

Anticipated Newborn Death

Assess the Situation

- Maternal Health
- Family Dynamic
- Prenatal Counseling

Identify Key Players

- Parents/Family
- Nursing staff
- Physicians
- Other

Level of support required:
Non-ICU

ICU: Refer to ICU algorithm

Pre-birth issues

Post-Birth Issues
(May be addressed pre-birth)

	Logistics	Symptoms
•Birth Plan – confirm parental hopes and wishes	Spiritual <ul style="list-style-type: none">•Baptism•Religious Needs	Pain <ul style="list-style-type: none">•Morphine•Sucrose•Intranasal Fentanyl
•Location of delivery	Memory Making <ul style="list-style-type: none">•Hand/footprints•Lock of hair•Photographs	Secretions <ul style="list-style-type: none">•Atropine•Glycopyrrrolate
•Plan for which family and staff will be present at delivery	Assessment of Hospital Protocols <ul style="list-style-type: none">•Erythromycin•Vitamin K•Glucose checks•Newborn screen	Dyspnea <ul style="list-style-type: none">•Morphine
•Labor Pain/ Symptoms addressed	Other <ul style="list-style-type: none">•Milk suppression•Autopsy	Seizures/ agitation <ul style="list-style-type: none">•Lorazepam
•Plan for visitors		Oral comfort <ul style="list-style-type: none">•Sucrose•Breastmilk•Formula

Death/Dying

Implement Logistics

Pronouncing Death

Bereavement

Debriefing

Symptom Management at End-of-Life –non-ICU

Pain

Minimal/Mild pain

- Non-pharmacologic measures: massage, repositioning, distraction
- Acetaminophen 15 mg/kg po/pr q6h prn-ATC
- Ibuprofen 10 mg/kg po q6h prn-ATC
- Ketorolac 0.1-1 mg/kg/dose IV q6h

Moderate pain

- Oxycodone 0.2 mg/kg po q4h, >6yo prn
- Morphine 0.15-0.3 mg/kg po/si q3-4h; 0.05-0.1 mg/kg IV q3-4h prn
- Hydromorphone 0.05-0.1 mg/kg po q3-6h (<50 kg) prn
- Intranasal fentanyl (1-2 mcg/dose neonate, 1 mcg/kg older children) q1-2 h prn

Severe pain

- Recommend continuous infusion or PCA if IV pain requirements
- Recommend Palliative Care or Acute Pain Service Consultation to titrate therapy and consider alternative agents (lidocaine, ketamine, etc as appropriate)

Secretions

- Non-pharmacologic measures: fluid restriction, gentle suction
- Glycopyrrrolate 0.01-0.02 mg/kg IV q4-6 hours (0.04-0.1 mg/kg po q3-4h)
- Atropine 0.01-0.02 mg/kg po (max dose 0.4 mg)
- Scopolamine patch (1/2 patch q3days for 6-12 yo, 1 patch q3days for >12 yo)

Dyspnea

- Non-pharmacologic measures: elevate the head of the bed, bedside fan, fluid restriction, gentle suction
- Oxygen as needed for comfort
- Morphine 0.15 mg/kg po q2 hours prn
- Assess for anxiety, may add lorazepam 0.05 mg/kg po q6 hours prn
- Consider decreasing/stopping artificial nutrition/hydration

Agitation

- Non-pharmacologic measures: familiar people/objects, low lighting, soothing tones, music, decreased monitoring
- Evaluate for pain versus anxiety, hypoxia, poor sleep, depression
- Lorazepam 0.05 mg/kg/dose po/IV q1-2 hours
- Haloperidol 0.05 po/IV/IM q4-6 hours (use IV with care given increased risk of prolonged QT)

Nausea/vomiting

- Non-pharmacologic measures: avoid noxious foods or smells
- Ondansetron 0.1-0.15 mg/kg/dose IV q6 hours
- Granisetron 0.01 mg/kg/dose IV q8 hours
- Metoclopramide 0.01-0.02 mg/kg/dose IV q4 hours
- Diphenhydramine 0.5-1 mg/kg/dose po/IV q6 hours
- Lorazepam 0.05 mg/kg/dose po/IV q4-6 hours
- Haloperidol 0.01-0.02 mg/kg/dose po/iv/im q8h prn (>3yo)

At Time of Death

Identify yourself to the patient's family and tell them you plan to examine the patient

Identify patient via wristband

Perform the death exam

- Provide verbal or tactile stimulus
- Feel for carotid or brachial pulse
- Listen to heart and lungs for 1-2 minutes
- Assess pupillary light reflex or other brainstem reflex

Announce death in an unambiguous manner

- Express sympathy to family if present; call family if not present

Write death note in chart*

Words to express sympathy at time of death

- "I'm sorry for your loss"
- "I had hoped things would have turned out differently"
- "Patient X has died. Time of death is..."
- "Is there anyone I can call for you?"
- "What questions do you have?"
- "I wish this could have been different."
- Offer social work and spiritual care support or bring them with you prior to the exam.

*Writing a death note

- State the reason you were called for assessment (apnea, asystole, death)
- Record your physical exam findings
- Note date and time of death (which is the date and time that YOU did your exam)
- Note time between staff/family concern for death and time of exam
- Document that the attending has been notified
- Consider a phrase expressing condolence/loss

Important tasks at time of death

- Notify any family not present
- Notify attending physician
- Notify social work
- Fill out death certificate
- Call Gift of Life/ organ donation
- Ask family about autopsy (may be initiated prior to death)
- Fill out body release/medical waste information
- Notify Medical Examiner if necessary (varies by location)

Filling out a death certificate

- Cause of death is the ultimate final illness, disease or injury and NOT symptom or mechanism (pneumonia NOT respiratory distress)
- List anything directly contributing to cause of death/the sequence of events leading to the death
- Time between onset and death, may put "unknown"
- May use "probable" or "presumed" if final cause not known

Algorithms for End-of-Life Care in Anticipated Pediatric Deaths



developed by the
Pediatric Palliative Care Team
C.S. Mott Children's Hospital
University of Michigan

This resource and its references can be viewed online
(includes pdf or smartphone downloads):

open.michigan
<http://open.umich.edu/education/med/resources/palliative-care/2010/>

Funding source:



Licensing information:



Disclaimer: This tool discusses investigative and/or off-label uses of prescription drugs. All medication dosing is from established external references as seen in the associated reference document posted online. This tool is meant to supplement clinical experience and should be used only by providers who have received appropriate training in the use of the included drugs.

Anticipated Pediatric Death

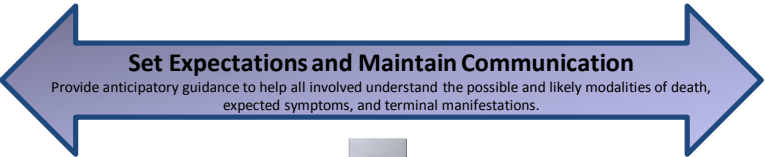
Assessment



the Big Picture



Communication



Develop and Implement Plan

Give options or choices when possible
Decrease monitoring when possible

Develop Plan/Death

Death

Implement Postmortem Logistics

Pronouncing Death

Bereavement

Staff Debriefing/Support

Managing Pain, Dyspnea and Agitation at End-of-life in the ICU

Intermittent IV dosing:

Pain or dyspnea starting doses:

Morphine: 0.1 mg/kg **

Hydromorphone: 0.05 mg/kg **

***Reassess every 10 minutes; repeat the dose if distress is present. Once distress is controlled give the total amount it took to control the distress into a single q 3 hour dose. Give 1/3 of this if needed for a breakthrough dose.*

Agitation starting doses:

Lorazepam: 0.05-0.1 to mg/kg q2- 4 hours
(Midazolam has a very short half life)

Haloperidol: 0.05 po/IV/IM q4-6 hours
(use IV with care given increased risk of prolonged QT)

ASSESS DISTRESS

Assess pain: grimace, tachycardia, verbal cues

Assess agitation: writhing, sweating

Assess dyspnea: retractions, flaring, tachypnea (Provide anticipatory guidance if you determine dyspnea is due to terminal respiratory effort)

Family and nurse interpretation and input is essential

Continuous IV infusion:

Beginning doses

Morphine: 0.05 mg/kg/hr

Hydromorphone 0.01 mg/kg/hr

Fentanyl 1 microgram/kg/hr

Midazolam 0.05 mg/kg/hr

Lorazepam 0.02/kg/hr

Later doses may reach or exceed

0.1- 5 mg/kg/hr

0.02-1 mg/kg/hr

2-10 mcg/kg/hr

0.5-1 mg/kg/hr

0.05 -0.2 mg/kg/hr

INCREASE THE DOSE IF DISTRESS PRESENT:

For dyspnea or pain, increase opioid:
Bolus: 1 hour's equivalent dose
AND
Increase infusion rate by 25% to 100%
(25–50% if moderate 50–100% if severe)

REASSESS EVERY 10 MINUTES

For agitation, increase benzodiazepine infusion rate by 25% to 100%.

Write orders so that the nurse can titrate.

DON'T FORGET

Using opioids with the intent to, and in doses meant to control symptoms is ethically appropriate.

Document in your care note, your plan to assess and treat pain, dyspnea, and agitation.

CHANGE THE OPIOID ONLY IF MYOCLONUS, ITCHING OR DELIRIUM DEVELOPS WITH HIGH DOSING.
(***CONCURRENTLY USING MULTIPLE OPIOIDS IS NOT RECOMMENDED***)

DON'T HESITATE TO CALL FOR HELP or ALTERNATE AGENTS (pager #2288)

Opioid Rotation:

1) Calculate the equianalgesic dose:

Morphine 1mg =

Hydromorphone 0.15 mg =

Fentanyl 10 micrograms

2) Start the infusion at 50% of the calculated equivalent.

3) Reassess!

Example: morphine is at 12 mg/kg/hour and myoclonus develops. Equivalent hydromorphone is 1.8 mg/kg/hr, decrease initial rate by 50%: 0.9mg/kg/hr.

REASSESS IN 10 MINUTES AND INCREASE AS ABOVE

Approach to ICU Withdrawal

Type of Intervention	Mode of Death	Appropriate for...	Advantages	Disadvantages	Don't forget...
Non-Escalation of Life-Prolonging Therapies	Progression or culmination of underlying disease – usually respiratory or hemodynamic compromise	Patient with terminal progressive disease whose family is uncomfortable withdrawing any life-prolonging therapies	This appropriately allows family to recognize dying as a consequence of disease progression beyond their control.	Can prolong suffering; this method often decreases control over exactly when and how death will occur.	Some families cannot say no to any offered therapy and depend on clinical teams to not offer or not escalate some therapies.
Discontinue Dialysis (HD/PD/CRRT)	<ul style="list-style-type: none">AcidosisElectrolyte disturbanceUremiaFluid overloadArrhythmiaCardiac arrest	Patient who is not on other forms of life support or whose other forms of life support are being discontinued	<ul style="list-style-type: none">Allows for renal disease to progress to a terminal condition in near term (hours to days)De-medicalizes careUremia can increase sedation	<ul style="list-style-type: none">Can be slow to progress (days) thereby can prolong sufferingDeath can be quick (high K) or prolonged (uremia/fluid overload)Fluid overload can be distressing	If a patient on CRRT has not recovered renal function by approximately 3 months and is not a PD or transplant candidate, some medical services would decline to offer further CRRT.
Discontinue Hemodynamic Support (Inotropes, Vasopressors, VA ECMO)	Hypotension progressing to acidosis, shock, and coma	Patient on significant hemodynamic support	<ul style="list-style-type: none">Hypotension can cause significant sedation, making patients more comfortable.Patients weaning from very high cardiac support will have a rapid death.	For patients on only moderate support, cessation may not achieve much sedation and may not culminate in death for hours to days. Also, it can precipitate ischemic or CHF symptoms.	If several supports are withdrawn, it is usually preferable to start with hemodynamic support as hypotension is typically sedating and does not cause overt symptoms.
Compassionate Extubation	Hypoxia , hypercarbia, acidosis with secondary hemodynamic collapse	Patient with multi-organ failure, especially if CNS is minimally intact	<ul style="list-style-type: none">De-medicalizes careDeath will be rapid if lung disease is severe	Prompt extubation can result in secretions, obstruction, and acute air hunger that requires prompt response and rapid titration of therapies, especially in the patient with intact CNS.	***Important to stop paralytics first in most cases*** Premedication is helpful to alleviate symptoms.
Stepwise Ventilator Wean Before Compassionate Extubation	Controlled and gradual hypoxia, hypercarbia, and acidosis with secondary hemodynamic collapse	<ul style="list-style-type: none">Patient with irreversible pulmonary diseasePatient with intact CNS not on pressors	<ul style="list-style-type: none">Hypoxia, hypercarbia, and acidosis progress more gradually.Comfort meds can be titrated step-wise.Extubation may be better tolerated.	<ul style="list-style-type: none">Can prolong suffering with a high level of technological support and equipmentCan be challenging for some families to see life support	Achieving a comfortable death in the neurologically and hemodynamically intact patient with bad pulmonary disease is particularly challenging. <i>Symptoms AND family support will require constant attention.</i>

Approach to ICU Withdrawal – continued