select antivirals . **Pulmonary** • Metered dose inhalers (albuterol, inhaled steroids), oral steroids (dexamethasone, prednisone). **Behavioral Health** • Haloperidol, other injectable and oral anti-psychotics, common anti-depressants, anxiolytics. **Other** • Sodium bicarbonate, paralytics, induction agents (etomidate, propofol), proparacaine/tetracaine, atropine, pralidoxime, epinephrine, local anesthetics, antiemetics, insulin, common oral anti-hyper tensive, diabetes medications, tetanus vaccine and tranexamic acid, anti-epileptics (IV and oral), hypertonic saline,and anti-diarrheals.	*Prepare*			
Use Equivalent Medications • Obtain medications from alternate supply sources (pharmaceutical distributors, pharmacy caches). • Explore options to compound or obtain from compounding pharmacies. **Pulmonary** • Metered dose inhalers instead of nebulized medications. **Analgesia/ Sedation** • Consider other medications (e.g. benzodiazepines , dexmedetomidine etc.) for propofol substitution (and other agents in short supply) • ICU analgesia/sedation drips Morphine 4-10mg IV load 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.	*Substitute*			
Anti-infective • Examples: cephalosporins, gentamicin, clindamycin substitute for unavailable broad-spectrum antibiotic • Target therapy as soon as possible based upon organism identified. **Other** • Beta blockers, diuretics, calcium channel blockers, ace inhibitors, anti-depressants, anti-infectives.	*Substitute*			
Reduce Use During High Demand • Restrict use of certain classes if limited stocks likely to run out (restrict use of prophylactic/empiric antibiotics after low risk wounds, etc.) • Decrease dose; consider using smaller doses of medications in high demand/likely to run out (reduce doses of medica tions 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 hospital.	*Conserve*			
• Do without - consider impact if medications not taken during shortage (statins, etc.). http://www.astho.org/Programs/Preparedness/Coping-With-Drug-Shortages/Drug-Shortage-Report-2012/	*Conserve*			

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MEDICATION ADMINISTRATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

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 = qtts/mL - 60, 10, etc.).* • Rule of 6: pt wgt (kg) x 6 = mg drug to add to 100mL fluid = 1mcg/kg/min for each 1 mL/hour NOTE: For examples, see http://www.dosagehelp.com/iv_rate_drop.html	*Adapt*			
• Consider use of select medications beyond expiration date.**, especially tablets/capsules • 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*			
• Determine patient priority to receive medications in limited stock.	*Re-Allocate*			

*Resources: ASPR TRACIE Hospital Disaster Pharmacy Calculator. This tool estimates the number of patients that should be planned for based on the size of the emergency department and the role of the hospital.

ASPR TRACIE Factsheet: Drug Shortages and Disasters. This factsheet can help health care providers prepare for and respond to drug shortages that may arise during and after a disaster

**Legal protection such as Food and Drug Administration approval or waiver required.

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HEMODYNAMIC SUPPORT AND IV FLUIDS

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*			
Minimize 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.	*Substitute & Conserve*			
Emphasize Oral Hydration Instead of IV Hydration When Possible Utilize appropriate 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: • 4 mL/kg/h for first 10kg of body weight (40 mL/h for 1st 10 kg) • 2 mL/kg/h for second 10kg of body weight (20 mL/h for 2nd 10kg = 60 mL/h for 20kg child) • 1 mL/kg/h for each kg over 20kg (example - 40 kg child = 60 mL/h plus 20 mL/h = 80 mL/h) Supplement for each diarrhea or emesis 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 • Rehydration Project http://rehydrate.org/ • Managing Acute Gastroenteritis Among Children https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5216a1.htm • Intravenous Fluid Orders-A Primer 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 nasogastric (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 on minidrip tubing and titrate to target blood pressure. • Epinephrine 1:1000 (1mg/mL) multi-dose vials available for drip use.	*Substitute*			
Re-use CVP, NG, and Other Supplies After Appropriate Sterilization/Disinfection • 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, hydrogen peroxide 6%, or bleach (5.25%) diluted 1:20 (2500 ppm) are acceptable solutions. NOTE: chlorine levels reduced if stored in polyethylene containers - double the bleach concentration to compensate). • Sterilize devices in contact with bloodstream (e.g., ethylene oxide sterilization for CVP catheters).	*Re-use*		(disinfection – NG, etc)	(sterilization - central line, etc)

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PO Box 110616
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Juneau, AK 99811-0616
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HEMODYNAMIC SUPPORT AND IV FLUIDS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Intraosseous/Subcutaneous (Hypodermoclysis) Replacement Fluids • Consider as an option when alternative routes of fluid administration are impossible/unavailable. • Intraosseous route preferred over subcutaneous. 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 IV push. Hypodermoclysis • Cannot correct more than moderate dehydration via this technique. • Many medications cannot be administered subcutaneously. • Common infusion sites: pectoral chest, abdomen, thighs, upper arms. • Common fluids: normal saline (NS), D5NS, D5 1/2 NS (Can add up to 20-40 mEq potassium if needed.) • Insert 21/24 gauge needle into subcutaneous tissue at a 45 degree angle, adjust drip rate to 1-2 mL per minute. (May use 2 sites simultaneously if needed.) • Maximal volume about 3 liters/day; requires site rotation. • Local swelling can be reduced with massage to area. • Hyaluronidase 150 units/liter facilitates fluid absorption but not required; may not decrease occurrence of local edema	*Substitute*			
Consider Use of Veterinary and Other Alternative Sources for Intravenous Fluids and Administration Sets	*Adapt*			

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MECHANICAL VENTILATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

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RECOMMENDATIONS	*Strategy*	*Conventional*	*Contingency*	*Crisis*
Increase Hospital Stocks of Ventilators and Ventilator Circuits, ECMO or bypass circuits	*Prepare*			
Access Alternative Sources for Ventilators/specialized equipment • Obtain specialized equipment from vendors, health care partners, regional, state, or Federal stockpiles via usual emergency management processes and provide just-in-time training and quick reference materials for obtained equipment.	*Substitute*			
Decrease Demand for Ventilators • Increase threshold for intubation/ventilation. • Decrease elective procedures that require post-operative intubation. • Decrease elective procedures that utilize anesthesia machines. • Use non-invasive ventilatory support when possible. • Attempt earlier weaning from ventilator.	*Conserve*			
Re-use Ventilator Circuits • Appropriate cleaning must precede sterilization. • If using gas (ethylene oxide) sterilization, allow full 12 hour 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 with appropriate alarms - especially for stable patients without complex ventilation requirements.	*Adapt*			
• Use anesthesia machines for mechanical ventilation as appropriate/capable. • Use bi-level (BiPAP) equipment to provide mechanical ventilation. • 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).				
Assign Limited Ventilators to Patients Most Likely to Benefit if No Other Options Are Available ***STEP ONE*:** assess patient acuity using SOFA (see next page+) scoring table and/or other parameters appropriate to the situation (agent-specific prognostic indicators, modifications based on agent involved).	*Re-allocate*			

ORGAN SYSTEM	SCORE = 0	1	2	3	4
RESPIRATORY **$Pa0_2/Fi0_2$**	> 400	≤ 400	≤ 300	≤ 200 with resp. support	≤ 100 with resp. support
HEMATOLOGIC **Platelets**	> 150	≤ 150	≤ 100	≤ 50	≤ 20
HEPATIC **Bilirubin (mg/dl)**	< 1.2	1.2 – 1.9	2.0 – 5.9	6 – 11.9	≥ 12
CARDIOVASCULAR **Hypotension**	None	Mean Arterial Pressure < 70 mmHg	Dopamine ≤ 5 or any Dobutamine	Dopamine > 5 or Epi < 0.1 or Nor-Epi ≤ 0.1	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**	<1.2	1.2 - 1.9	2.0 - 3.4	3.5 - 4.9	≥5.0

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MECHANICAL VENTILATION/EXTERNAL OXYGENATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

RECOMMENDATIONS				Strategy	Crisis
***STEP TWO*:** Compared to other patient(s) requiring and awaiting external ventilation/oxygenation, does this patient have significant differences in prognosis or resource utilization in one or more categories below that would justify re-allocation of the ventilator/unit? Factors listed in relative order of importance/weight. Injury/epidemiologic factors may have the highest predictive value in some cases and may also affect the predictive ability of the SOFA score.				*Re-allocate*	
Criteria	Patient keeps resource		Resource re-allocated		
1. Organ system function[a]	Low potential for death (SOFA score ≤ 7)	Intermediate potential for death (SOFA score 8-11)	High potential for death (SOFA score ≥12)		
2. Duration of benefit / prognosis	Good prognosis based upon epidemiology of specific disease/ injury. No severe underlying disease.[b]	Indeterminate/intermediate prognosis based upon epidemiology of specific disease/injury Severe underlying disease with poor long-term prognosis and/or ongoing resource demand (e.g., home oxygen dependent, dialysis dependent) and unlikely to survive more than 1-2 years.	Poor prognosis based upon epidemiology of specific disease/injury (e.g., pandemic influenza) Severe underlying disease with poor short-term (e.g., <1 year) prognosis		
3. Duration of need	Short duration – flash pulmonary edema, chest trauma, other conditions anticipating < 3 days on ventilator	Moderate duration – e.g., pneumonia in healthy patient (estimate 3-7 days on ventilator)	Long duration – e.g., ARDS, particularly in setting of preexisting lung disease (estimate > 7 days on ventilator)		
4. Response to mechanical ventilation	Improving ventilatory parameters over time[c]	Stable ventilatory parameters over time	Worsening ventilatory parameters over time		

[a] The Sequential Organ Failure Assessment (SOFA) score is the currently preferred assessment tool but other predictive models may be used depending on the situation/epidemiology. Note: mortality prediction for SOFA scores in respiratory failure cases is poor. Specific SOFA scores should never be used to deny a ventilator to a patient but should be used in combination with other factors to compare patients needing the resource.

[b] Underlying diseases that predict poor short-term survival

[c] Changes in Oxygenation Index over time may provide comparative data, though of uncertain prognostic significance.
OI = MAWP x FiO2/PaO2where: OI = oxygenation index, MAWP= Mean Airway Pressure, FiO2= inspired oxygen concentration, PaO2= arterial oxygen pressure (May be estimated from oxygen dissociation curve if blood gas unavailable.)

***STEP THREE*:** Re-allocate ventilator/resource only if patient presenting with respiratory failure has significantly better chance of survival/benefit as compared to patient currently receiving ventilation. Follow additional regional and state/federal guidance and institutional processes for scarce resource situations.

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http://dhss.alaska.gov

PO Box 110616
350 Main St., Suite 530
Juneau, AK 99811-0616
Tel: 907-465-3140

BLOOD PRODUCTS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Category	RECOMMENDATIONS	Health care Facility	Blood Center	Strategy	Conventional	Contingency	Crisis
All Blood Products	• Increase donations if required, and consider local increase in frozen reserves. • Increase O positive levels. • Consider maintaining a frozen blood reserve if severe shortage. • Increase recruitment for specific product needs.		√	*Prepare*			
	• Consider adjustments to donor hemoglobin/hematocrit 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 use of O negative to women of child-bearing age and pediatric females • Use O positive packed cells for emergent transfusion of males and post-menopausal women following local blood bank procedures to conserve O 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, with or without evidence of cardiac ischemia/organ dysfunction (for example, hemoglobin 7 without cardiac ischemia, hemoglobin 8 with acute coronary ischemia).	√		*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*			
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 : plasma ratios in massive transfusion protocols in consultation with blood bank medical staff.	√		*Conserve*			
	• No anticipatory use of plasma 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)

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PO Box 110616
350 Main St., Suite 530
Juneau, AK 99811-0616
Tel: 907-465-3140

BLOOD PRODUCTS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

Category	RECOMMENDATIONS	Health care 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 platelet 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 Apheresis.		√	*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)

Resource: ASPR TRACIE Blood and Disaster: Frequently Asked Questions. This document includes answers to frequently asked questions about blood use during disasters.

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PO Box 110616
350 Main St., Suite 530
Juneau, AK 99811-0616
Tel: 907-465-3140

RENAL REPLACEMENT THERAPY
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Resource cards are intended to provide incident-specific tactics and planning information to supplement the general strategy cards. They are organized according to the 'CO-S-TR' framework of incident response planning.

Category	RESOURCE and 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. Disaster dialysis challenges generally result from: 1. Lack of clean water sources (each hemodialysis requires about 160 liters ultra-clean water). 2. Relocation of dialysis-dependent patients to a new area (evacuation of nursing homes, flood zones, etc.) 3. Increase in patients requiring dialysis (crush syndrome, unusual infections). Outpatient • 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). • Midwest Kidney Network (Multi-state renal planning, quality, and emergency preparedness) has a database of all dialysis patients in teh state/region and assists coodination of activities. Inpatient • Most facilities lease inpatient services via contract with above or other agencies; some have own nurses and program – plans should account for contingency use of alternate services/leasing services. Patient preparedness • Patients should have a disaster plan – including specific foods set aside for up to 72h. Note that shelters are unlikely to have foods conducive to renal dietary needs (low sodium, etc.) • Personal planning guidance from the National Kidney Foundation **Shortage of Renal Replacement Therapy (RRT) Resources** • Affected facility should contact involved/affected dialysis provider companies and organizations as expert consultants.[1] (MDH EPR and the Renal Network 11 website maintain contact information)	*Prepare*			
Space	**Relocated Patients Requiring Outpatient Dialysis** • Contact usual outpatient provider network to schedule at new facility – refer patients to 'hotlines' as needed. **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 quality 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*			

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Juneau, AK 99811-0616
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RENAL REPLACEMENT THERAPY
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Supplies	**Water Supply** • Quantify water-purifying machines available for bedside dialysis machines. • Identify facilities providing high-volume services that purify their own water and pipe to specific rooms in the dialysis unit, intensive care, etc. • Identify water-purifying and dialysis machines to be obtained through lease agreements.	*Prepare*			
	Water Contamination • Consider alternate sources of highly purified water.	*Prepare*			
	• Consider transferring stable inpatients to outpatient dialysis centers for dialysis treatments and vice versa.	*Substitute*			
	• Consider use of AK National Guard water reserves and purification equipment – but must assure adequate purity for dialysis (potable is NOT sufficiently clean).	*Adapt*			
	Power Outage or Shortage • Consider transferring stable inpatients to outpatient dialysis centers 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 Machines, and/or Other Supply Shortages ***Note:*** Dialysis catheters and tubing are inexpensive, relatively interchangeable, and supplied by several manufacturers.				
	• Stock adequate dialysis tubing sets and venous access catheters (Quinton, etc.) for at least one month's usual use. • Identify provider network and other sources of supplies and machines.	*Prepare*			
	• Transfer machines/supplies between outpatient centers and hospitals, or between hospitals.	*Substitute*			
Staff	**Dialysis Staff Shortages**[2] • Non-dialysis nursing staff to take on "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 . • Outpatient dialysis techs may be used to supervise dialysis runs if provider deficit is critical issue (would be unlikely aside from potentially in pandemic or other situation affecting staff).	*Adapt*			
Special	**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*			
Triage	**Insufficient Resources Available For All Patients Requiring Dialysis** • Change dialysis from 'scheduled' to 'as needed' based on clinical and laboratory findings (particularly 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 critical care intervention prioritization (see Mechanical Ventilation Strategies for Scarce Resource Situations).	*Re-allocate*			

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Juneau, AK 99811-0616
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Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	**Crush Syndrome** • Initiate IV hydration and acidosis prevention protocols "in the field" for crush injuries to prevent/treat rhabdomyolysis in hospital settings.	*Conserve*			
	Mode of Dialysis • Restrict to hemodialysis only for inpatient care (avoid continuous renal replacement therapy (CRRT) and peritoneal dialysis (PD) due to duration of machine use (CRRT) and supply issues (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 "kits" of medication (Kayexalate) 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 service providers/dialysis clinics first for transportation and other assistance during service/transportation interruptions. • Emergency management and/or the health and medical 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 disasters; their input during any anticipated or actual incident is imperative to optimize the best patient care in Minnesota.

[2] See Staffing in the Core Clinical Strategies for Scarce Resource Situations card set.

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Rural and Community Health Systems Section
http://dhss.alaska.gov

PO Box 110616
350 Main St., Suite 530
Juneau, AK 99811-0616
Tel: 907-465-3140

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350 Main St., Suite 530
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Tel: 907-465-3140

PEDIATRICS
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Staff	**Staff:** • Pre-incident pediatric medical/trauma critical care training should be conducted for physician and nursing staff expected to provide emergency care. Consider courses such as Advanced Pediatric Life Support, Pediatric Advanced Life Support.	*Prepare*			
	• Staff that do not regularly provide pediatric emergency care but could be called upon in a disaster should receive pre-incident training and orientation to facility equipment. Scenario-based or other training (simulation and other brief, frequent training) is highly recommended. • Just-in-time training may be required in certain situations for non-pediatric nursing and physician staff reinforcing key points of pediatric or incident-specific patient care (including pediatric assessment triage, importance of fluid management, urine output parameters, principles of analgesia, etc.)	*Adapt*			
	• In a major incident, adjust pediatric physician and nurse staffing patterns as needed to provide supervision of key aspects of pediatric care. See *Staffing Strategies for Scarce Resource Situations* for further consider-ation; for example, have critical care staff supervise care at a higher level, delegating many bedside duties to other providers. • AK HSS may work with in-state and adjacent state experts to set up 'hotline' to provide consultation to non-pediatric centers caring for pediatric patients (for example during pandemic). • National Disaster Medical System and/or other supplemental staff may be required to work in facilities (see *Staffing Strategies for Scarce Resource Situations*).	*Conserve* *Adapt* *Substitute*			

Special	**Consider availability of resources for:**
	• Social work/ family support.
	• Psychological support for children, their families and staff (do not under-estimate the increased stress and psychological impact of a pediatric incident, particularly a mass casualty incident, on health care providers).
	  • Psychological First Aid for Disaster Survivors (PDF)
	  • Disaster Mental Health for Children (PDF)
	  • After a Disaster: Guide for Parents and Caregivers (PDF)
	  • More Behavioral Health Resources
	• Discharge support and planning, particularly for rehabilitation and other specialty follow-up.
	• Patient tracking and patient safety, particularly for unaccompanied minors (e.g. banding system to identify children and guardians).
	• Family/caregiver accommodations.
		Prepare			

Triage	**Consider early transfer to a facility providing pediatric intensive care services for:** • Progressing respiratory symptoms/hypoxia. • Shock, or need for ongoing resuscitation. • Critical trauma, including neurotrauma according to usual trauma triage criteria. • Patients with concomitant burns should be transferred to Regions Hospital or Hennepin County Medical Center. • Patients with complex underlying medical conditions may require consultation or special triage considerations.	*Conserve*			

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PEDIATRICS
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	**Provide stabilizing care (airway, fluid management, analgesia, etc.) – see Pediatric Triage Card for initial priorities** **Special Considerations:** • Airway/Breathing and Circulation (ABCs) are still critical – do not deviate from usual trauma/critical care priorities due to size/age/behavior concerns. • Pediatric airways are small; there is little room between partial and complete obstruction. • Age and height-based estimations are NOT always accurate – always be prepared with a range of equipment sizes, especially for airway interventions. • Assess skin color, capillary refill and heart rate for signs of poor perfusion. Hypotension is a late sign of shock in pediatric patients. • Typically, pediatric patients respond to treatments more quickly than adults. Reassess frequently and alter treatments to fit the response. • Monitor for signs of pain and treat pediatric patients with analgesics via weight-based guidelines, then titrate to effect. Pediatric pain is often inadequately treated. • Hypoglycemia and hypothermia are very common –anticipate, prevent, and correct as necessary. • Monitor IV fluids carefully to control volume delivered in smaller patients (e.g., IV pumps or buretrols). • Double-check medication doses with team members, especially with medication drips as significant errors are common. DO NOT exceed maximum adult dose. • Assessment may be difficult due to age-related and communication-related issues – history from the family/caregivers may be critical. • Do not separate the child from family/guardian if at all possible. • Medical alert bracelets and care plans should be sought for all children.	*Prepare*			
Transportation	**After stabilizing care, assess need for transfer:** • Plan for oxygen, fluids, and analgesia requirements in transport. • Consider need for airway intervention prior to transport. • Consider plans for caregivers/family transportation . • A mass casualty incident may affect more than one facility requiring coordination with regional health care coalitions to prioritize transportation and manage logistics via Multi-Agency Coordination. • Regional transfer coordination may be required in major disasters – AK HSS Center for Emergency Prepared-ness & Response will assist regional health care coalitions and involve appropriate State and Federal (NDMS) resources; in certain situations (such as pandemic, major mass casualty incident) patients may have to receive care in non-pediatric centers. • Ensure that targeted medical record information (including name, allergies, medications given, current medications, age and family contact information) is always with patient. • Arrange transport via air medical transport as appropriate – if multiple institutions affected coordinate with regional health care coalition and/or multi-agency coordination system.	*Prepare* *Adapt*			

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PEDIATRIC TRIAGE CARD For Mass Casualty Situations

Patient Arrives/ Initial Assessment

High Risk Features? *

- Hypoxia or respiratory distress.
- Multiple injuries or high-energy mechanism.
- Signs of hypoperfusion/ shock (may be isolated to tachycardia).
- Altered mental status.

* Consultation may be warranted for age <8 years, or underlying complex illness/ disease (congenital abnormality, etc.)

Yes →

No ↓

Minor:

- Assessment, treatment and observation .
- Address psychosocial needs; re-unify with family; support as needed.
- Discharge, if able, to secure environment if parent/guardian not accompanying.

Resource list of pediatric emergency equipment:
https://www.acep.org/globalassets/new-pdfs/policy-statements/pediatric-readiness-in-the-emergency-department.pdf

Initial interventions:

Airway – Assess and position airway; airway interventions as needed. Children < 5 years have small airways that do not tolerate edema well. Reassess frequently.
Breathing –Assess for evidence of respiratory distress (retractions, hypoxia, grunting). Provide oxygen, bronchodilators (e.g., albuterol, epinephrine) and other interventions as needed.
Circulation – Assess for signs of hypoperfusion including capillary refill, vital signs, pulses, etc. Fall in blood pressure is late and end-stage. Treat signs of hypoperfusion aggressively with 20 mL/kg normal saline (and 10 mL/kg packed red blood cells if hemorrhagic shock persists after initial boluses of saline), see Fluid Management below.
Disability – Assess neurologic status (including sensation and motor) and need for cervical spine protection.
Decontamination – Consider for chemical/radiologic – brush away loose material, then copious water. Consult Poison Control Center at 1-800-222-1222.
Expose - Remove clothing, jewelry and, if mental status altered, contact lenses. Protect from heat loss; hypothermia is common.
Fluids – IV fluids (see Fluid Management below) .
Family – Avoid separating family/guardians from patients. Identify and notify patient's family/guardians of patient's status when possible.
Glucose – Check fingerstick glucose for all significantly ill/injured children. Correct hypoglycemia.
History – Note mechanism and time of injury, treatments pre-hospital, underlying diseases, tetanus status, medications/allergies, social history, family history, immunization history.
Orogastric – Tube for all intubated patients (due to usual gastric distension).
Pain control – Titrated opioid analgesia, IV, intranasal, or subcutaneous as required for comfort (e.g., morphine 0.1 mg/kg or fentanyl 1 mcg/kg IV).
Temperature/Thermal – Protect from heat losses; initiate cooling/rewarming or anti-pyresis as indicated. Children lose body heat rapidly.
Urine output– Target urine output to 0.5 - 1 ml/kg/hour. Indwelling urinary cathether as needed.

↓

Secondary Assessment – Critical illness/ injury?

- Intubated or progressive respiratory failure.
- Multiple organ systems affected.
- Surgical emergency.
- Evidence of shock (poor perfusion, high lactate, persistent tachycardia) not responding to fluid resuscitation.

Yes →

High Priority for Transfer to Pediatric Center

- Continue fluid resuscitation .
- Arrange transfer and consultation .
- May have to provide transfers, triage resources, or even provide palliative care as only intervention based on scope of injury/nature of incident. Re-triage as more resources become available or condition changes.

No ↓

Secondary Priority for Transfer

- May have to manage in place awaiting transfer (24-48 hours) (e.g. isolated orthopedic injuries).
- Obtain consultation from pediatric referral center (during mass casualty incident MDH may organize hotline).
- Diagnostic studies as indicated (minimize ionizing radiation without omitting necessary studies).
- Monitor urine output and provide IV fluids (see Fluid Management).
- Infection control – providers should gown, glove and mask as appropriate for illness/ injury.
- Follow cardiorespiratory and renal function, Circulation, Motor and Sensory function (CMS) and glucose checks at regular intervals.
- Maintain body temperature.
- Analgesia.
- Psychological triage and support/family support.

Fluid Management

Goals of Fluid Resucitation: Normal vital Signs, Improved signs of perfusion, Urine output 0.5-1 mL/kg/hr

Type	Fluid	Rates and Notes
Resuscitation Fluids	NS	Initial bolus 20 mL/kg, over 30-60 min, repeat as needed
	PRBCs	Hemorrhagic shock 10 mL/kg if not responding to initial 20 mL/kg of crystalloid May use O Neg (or O Pos for males) until type-specific or cross matched available
Maintenance Fluids Maximum of 2400 mL/day	D10W	Newborn (first 48 hrs): 3 mL/kg/hr
	D10½NS	Neonate (28 days or less): 4 mL/kg/hr
	D5NS	Pediatric patient without renal compromise: 4 mL/kg/hr first 10 kg 2 mL/kg/hr next 10 kg 1 additional mL/kg/hr for each kg over 20 kg
Hypo-glycemic Treatment over 15-30 min	D10W	Neonate with BG < 45 give 3 mL/kg IV or IO
	D25W	< 4 years with BG < 60 give 2 mL/kg IV or IO
	D50W	≥ 4 years with BG < 60 give 1 mL/kg IV or IO

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Juneau, AK 99811-0616
Tel: 907-465-3140

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PALLIATIVE CARE
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Resource cards are intended to provide incident-specific tactics and planning information to supplement the general strategy cards. They are organized according to the 'CO-S-TR' framework of incident response planning.

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:

Planning Resources	Page 11-2	Staff	Page 11-5	Tracking	Page 11-8
Communications and Coordination	Pages 11-2 & 11-3	Special	Page 11-5	Key Symptoms and Treatments	Page 11-9
Space	Page 11-4	Triage	Page 11-6	Dose Conversion Table for Selected Opioids	Page 11-10
Supplies	Page 11-4	Treatment	Pages 11-7 & 11-8		

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 equipment 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 pg 11-6.
- 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
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Planning Resources	**Planning Resources:** •General palliative care resources and fact sheets: • PCNOW Fast Facts and Concepts •General recommendations for home care/family based care and infectious prevention: • Home Care Guide: Providing Care •ICU care: • Improving Palliative Care in the ICU (IPAL-ICU project) •General resources in palliative care and non-pharmacologic intervention: • American Academy of Hospice and Palliative Medicine. • Center to Advance Palliative Care. • World Health Organization Essential Medicines in Palliative Care. • UpToDate—What's new in Palliative Care.	*Prepare*			
Planning/ Communications and Coordination	**Key Alaska Organizations:** • http://palliativecarealaska.com/ • http://anmc.org/services/palliative-care/ • https://alaska.providence.org/locations/anchorage/palliative-care-clinic • http://dhss.alaska.gov/dhcs/Pages/hflc/fac_hospice.aspx	*Prepare*			

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http://dhss.alaska.gov

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350 Main St., Suite 530
Juneau, AK 99811-0616
Tel: 907-465-3140

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PALLIATIVE CARE
REGIONAL RESOURCE CARD

Alaska Health Care Preparedness Program

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Communications and 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. • In major disasters requiring proactive triage to palliative care only, AK HSS may provide additional guidance and incident-specific resources, which may include a hotline for advice and consultation about palliative care issues. Additional resources for families providing home care would also need to be made available by local and state public health and major health care systems. **Communications with Families and Patients:** • Review advance care planning in the context of the current situation – proxy designations, advance direc tives, Physician Orders for Life-Sustaining Treatment (POLST) forms. • 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. • 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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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. **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. **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).	*Adapt* *Conserve* *Adapt* *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. **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.	*Prepare* *Adapt*			

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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 in creased 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			

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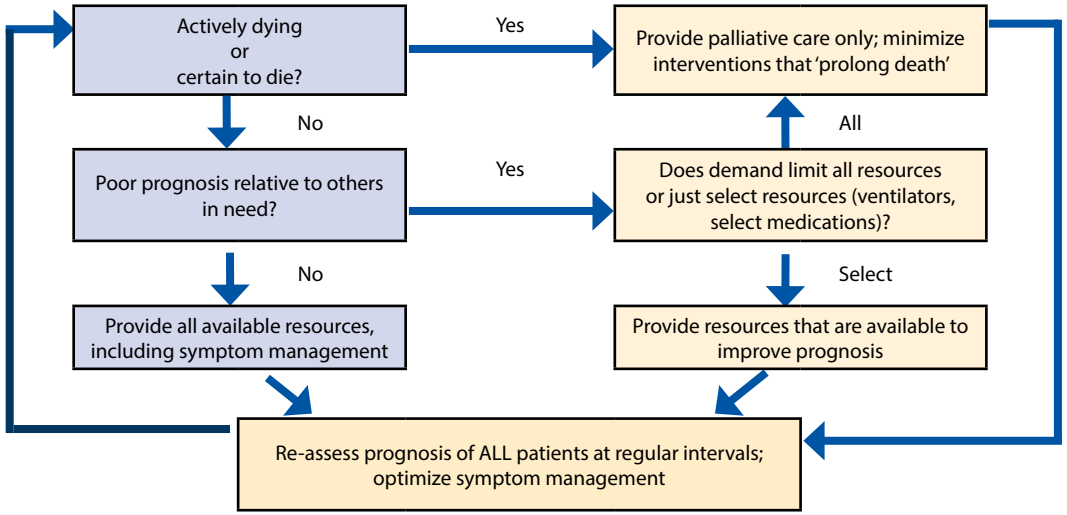
Triage	**Triage:** • The need for palliative care should be anticipated in all disaster scenarios. • Triage decisions may be required in minutes (multiple victims), over hours (many trauma victims), or over days or weeks (pandemic). • When it is clear that the volume of patients and current level of 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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Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	**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. • '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 time frame allows these treatments to be implemented. • Cannabis/cannabinoid class agents may offer symptom benefits for pain, nausea, anxiety. • 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. **Opioid Management Principles for Disaster Situations:** • 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).	*Prepare* *Adapt*			

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	• 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 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: 1/3ot½ of the twelve hour dose or 10-15 % of the 24 hour dose (if >3 breakthrough doses per 24 hr period consistently required, consider retitration of dose). • Titrating dosage, may use the following guideline: (Pain scores from 1-10 with 10 being worst imaginable): Pain > 7 — Increase dose by 50% to 100% Pain 4 – 7 — Increase dose by 25% to 50% Pain < 4 — Increase dose by 25% if indicated/desired • 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 that 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 > 3000 - 4000 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.	*Prepare* *Adapt*			
Tracking	**Tracking:** • Assure that patients referred to home care (formally or informally) are tracked by public health and the appropriate agencies.	*Prepare*			

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Key Symptoms and Treatments:

Symptom	Pharmacologic Options	Additional Strategies
Pain	See 'WHO ladder' on page 11- 7	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)	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	Treat underlying cause, spiritual support, supportive caring, integrative therapies, hypnosis, relaxation techniques, music therapy
Agitation/Delirium	Haloperidol, atypical antipsychotics, sedatives	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, glycerine, enemas	Treat underlying conditions, hydration, consider subcutaneous methylnaltrexone 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, antibiotics. 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.

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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.

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