Poisoning/Overdose #1

Call Poison Control (1-800-222-1222) to receive medical guidance on patient care and to ensure information on the toxin can be sent to the receiving ED prior to patient arrival. For decontamination/hazardous materials exposure, see ***/Grey ***

EMT
1. Administer O₂ as appropriate
2. Manage airway as needed refer to Blue 3
3. Request ALS
4. If respirations less than 12/minute AND narcotic overdose

***NEVER GIVE NALOXONE TO A NEONATE***

a. ADULTS and PEDIATRIC patients: naloxone 0.5 mg IN. Titrate to effect by providing 0.5 mg in one nostril.
   i. The beneficial outcome is effective oxygenation and ventilation with one important parameter being a respiratory rate of greater than 12 breaths/minute. Continue to manage the airway while assessing for effect.
   ii. If the patient remains apneic or continues to have ineffective oxygenation and ventilation in 2-5 minutes after provision of the first dose of naloxone, provide a second dose of naloxone 0.5 mg in the other nostril.
   iii. Repeat 0.5 mg of naloxone IN every 2-5 minutes in alternating nostrils.

b. EMRs and EMTs may use IN or IM naloxone via auto-injector at a dose available per commercially packaged product. Repeat dose (in opposite nostril if using IN route) if no response in 2-5 minutes. Lower dose strategies that allow titration of effect are preferred whenever possible.

c. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as prolonged release opioids, buprenorphine or methadone may require doses greater than 4 mg.

5. For suspected cyanide or CO poisoning, see ***protocol, Yellow ***

6. For hypoglycemia, see *** protocol, Gold ***

7. For seizures, see *** protocol, Gold ***

ADVANCED EMT/PARAMEDIC

8. Establish IV access

9. Alternate naloxone route of administration
   a. Naloxone 0.1 - 2 mg IV/IO/IM; titrate to improved respiratory drive
   b. In Pediatric Patients: 0.1 mg/kg naloxone if less than 20 kg; 0.1 - 2 mg IV/IO/IM if greater than 20 kg or 5 years or older; titrate to to improved respiratory

10. Cardiac Monitor
11. If patient is hypotensive, administer a fluid bolus
12. Obtain ECG

PARAMEDIC

13. Ingested Poison: the role of charcoal in EMS is of limited value and should be provided ONLY under OLMC guidance. Contact OLMC to consider:
   a. Activated charcoal without sorbitol 1 gram/kg PO
   b. Do NOT provide charcoal under the following circumstances:
      i. Ingested caustic substance
      ii. Hydrocarbons
      iii. Seizures
      iv. Patient is unable to swallow/protect airway
11. For absorbed toxins resulting in pain, see *** protocol, Green *** or analgesic for eye pain, see Ophthalmology protocol, Green ***

12. Suggested Treatments
   a. Symptomatic beta- or calcium channel blocker overdose, see *** protocol, Red ***
   b. Dystonic reaction:
      i. Adult: Diphenhydramine 25 - 50 mg IV/IM
      ii. Pediatric: 1-2 mg/kg IV/IM (max dose 50 mg)
   c. Organophosphates
   d. Severe agitation
   e. Tricyclic Antidepressant with either hemodynamic instability or widened QRS Complex (> 120 msec)
      i. Administer sodium bicarbonate 1 mEq/kg IV. May repeat as needed with goal of QRS complex less than 120 msec
      ii. Contact OLMC if further direction needed for conditions such as arrhythmia

PEARLS
- If possible, bring container/bottles, MSDS sheets, placard info, shipping manifest, and/or contents and note the following:
  - Route, time, quantity and substance(s)
  - Reason if known: intentional or accidental
  - What treatments were provided prior to your arrival
- Pulse oximetry may NOT be accurate for toxic inhalation patients

For management of opioid overdose:
- Recall, the patient suffering from opiate overdose requires immediate oxygenation and ventilation. This should be the priority for these patients and is accomplished by airway management. Naloxone may be applied, but only after initiation of airway management practices.
- Naloxone should be titrated to adequate respiratory drive and airway protection rather than a completely awakened state.
- Patients receiving naloxone should be transported to the hospital. Contact OLMC for patients refusing transport.

For tricyclic antidepressant toxicity:
- Sodium bicarbonate increases extracellular sodium, thereby overcoming sodium channel blockade of the tricyclic antidepressant. This effect is transient and may be difficult to notice at first. Some patients may need repeated doses of sodium bicarbonate to fully correct QRS duration (under 120 msec). If no change to the QRS occurs, please repeat immediately. While some patients may require additional doses of sodium bicarbonate, this should not delay transport. Consider the importance of alerting OLMC.
Call Poison Control (1-800-222-1222) to receive medical guidance on patient care and to ensure information on the toxin can be sent to the receiving ED prior to patient arrival.

This protocol refers to toxins that are:
- Ingested
- Inhaled
- Absorbed
- Injected (envenomation)

This protocol refers to toxins that cause:
- Systemic effects
- Local effects
- Both systemic and local effects

I. GENERAL ASSESSMENT
   - **What:** Identify specific toxin and amount of exposure. If possible, bring pill bottles, MSDS sheets, placard info, shipping manifest, etc.
   - **When:** Identify time of exposure
   - **Why:** Identify reason for exposure

In many cases, all vital information obtainable from the scene is available ONLY to EMS providers. This is essential information to pass on to downstream providers.

II. INITIAL ASSESSMENT
   - **EMT**
     1. Scene-Safety: protect rescuers and patients from immediate danger and contamination. Toxic exposures might require special precautions, including HAZMAT precautions, before patient treatment begins
     2. O₂ as appropriate
     3. Manage airway as necessary, refer to **Blue 3** and **Blue 5**
     4. Consider local measures for treatment
     5. Request ALS

   - **ADVANCED-EMT/PARAMEDIC**
     6. If patient is hypotensive, initiate IV en-route and perform fluid bolus
III. SPECIFIC TREATMENTS TO REMOVE AND DILUTE TOXINS

Initiate measures to remove and dilute toxin

For INGESTED Toxins

EMT
1. \( \text{O}_2 \) as appropriate
2. Manage airway as necessary per Blue 3 or Blue 5
3. Consider local measures for treatment

ADVANCED EMT
4. If patient is hypotensive—IV en route—perform fluid bolus

PARAMEDIC
5. The role of charcoal in EMS is of limited value and should be provided ONLY under OLMC guidance. Contact OLMC to consider:
   a. Activated charcoal without sorbitol 1 g/kg PO
   b. Do not provide charcoal under the following circumstances:
      i. Ingestion of caustic substance
      ii. Hydrocarbons
      iii. Seizures
      iv. Patient is unable to swallow/protect airway
Toxins #3

For INHALED Toxins

EMT/Advanced EMT/Paramedic
1. Remove the patient from exposure site
2. Deliver 100% oxygen if possible
3. Manage airway as necessary per Blue 3 or Blue 5

For Absorbed Toxins

EMT/ADVANCED EMT
1. Brush off all solid material
2. Flush skin vigorously and continuously with water
3. Flush eyes continuously with water, saline, or Lactated Ringers

PARAMEDIC
4. Consider pain medication, refer to Adult Universal Pain Management—protocol, Green 17, Pediatric Universal Pain Management protocol, Pink 3, or analgesic for eye pain see Ophthalmology protocol, Yellow 11

For INJECTED Toxins

There is no effective method of removing/diluting toxins that have already been injected through. Avoid further exposure to injected toxins.
Antidotes for Specific Toxins:
Tricyclic Antidepressant Overdose

Some examples of tricyclic antidepressants include: amitriptyline, desipramine, doxepin, imipramine, nortriptyline, notify OLMC

**EMT**
1. O₂ as appropriate
2. Manage airway as needed, refer to Blue 3 or Blue 5
3. Request ALS

**ADVANCED EMT**
4. Initiate IV
5. Perform fluid bolus if hypotensive
6. Obtain ECG

**PARAMEDIC**
In patients with known tricyclic overdose, and either hemodynamic instability or widened QRS complex:

7. Administer sodium bicarbonate 1 mEq/kg IV. May repeat as needed with goal of QRS Complex less than 120 msec

8. Contact OLMC if further direction needed for conditions such as arrhythmia

**PEARLS for Tricyclic Antidepressant Toxicity:**

Sodium bicarbonate increases extracellular sodium, thereby overcoming sodium channel blockade of the tricyclic antidepressant. This effect is transient and may be difficult to notice at first. Some patients may need repeated doses of sodium bicarbonate to fully correct QRS duration.
**Antidotes for Specific Toxins:**

**Opiate Overdose**

**NEVER GIVE NALOXONE TO A NEONATE**

**EMT**
1. Administer O₂ as appropriate
2. Manage airway as needed refer to Blue 3 or Blue 5
3. Request ALS if available
4. If respirations less than 12/minute AND narcotic overdose suspected:
   a. Adults and Pediatric patients: naloxone 0.5 mg IN. Titrate to effect by providing 0.5 mg in one nostril. The beneficial outcome is effective oxygenation and ventilation with one important parameter being a respiratory rate of greater than 12 breaths/minute. Continue to manage the airway while assessing for effect. If the patient remains apneic or continues to have ineffective oxygenation and ventilation in 2-5 minutes after provision of the first dose of naloxone, provide a second dose of naloxone 0.5 mg in the other nostril. Repeat 0.5 mg of naloxone every 2-5 minutes in alternating nostrils.
   b. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as prolonged release opioids, buprenorphine or methadone may require doses greater than 4 mg.

**ADVANCED EMT/PARAMEDIC**
5. Establish IV access as needed
6. Alternate naloxone route of administration:
   a. Naloxone 0.1 – 2 mg IV/IO/IM; titrate to improved respiratory drive
   b. In Pediatric Patients: 0.1 mg/kg naloxone if less than 20 kg - 0.1 – 2 mg IV/IO/IM if greater than 20 kg or 5 years or older; titrate to to improved respiratory drive
   c. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as prolonged release opioids, buprenorphine or methadone may require doses greater than 4 mg.
   d. Cardiac monitor

**PEAALLS for Management of Opioid Overdose:**

*Recall, the patient suffering from opiate overdose requires immediate oxygenation and ventilation. This should be the priority for these patients and is accomplished by airway management. Naloxone may be applied, but only after initiation of airway management practices.*

*Naloxone should be titrated to adequate respiratory drive and airway protection rather than a completely awakened state.*

*Patients receiving naloxone should be transported at the hospital. Contact OLMC for patients refusing transport.*
Antidotes for Specific Toxins: Nerve Agent/Organophosphate/Carbamate Poisoning

PEARLS:
WARNING: CONTACT WITH THESE TOXINS CAN BE FATAL TO RESCUERS. CONSIDER SCENE SAFETY AND DECONTAMINATION

- Assess for SLUDGEM (Salivation, Lacrimation, Urination, Defecation, GI Distress, Emesis, Muscle twitching/Miosis [constricted pupils] and the Killer-Bs (Bradycardia, Bronchorrhea, Bronchospasm)
- If you suspect a bioterrorism/WMD threat, see Grey 21

In unstable patients with known organophosphate/carbamate poisoning:

EMT
1. Remove patient from contaminated area and consider decontamination as needed based on scene/call circumstances
2. O₂ as appropriate
3. Manage airway as appropriate, see to Blue 3
   *Ventilatory support can be critical in these poisonings, or Blue 5*
4. Vigorous suctioning may be necessary
5. Request ALS
6. Mark 1 kit (noted as auto-injector in table below)

ADVANCED EMT
7. IV en route
8. Cardiac monitor
9. In all cases, continue to monitor closely for worsening symptoms

PARAMEDIC
10. May administer atropine IM without auto-injector as noted in table below
11. If seizures are present, refer to Adult or Pediatric Seizure Protocol, Gold *** or Pink 6:

   12. Contact OLMC for options
       a. Repeat dose, as necessary, every 5 minutes
       b. Administer other selected antidotes

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Dyspnea, twitching, nausea, vomiting, sweating, confusion, or pinpoint pupils</th>
<th>Apnea, seizure, unconsciousness, or flaccid paralysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>1 atropine auto-injector IM or 2 mg IM</td>
<td>3 atropine auto-injectors IM or 6 mg IM</td>
</tr>
<tr>
<td>Pediatric &lt; 1 year old</td>
<td>1 pediatric atropine auto-injector IM or 0.5 mg IM</td>
<td></td>
</tr>
<tr>
<td>Pediatric 1 year or older</td>
<td>1 adult atropine auto-injector IM or 2 mg IM</td>
<td></td>
</tr>
</tbody>
</table>
## Hypothermia #1

<table>
<thead>
<tr>
<th>Classification</th>
<th>Core Temp</th>
<th>Clinical Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&gt;95°F / 35°C</td>
<td>Cold sensation/shivering</td>
</tr>
<tr>
<td>Mild</td>
<td>90 - 95°F / 32 - 35°C</td>
<td>Loss of fine or gross motor skills inability to complete simple thoughts</td>
</tr>
<tr>
<td>Moderate</td>
<td>82 - 90°F / 28 - 32°C</td>
<td>(&lt;= 90°F/32°C: Shivering stops &lt;=86°F/30°C: AMS</td>
</tr>
<tr>
<td>Severe</td>
<td>(&lt;= 82°F &amp; &lt;= 28°C &amp; &lt;= 77°F &amp; &lt; = 24°C</td>
<td>Rigidity, vital signs reduced/absent. Severe risk of V-fib with mechanical simulation (rough handling)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spontaneous V-fib cardiac arrest</td>
</tr>
</tbody>
</table>

**Bold** indicates major thresholds between stages  
Adapted from "State of Alaska Cold Injuries Guidelines" 2014

### Treatment

**SEVERE HYPOTHERMIA WITH SIGNS OF LIFE/NOT IN CARDIAC ARREST:**

**EMT**

1. Prevent further heat loss by insulating from the ground and shielding from wind and water. Move to a warm environment when possible. Gently remove wet clothing. Cover with warm blankets
2. Pack thorax with wrapped heat pack
3. Consider warmed AND humidified 100% O₂
4. High sugar oral fluids if tolerated and (only in mild hypothermia)
5. Handle gently. Avoid rough movement and excess activity
6. Maintain supine position in moderate or severe hypothermia

**ADVANCED EMT/ PARAMEDIC**

7. Consider one to two 500 mL (20 mL/kg for pediatrics) boluses of NS heated to 104 - 108°F (40 - 42°C)

8. Contact OLMC for additional boluses
Hypothermia #2

SEVERE HYPOTHERMIA WITHOUT SIGNS OF LIFE

Note: Assess for pulse and respirations for 1 minute

Note: Definitive treatment for severe hypothermia without signs of life is rearming with cardiopulmonary bypass. Do not delay transport of these patients. Do not initiate CPR if it will delay transport.

*Do not initiate resuscitation if the patient meets any of the criteria of “Grey 1 Section II.A” OR Rescuers are exhausted or in a dangerous situation. These patients are deceased.*

**EMT**
1. Initiate CPR after 1 minute pulse/respiration assessment
2. Attach AED and follow prompts.
3. Rewarm using techniques as listed under Treatment: Not in Cardiac Arrest (above)
4. If no ROSC after 20 minutes of CPR/rewarming, consider termination of resuscitation. Contact OLMC if possible

**ADVANCED EMT/PARAMEDIC**
5. Consider one to two 500 mL (20 mL/ kg for pediatrics) boluses of NS heated to 104 - 108°F (40 - 42°C)

6. Contact OLMC for additional boluses

7. Otherwise treat as per normothermic cardiac arrest management for the patient’s dysrhythmia, refer to Cardiac Arrest protocol, **Red 8**

**PEARL**

- Do not massage extremities in attempt to actively re-warm the patient
HEAT EXHAUSTION — Volume depletion due to sweat loss

ASSESSMENT:
If core temperature is obtained, it will be variable, but always below 105° F (40.6° C).
Clinical pattern is essentially that of compensated hypovolemic shock:
• Weakness and vomiting
• Skin is variable. Core shell shunt to increase heat loss competes with shell core shunt to protect volume. Skin is usually pale and moist with variable skin temperature
• Sweating
• Normal consciousness and CNS function

TREATMENT: Goal is to reduce sweating and to restore volume

EMT
1. Protect the patient from heat challenge. Stop exercise and put patient at rest in a cool, shady place
2. Use evaporation techniques and remove/loosen as much clothing as practical
3. Oral fluids can be effective if the patient is not vomiting. Use dilute (less than 5% sugar) fluids given in small sips. Appropriate fluids to use include the World Health Organization’s Oral Rehydration Solution OR a “homemade” solution using 1 teaspoon of salt and 8 teaspoons of sugar per 1 liter of water

ADVANCED EMT / PARAMEDIC
4. Establish IV
5. Perform fluid bolus
Hyperthermia - Heat Stroke

HEAT STROKE — A true medical emergency that requires radical field treatment, usually, but not always, associated with heat exhaustion. Heat stroke is characterized by multisystem organ injury and failure. CNS dysfunction characterized by alterations in mental status is a hallmark distinguishing between heat exhaustion and heat stroke.

ASSESSMENT:
If core temperature is obtained it is 105° F (40.6° C) or greater. Abnormal consciousness and/or CNS function; seizures are common. Any acute change in consciousness/CNS function in the context of a significant heat challenge should be managed as heat stroke without delay. Skin and sweating are variable, depending on volume status. Note that red, dry skin is not a dependable sign of heat stroke.

TREATMENT:
Immediate radical cooling is the urgent priority, followed by volume replacement.

EMT
1. Cool the patient immediately by any means practical, such as:
   a. Initiate Radical Cooling (especially beneficial for exertional hyperthermia, i.e. athletes, laborers) which includes:
      i. Immerse patient up to their neck in cold water ice water tub. Patient should be on cardiac monitor if possible (AEMT).
      ii. TACO Method (Tarp-assisted Cooling with Oscillation) with 4-5 people holding the patient in a tarp, add ice water at foot and up to the neck and continuously oscillate the tarp to avoid warming of water in contact with the patient. Patient should be on cardiac monitor, if possible.
   b. Also consider non-radical cooling which includes: ice packs applied to neck, axillae, groin, back; wet patient, apply cold wet sheets to patient, and air conditioning en route
   c. Consider moistening the skin and fan vigorously. This method is effective only at low ambient humidity and a large electric fan is more beneficial than manual fanning.
2. Discontinue radical cooling if:
   a. Shivering begins
   b. Core temperature falls to 102° F (38.8° C).

ADVANCED EMT / PARAMEDIC
3. Establish IV
4. Cardiac Monitor
5. Perform fluid bolus

Pearl
If at a sporting or athletic event, it is important to discuss the cooling plan with other on scene providers, i.e. sports medicine providers or athletic trainers prior to the start of the event to assure that necessary equipment is available.
EMT

1. Maintain crew safety; ask for law enforcement assistance if available
2. Attempt verbal de-escalation using direct, empathetic and calm voice. Present clear limits and options. Respect the patient’s personal space. Avoid direct eye contact and assume a non-confrontational posture
3. If altered mental status, check oxygen saturation and perform finger stick blood glucose, if so trained

ADVANCED EMT

4. If blood glucose is less than 60 mg/dL, refer to Adult Diabetic/Hypoglycemic Emergencies protocol, Gold 6

PARAMEDIC

5. Perform the Altered Mental Status Scale:

<table>
<thead>
<tr>
<th>Score</th>
<th>Responsiveness</th>
<th>Speech</th>
<th>Facial Expression</th>
<th>Eyes</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative, very violent, out of control</td>
<td>Loud Outbursts</td>
<td>Agitated</td>
<td>Normal</td>
</tr>
<tr>
<td>-3</td>
<td>Very anxious, agitated, mild physical element of violence</td>
<td>Loud Outbursts</td>
<td>Agitated</td>
<td>Normal</td>
</tr>
<tr>
<td>+2</td>
<td>Anxious, agitated</td>
<td>Loud Outbursts</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>+1</td>
<td>Anxious, agitated</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>0</td>
<td>Responds to name in normal tone</td>
<td>Normal</td>
<td>Normal</td>
<td>Clear, no ptosis</td>
</tr>
<tr>
<td>-1</td>
<td>Lethargic response to name</td>
<td>Mild slowing or thickening</td>
<td>Mild Relaxation</td>
<td>Glazed or mild ptosis (&lt; half eye)</td>
</tr>
<tr>
<td>-2</td>
<td>Responds only if name is called loudly</td>
<td>Slurring or prominent slowing</td>
<td>Mild Relaxation (Slacked Jaw)</td>
<td>Glazed or marked ptosis (&lt; half eye)</td>
</tr>
<tr>
<td>-3</td>
<td>Responds only after mild prodding</td>
<td>Few Recognizable Words</td>
<td>Mild Relaxation (Slacked Jaw)</td>
<td>Glazed or marked ptosis (&lt; half eye)</td>
</tr>
<tr>
<td>-4</td>
<td>Does not respond to mild prodding or shaking</td>
<td>Few Recognizable Words</td>
<td>Mild Relaxation (Slacked Jaw)</td>
<td>Glazed or marked ptosis (&lt; half eye)</td>
</tr>
</tbody>
</table>

**Procedure for AMSS Assessment**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Observe the patient - if alert, restless, agitated or combative</td>
<td>0 to + 4</td>
</tr>
<tr>
<td>2. Say the patient’s name in a gentle tone of voice and ask patient to open eyes</td>
<td>-1</td>
</tr>
<tr>
<td>3. If no response to voice, continue with routine EMS</td>
<td>-2 to -4</td>
</tr>
</tbody>
</table>
Agitation/Excited Delirium #2

PARAMEDIC

7. If Altered Mental Status Score +1, +2 or +3, consider midazolam 4-10 mg IM for patient/EMS provider safety and patient comfort. First dose should be based on patient’s size, age, and the circumstances causing agitation.

8. If Altered Mental Status Score +4, consider either:
   * Midazolam 4-10 mg IM for patient/EMS provider safety and patient comfort. First dose should be based on patient’s size, age, and the circumstances causing agitation
   
   OR

   * Contact OLMC for Ketamine 2 mg IV or 4 mg/kg IM. If suspected or known alcohol or sedatives present, consider half dose to minimize respiratory depression.
     Ketamine may not be used in patients greater than 65 years old

9. Monitor and document the following every 5 minutes - ECG, O₂ sat, ETCO₂, AMSS, and vital signs

10. Contact OLMC for dosing questions or if patient requires repeat dosing.

Pearls for Agitation/Excited Delirium

Agitation - is defined by excessive, purposeless cognitive and motor activity or restlessness, usually associated with a state of tension or anxiety

Excited Delirium - is a sub-category of agitation, with a potential for higher mortality and morbidity. It can be defined by a patient presenting with the following constellation of symptoms (based on the 2009 ACEP White Paper) with frequency in parenthesis:
   * Exceptional/abnormal pain tolerance (100%)
   * Tachypnea (100%)
   * Tactile hyperthermia (95%)
   * Unusual strength (90%)
   * Police Noncompliance (90%)
   * Lack of tiring against restraint (90%)
   * Inappropriate clothing for environmental temperature (70%)
   * Violent and paranoid behavior
   * Rapid development of symptoms
   * Rapidly and fluctuating periods of calm and then delirium

These symptoms may be caused by a number of intoxicants, including, but not limited to alcohol, sympathomimetics (cocaine, methamphetamine, MDMA), and dissociative agents (PCP, LSD, dextromethorphan, K2/Spice, Bath Salts, DMT, etc). Early contact of OLMC is essential for proper preparation of the receiving facility and staff.
Agitation/Excited Delirium #3

Pearls for Midazolam/Ketamine

Midazolam
- Patients with underlying medical conditions (including COPD/CHF/CAD) as well as patients older than 60 are more likely to suffer adverse effects from midazolam. Consider lower doses in this population.
- **WARNING**: May cause respiratory depression, arrest, or apnea.
- Assess patients for signs and symptoms of respiratory depression and sedation.
- Administration: **IM** - Administer undiluted deep IM into large muscle.
- Administration: **IV** - Do not administer intra-arterially. Administer by slow IV injection over at least 2 minutes using a concentration of 1 mg/mL or a dilution of the 1 or 5 mg/mL concentrations.
- Concomitant use with opioids: **[US Boxed Warning]**: Concomitant use of benzodiazepines and opioids may result in profound sedation, respiratory depression, coma, and death.

Ketamine
- Document the patient’s Altered Mental Status Score (AMSS) in the run report.
- Patients with an AMSS less than 4 are more likely to require airway management.
- Maine EMS Services will be stocking the 100 mg/mL concentration to accommodate the wide dose ranges in the protocol. This is to avoid carrying two very different concentrations and risk a serious dose error.
- **WARNING**: Overdose may lead to panic attacks and aggressive behavior; rarely seizures, increased ICP, and cardiac arrest. Very similar in chemical makeup to PCP (phencyclidine), but it is shorter acting and less toxic.
- Administration: **IM** - Inject deep IM into large muscle mass.
- Administration: **IV** - According to the manufacturer, administer bolus/induction doses over 1 minute or at a rate of 0.5 mg/kg/minute; more rapid administration may result in respiratory depression and enhanced pressor response. Some experts suggest administration over 2 to 3 minutes (Miller 2010).
- **The 100 mg/mL concentration should not be administered IV unless properly diluted with an equal volume of Sterile Water for Injection, NS, or D5W.**
Known or Suspected Cyanide/CO Exposure #1

Don appropriate PPE if necessary, assess patient after evacuation
***Remove patient from source of smoke/inhalation***

Assessment
Vital Signs
Evidence of Major Trauma
Major Burns, Inhalation Injury,
Check Finger CO if Possible

Proceed to Appropriate Trauma or Airway Management Protocol

Severity of Exposure Definitions (CO, CN, or Combined)

**Mild Exposure**
- Transient neuro changes
- GCS 14 or 15
- No cardiovascular symptoms

- Do Step 1

**Moderate Exposure**
- Ongoing neuro changes
- Severe confusion
- GCS 8-13
- +/- Hypotension
- +/- Chest Pain/SOB

- Do Step 1 and 2
- Report CO levels greater than 10%
- Paramedic: If antidote considered, contact OLMC

**Severe Exposure**
- Coma
- Severe confusion
- GCS < 8
- +/- Hypotension
- Apnea

- Do Step 1, 2, and 3

Treatments

**Step 1**
EMT/AEMT/P
1) Administer high flow O₂
2) Pulse Ox may be inaccurate in exposure to CO/CN or methemoglobinemia

AEMT/P
3) Monitor rhythm

**Step 2**
AEMT/P
1) Mange Airway as appropriate
2) Collect rainbow blood sample tubes per local protocol
3) If hypotensive, administer IV bolus, may repeat x 1
4) 12-lead ECG

**Step 3**
Paramedic
In case of CN toxicity, either alone or in combination with CO exposure:
1) Adult: Cyanokit - 5 g IV. May repeat x 1 for partial response
2) Peds: Cyanokit - 70 mg/kg IV, 2.5 g for weight less than 30 kg
PEARLS for CO/Cyanide Exposure:

- Finger CO monitors may not accurately detect CO level and should not be relied upon to guide treatment or alter transport decision.

- There is no correlation between CO (Carboxyhemoglobin) level and ETCO2 (waveform capnography)

- Carbon monoxide (CO) and Hydrogen cyanide (HCN) gases are chemical asphyxiants that can kill rapidly. Carbon monoxide is odorless. Only 40% are able to detect the almond smell of CN. Cyanide is generated by combustion of synthetic materials present in many structural fires.

- Appropriate PPE includes self-provided air/oxygen source (i.e. SCBA). Scene safety is the top priority. No patient decontamination is required for victims evacuated from CN gas exposure.

- It is rare for viable CO exposed patients to have persistent unconsciousness requiring intubation.

- Sources of CN: Structural fire (HCN), industrial cyanide salts*, unripe cassava, apricot pits, laetrile, etc.

- If injuries incompatible with life, DO NOT GIVE ANTIDOTE.

*may persist on skin, however water decontamination may liberate HCN gas.
Drowning/Submersion Injuries
Adult and Pediatric

EMT
1. If C-spine injury suspected, stabilize C-spine
2. Obtain specific history including time, temperature, associated injury, etc.
3. Begin resuscitation efforts while removing patient from the water (e.g. rescue breaths) - follow ABC (rather than CAB) flow of resuscitation.
4. Consider hypothermia, refer to Hypothermia protocol, Yellow 7
5. Remove wet clothes and warm the patient
6. Conscious patients with submersion injuries should be transported hospital for further evaluation
7. If water temperature is estimated to be less than 43° F and submerged
   a. Less than 90 minutes - initiate full resuscitation
   b. Greater than 90 minutes - consider not initiating resuscitation or termination of resuscitation
8. If water temperature is estimated to be greater than 43° F and submerged
   a. Less than 30 minutes - initiate full resuscitation
   b. Greater than 30 minutes - consider not initiating resuscitation or termination of resuscitation

ADVANCED EMT/PARAMEDIC
9. Consider CPAP to supplement the patient’s own respiratory effort
10. Reassure anxious patients
11. If near drowning incident involves scuba diver, suggesting barotrauma, contact OLMC and consider hyperbaric treatment facility

PEARLS for Drowning:

• Fresh and salt water drowning are treated the same in the field; treatment must be directed toward correcting severe hypoxia.

• Factors affecting survival include the patient’s age, length of time submerged, general health of the victim, type and cleanliness of liquid medium and water temperature that may contribute to the effectiveness of the mammalian diving reflex (decreased respirations, decreased heart rate, and vasoconstriction, with maintenance of blood flow to the brain, heart and kidneys).

• All drowning/near drowning victims with suspected barotrauma/decompression sickness should be transported in the left lateral Trendelenburg position to prevent any emboli in the ventricles from migrating to the arterial system.

• Even patients that are conscious and appear well after a submersion event require hospital level evaluation and observation as they may develop delayed symptoms.

EMS personnel are authorized under Maine Law as physician extenders to physically restrain any patient who poses a threat to themselves or others. Providers are cautioned to use physical restraint as a last resort, preferably with the assistance of local law enforcement. Once the decision is made to restrain a patient, the patient should remain restrained until arrival at the emergency department, unless it interferes with the delivery of medical care. Only commercially available soft restraints are approved for use by Maine EMS.

EMT/AEMT

1. Request law enforcement assistance
2. Request ALS
3. Attempt de-escalation techniques (speak in an honest, non-confrontational tone while avoiding eye contact)
4. Have appropriate personnel available prior to initiating restraints
5. Restrain patients in a lateral or supine position. NEVER leave patients restrained in a prone position. NEVER restrain a patient’s hands and feet behind them (hog-tying). All applied restraints must be easy to remove should a medical emergency occur.
6. Never place objects on top of patients to restrain them.
7. Restrained patients require 1:1 observation by EMS personnel and require continuous cardiac, pulse oximetry and waveform capnography monitoring, if able to do so.
8. Documentation: Type of restraints used, how restraints applied, when restraints applied, why restraints applied (patient’s behavior and mental status), the agency and individual that applied the restraints, frequent vital signs and CSM checks, education provided to patient and time OLMC notified.
9. Restraint devices applied by law enforcement require an officer’s continued presence to ensure patient safety and allow for quick removal, if necessary. Law enforcement should accompany the patient in the ambulance.
10. Restrained patients should not be moved in a stair chair device as violent patients cannot properly be restrained in a stair chair and EMS personnel may be easily thrown off-balance by a resisting patient.
10. Restrained patients should be transported to the nearest emergency department that can safely accept the patient.

PARAMEDIC

11. Refer to Yellow 12, Agitation/Excited Delirium Protocol
1. Ensure the scene is safe and request law enforcement for patients actively threatening/attempting suicide
2. Assess the patient for need of medical treatment and follow appropriate protocol
3. Establish rapport with the patient by listening carefully and speaking in a non-confrontational manner.
4. Assess the patient
   a. Has a suicide attempt been made? If yes, request ALS
   b. SAD PERSONS Scale (report score to receiving hospital)
      1 point for each of the following
      Sex: male
      Age <20 or >44
      Depression
      Previous suicide attempt
      Ethanol abuse
      Rational thinking loss
      Social supports lacking
      Organized suicide plan
      No spouse (divorced, widowed, single)
      Sickness (chronic, debilitating, or severe)
   c. Columbia Suicide Screening (if possible, discuss the following questions with the patient):
      i. Have you wished you were dead or wished you could go to sleep and not wake up?
      ii. Have you been thinking about how you might kill yourself?
      iii. Have you taken any steps towards making a suicide attempt or preparing to kill yourself (such as collecting pills, getting a gun, giving valuables away or writing a suicide note)?
5. Provide constant, 1:1 supervision for the patient
6. Collect items such as toxic substances, alcohol, drugs and medications that may have been taken and transport with patient to the hospital
7. Provide support for family and friends who are present.
8. Obtain information from family and friends and inform them about what will occur next. Obtain their contact information to provide the hospital should they have any questions.
9. Transport the patient to the closest facility that can meet their medical and psychiatric needs

Refer to Grey ___16___ for Transport of Mentally Ill Patients Protocol
Refer to Yellow ___ for Restraint Protocol
Refer to Yellow ___ for Agitated/Excited Delirium Protocol

PEARL

A SAD PERSONS Score > 4 or a "yes" answer to any of the Columbia Suicide Screening questions may indicate that the patient requires psychiatric hospitalization. However, all patients presenting with a psychiatric emergency should be transported to the hospital for evaluation.
Radiation Injuries

EMT/AEMT
1. Ensure the scene is safe.
2. Don standard PPE capable of preventing skin exposure to liquids and solids (gown and gloves), mucous membrane exposure to liquids and particles (face mask and eye protection), and inhalational exposure to particles (N95 face mask or respirator).
3. Hazmat Trained Personnel to determine need for decontamination
4. For Mass Casualty Incidents (MCI), if vomiting occurs:
   a. Within 1 hour of exposure, survival is unlikely. If providing care to patient will compromise other patients, tag patient “Black”.
   b. Less than 4 hours after exposure, patient requires immediate decontamination and medical evaluation; tag patient “Red”.
   c. 4 hours after exposure, re-evaluation can be delayed 24-72 hours; tag patient “Yellow”.
5. Treat traumatic injuries per appropriate protocol (Green Section).
6. Use water-repellent dressings to cover wounds to prevent cross contamination.
7. Consider transport only after appropriate decontamination

PARAMEDIC
8. Consider anti-emetic per Nausea and Vomiting protocol, Yellow____. Document the time the GI symptoms started.
9. Consider pain management per Universal Pain Management Protocol, Green_____.
10. Treat seizures per seizure guideline, Gold_____. *consider a primary medical cause or exposure to possible chemical agents unless indicators for a large whole body radiation dose (> 20Gy), such as rapid onset of vomiting, are present.

Pearls
- In general, patients exposed or contaminated by radiation should be triaged and treated according to the severity of their conventional injuries.
- Patients contaminated with radioactive material (flecks embedded in clothing or skin), generally pose minimal exposure risk to medical personnel who use appropriate PPE.
- Irradiated patients pose no threat to medical providers.
- Time to nausea and vomiting is a reliable indicator of received dose of ionizing radiation. The more rapid the onset of vomiting, the higher the whole-body dose of radiation.
- Tissue burns are a late finding (weeks following exposure) of ionizing radiation injury. If burns are present acutely, they are from a thermal or chemical mechanism.
- Seizures may suggest acute radiation syndrome if accompanied by early vomiting, if other clinical indicators do not suggest a whole-body dose of greater than 20 Gy, consider other causes of seizure.
1. Ensure the scene is safe and request law enforcement for patients actively threatening/attempting suicide
2. Assess the patient for need of medical treatment and follow appropriate protocol
3. Establish rapport with the patient by listening carefully and speaking in a non-confrontational manner.
4. Assess the patient
   a. Has a suicide attempt been made? If yes, request ALS
   b. **SAD PERSONS** Scale (report score to receiving hospital)
      1 point for each of the following
      - Sex: male
      - Age <20 or >44
      - Depression
      - Previous suicide attempt
      - Ethanol abuse
      - Rational thinking loss
      - Social supports lacking
      - Organized suicide plan
      - No spouse (divorced, widowed, single)
      - Sickness (chronic, debilitating, or severe)
   c. Columbia Suicide Screening (**if possible, discuss the following questions with the patient**):
      i. Have you wished you were dead or wished you could go to sleep and not wake up?
      ii. Have you been thinking about how you might kill yourself?
      iii. Have you taken any steps towards making a suicide attempt or preparing to kill yourself (such as collecting pills, getting a gun, giving valuables away or writing a suicide note)?
5. Provide constant, 1:1 supervision for the patient
6. Collect items such as toxic substances, alcohol, drugs and medications that may have been taken and transport with patient to the hospital
7. Provide support for family and friends who are present.
8. Obtain information from family and friends and inform them about what will occur next. Obtain their contact information to provide the hospital should they have any questions.
9. Transport the patient to the closest facility that can meet their medical and psychiatric needs

Refer to **Grey ___16___ for Transport of Mentally Ill Patients Protocol**
Refer to **Yellow ____ for Restraint Protocol**
Refer to **Yellow ____ for Agitated/Excited Delirium Protocol**

**PEARL**

A **SAD PERSONS** Score > 4 or a "yes" answer to any of the Columbia Suicide Screening questions may indicate that the patient requires psychiatric hospitalization. However, all patients presenting with a psychiatric emergency should be transported to the hospital for evaluation.
Restraints

EMS personnel are authorized under Maine Law as physician extenders to physically restrain any patient who poses a threat to themselves or others. Providers are cautioned to use physical restraint as a last resort, preferably with the assistance of local law enforcement. Once the decision is made to restrain a patient, the patient should remain restrained until arrival at the emergency department, unless it interferes with the delivery of medical care. Only commercially available soft restraints are approved by Maine EMS.

EMT/AEMT

1. Request law enforcement assistance
2. Request ALS
3. Attempt de-escalation techniques (speak in an honest, non-confrontational tone while avoiding eye contact)
4. Have appropriate personnel available prior to initiating restraints
5. Restrain patients in a lateral or supine position. NEVER leave patients restrained in a prone position. NEVER restrain a patient’s hands and feet behind them (hog-tying). All applied restraints must be easy to remove should a medical emergency occur.
6. Never place objects on top of patients to restrain them.
7. Restrained patients require 1:1 observation by EMS personnel and require continuous cardiac, pulse oximetry and waveform capnography monitoring, if able to do so.
8. Contact OLMC as soon as logistically possible after securing the safety of the patient and providers.
9. Documentation: Type of restraints used, how restraints applied, when restraints applied, why restraints applied (patient’s behavior and mental status), the agency and individual that applied the restraints, frequent vital signs and CSM checks, education provided to patient and time OLMC notified.
10. Restraint devices applied by law enforcement require an officer’s continued presence to ensure patient safety and allow for quick removal, if necessary. Law enforcement should accompany the patient in the ambulance.
11. Restrained patients should not be moved in a stair chair device as violent patients cannot properly be restrained in a stair chair and EMS personnel may be easily thrown off-balance by a resisting patient.
10. Restrained patients should be transported to the nearest emergency department that can safely accept the patient.

PARAMEDIC

11. Refer to Yellow 12, Agitation/Excited Delirium Protocol
## EMT
1. Maintain crew safety; ask for law enforcement assistance if available
2. Attempt verbal de-escalation using direct, empathetic and calm voice. Present clear limits and options. Respect the patient’s personal space. Avoid direct eye contact and assume a non-confrontational posture
3. If altered mental status, check oxygen saturation and perform finger stick blood glucose, if so trained

## ADVANCED EMT
4. If blood glucose is less than 60 mg/dL, refer to Adult Diabetic/Hypoglycemic Emergencies protocol, **Gold 6**

## PARAMEDIC
5. Perform the Altered Mental Status Scale:

<table>
<thead>
<tr>
<th>Score</th>
<th>Responsiveness</th>
<th>Speech</th>
<th>Facial Expression</th>
<th>Eyes</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative, very violent, out of control</td>
<td>Loud Outbursts</td>
<td>Agitated</td>
<td>Normal</td>
</tr>
<tr>
<td>+3</td>
<td>Very anxious, agitated, mild physical element of violence</td>
<td>Loud Outbursts</td>
<td>Agitated</td>
<td>Normal</td>
</tr>
<tr>
<td>+2</td>
<td>Anxious, agitated</td>
<td>Loud Outbursts</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>+1</td>
<td>Anxious, agitated</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>0</td>
<td>Responds to name in normal tone</td>
<td>Normal</td>
<td>Normal</td>
<td>Clear, no ptosis</td>
</tr>
<tr>
<td>-1</td>
<td>Lethargic response to name</td>
<td>Mild slowing or thickening</td>
<td>Mild Relaxation</td>
<td>Glazed or mild ptosis (&lt;half eye)</td>
</tr>
<tr>
<td>-2</td>
<td>Responds only if name is called loudly</td>
<td>Slurring or prominent slowing</td>
<td>Mild Relaxation (Slacked Jaw)</td>
<td>Glazed or marked ptosis (&lt;half eye)</td>
</tr>
<tr>
<td>-3</td>
<td>Responds only after mild prodding</td>
<td>Few Recognizable Words</td>
<td>Mild Relaxation (Slacked Jaw)</td>
<td>Glazed or marked ptosis (&lt;half eye)</td>
</tr>
<tr>
<td>-4</td>
<td>Does not respond to mild prodding or shaking</td>
<td>Few Recognizable Words</td>
<td>Mild Relaxation (Slacked Jaw)</td>
<td>Glazed or marked ptosis (&lt;half eye)</td>
</tr>
</tbody>
</table>

### Procedure for AMSS Assessment

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Observe the patient - if alert, restless, agitated or combative</td>
<td>0 to +4</td>
</tr>
<tr>
<td>2. Say the patient’s name in a gentle tone of voice and ask patient to open eyes</td>
<td>-1</td>
</tr>
<tr>
<td>3. If no response to voice, continue with routine EMS</td>
<td>-2 to -4</td>
</tr>
</tbody>
</table>
**Agitation/Excited Delirium #2**

**PARAMEDIC**

7. If Altered Mental Status Score +1, +2 or +3, consider midazolam 4-10 mg IM for patient/EMS provider safety and patient comfort. First dose should be based on patient's size, age, and the circumstances causing agitation.

8. If Altered Mental Status Score +4, consider either:
   * Midazolam 4-10 mg IM for patient/EMS provider safety and patient comfort. First dose should be based on patient's size, age, and the circumstances causing agitation.

   **-OR-**

   * Contact OLMC for Ketamine 2 mg IV or 4 mg/kg IM. If suspected or known alcohol or sedatives present, consider half dose to minimize respiratory depression.

   Ketamine may not be used in patients greater than 65 years old.

9. Monitor and document the following every 5 minutes - ECG, O2 sat, ETCO2, AMSS, and vital signs.

10. Contact OLMC for dosing questions or if patient requires repeat dosing.

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**Pearls for Agitation/Excited Delirium**

**Agitation** - is defined by excessive, purposeless cognitive and motor activity or restlessness, usually associated with a state of tension or anxiety.

**Excited Delirium** - is a sub-category of agitation, with a potential for higher mortality and morbidity. It can be defined by a patient presenting with the following constellation of symptoms (based on the 2009 ACEP White Paper) with frequency in parenthesis:

- Exceptional/abnormal pain tolerance (100%)
- Tachypnea (100%)
- Tactile hyperthermia (95%)
- Unusual strength (90%)
- Police Noncompliance (90%)
- Lack of tiring against restraint (90%)
- Inappropriate clothing for environmental temperature (70%)
- Violent and paranoid behavior
- Rapid development of symptoms
- Rapidly and fluctuating periods of calm and then delirium

These symptoms may be caused by a number of intoxicants, including, but not limited to alcohol, sympathomimetics (cocaine, methamphetamine, MDMA), and dissociative agents (PCP, LSD, dextromethorphan, K2/Spice, Bath Salts, DMT, etc). Early contact of OLMC is essential for proper preparation of the receiving facility and staff.

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Discussion re: half dosing - discussion about pulling back from half dosing and keep this at 4 mg/kg BUT also reinforce that this is ONLY for agitated delirium patients.

ALSO - regional medical directors touch base with hospitals to ascertain if this remains an issue.
**Agitation/Excited Delirium #3**

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**Pearls for Midazolam/Ketamine**

**Midazolam**
- Patients with underlying medical conditions (including COPD/CHF/CAD) as well as patients older than 60 are more likely to suffer adverse effects from midazolam. Consider lower doses in this population.
- **WARNING:** May cause respiratory depression, arrest, or apnea.
- Assess patients for signs and symptoms of respiratory depression and sedation.
- Administration: **IM** - Administer undiluted deep IM into large muscle.
- Administration: **IV** - Do not administer intra-arterially. Administer by **slow IV** injection over at least 2 minutes using a concentration of 1 mg/mL or a dilution of the 1 or 5 mg/mL concentrations.
- Concomitant use with opioids: **[US Boxed Warning]**: Concomitant use of benzodiazepines and opioids may result in profound sedation, respiratory depression, coma, and death.

**Ketamine**
- Document the patient's Altered Mental Status Score (AMSS) in the run report.
- Patients with an AMSS less than 4 are more likely to require airway management.
- Maine EMS Services will be stocking the 100 mg/mL concentration to accommodate the wide dose ranges in the protocol. This is to avoid carrying two very different concentrations and risk a serious dose error.
- **WARNING:** Overdose may lead to panic attacks and aggressive behavior; rarely seizures, increased ICP, and cardiac arrest. Very similar in chemical makeup to PCP (phencyclidine), but it is shorter acting and less toxic.
- Administration: **IM** - Inject deep IM into large muscle mass.
- Administration: **IV** - According to the manufacturer, administer bolus/induction doses over 1 minute or at a rate of 0.5 mg/kg/minute; more rapid administration may result in respiratory depression and enhanced pressor response. Some experts suggest administration over 2 to 3 minutes (Miller 2010).
- **The 100 mg/mL concentration should not be administered IV unless properly diluted with an equal volume of Sterile Water for Injection, NS, or D5W.**