Vermont Adult Medication Reference

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See the Pediatric Color Coded Appendix for pediatric dosages

Medication	Adult Protocol/Dosing
Acetaminophen (Tylenol/Ofirmev) **Indications:** • Fever control (pediatric seizure). • Pain control. **Contraindications:** • Avoid in patients with severe liver disease. • Impairment or sensitivity to acetaminophen. • Do not use with other drug products containing acetaminophen or if patient has taken any drug containing acetaminophen within 4 hours.	**Pain Management** • 325 – 1000 PO, no repeat. • 1000 mg IV over 10 minutes (if not taken or given PO)
Activated Charcoal **Indications:** • Poisoning/Overdose. **Contraindications:** • **Caustic Substances** • **Ingestion greater than 60 minutes ago** • **Patient unable to protect airway**	**Poisoning/Substance Abuse/Overdose** • **Contact Medical Direction for** 25 – 50 grams PO

Adenosine (Adenocard)
Indications:
• Specifically for treatment or diagnosis of Supraventricular Tachycardia.
• Consider for regular or wide complex tachycardia.
Contraindications:
• WPW (Wolff-Parkinson-White) Syndrome.
	Narrow and Wide Complex Regular Tachycardia
	• 6 mg rapid IV/IO push, followed by rapid flush.
	  ▪ May repeat 12 mg if no conversion.
	  ▪ May repeat successful dose if dysrhythmia recurs after conversion.
	  ▪ May dilute adenosine with 20 mL of 0.9% normal saline and give as rapid IV push.

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Medication	Adult Protocol/Dosing
Albuterol **Indications:** • Nebulized treatment for use in respiratory distress with bronchospasm. • Hyperkalemia.	**Allergic Reaction/Anaphylaxis** • 2.5 mg via nebulizer or metered-dose inhaler (MDI) 2 – 4 puffs. ▪ May repeat every 5 minutes for continued symptoms. • 2.5 mg albuterol and 0.5 mg ipratropium (DuoNeb) via nebulizer. ▪ May repeat every 5 minutes (maximum 3 doses). • Contact **Medical Direction** for additional dosing. **Asthma/COPD/RAD** • 2.5 mg albuterol and 0.5 mg ipratroprium bromide (DuoNeb) via nebulizer. ▪ May repeat every 5 minutes for continued symptoms (maximum 3 doses). • 2.5 mg albuterol via nebulizer. ▪ May repeat every 5 minutes for continued symptoms. • Albuterol metered-dose inhaler (MDI) 2 – 4 puffs. ▪ May repeat every 5 minutes for continued symptoms. **Crush/Suspension Injury** • Albuterol continuous 10 – 20 mg nebulized if ECG suggestive of hyperkalemia before or after extrication. **Hyperkalemia** ▪ Albuterol continuous 10 – 20 mg nebulized **Smoke Inhalation/Carbon Monoxide Poisoning** • 2.5 mg albuterol via nebulizer. ▪ May repeat every 5 minutes for continued symptoms.
Amiodarone (Cordarone) **Indications:** • Antiarrhythmic used mainly in wide complex tachycardia and ventricular fibrillation. **Contraindications:** • Avoid in patients with heart block or profound bradycardia. • Contraindicated in patients with iodine hypersensitivity. • Contraindicated in patients with WPW (Wolff-Parkinson-White) Syndrome.	**Cardiac Arrest** **V-Fib/Pulseless V-Tach** • 300 mg IV/IO ▪ Repeat 150 mg dose as needed. **Post Resuscitative Care** • Infusion 1 mg/min IV/IO (if arrest was the result of V-Fib or Pulseless V-Tach and, the patient is having frequent PVCs or runs of VT or transport time exceeds 30 minutes). **Tachycardia** **Wide complex tachycardia** • 150 mg IV/IO mixed with 50 – 100 mL D5W or 0.9% NaCl over 10 min. ▪ May repeat once in 10 minutes. ▪ If successful, consider maintenance infusion of 1 mg/min IV/IO.

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Aspirin **Indications:** • An antiplatelet drug for use in cardiac chest pain. **Contraindications:** • History of anaphylaxis to aspirin or NSAIDs • Active GI bleeding	**Acute Coronary Syndrome** • 324 mg PO. ▪ If patient has taken a partial dose within the last hour, administer additional aspirin dose to equal 324 mg.
Atropine **Indications:** • Anticholinergic drug used in bradycardias and organophosphate poisonings. **Contraindications:** • Avoid in hypothermic bradycardia • Caution with myocardial ischemia, increases 02 demand • Not effective in Mobitz type II block or new 3rd degree block	**Bradycardia** • 1 mg IV/IO every 3 – 5 minutes to total of 3 mg. **Nerve Agents/Organophosphate Poisoning** • 2 mg IV/IO; repeat every 5 minutes until excess secretions cease (stop).
Atropine and Pralidoxime Auto-Injector (DuoDote or MARK I) Nerve Agent Kit **Indications:** • Antidote for Nerve Agents or Organophosphate Overdose.	**Nerve Agent/Organophosphate Poisoning** • Refer to Nerve Agents Organophosphate Poisoning Protocol – Adult 2.13A for symptom assessment and dosing guidelines.

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Calcium Chloride 10% solution

Indications:

- Calcium channel blocker overdose, hyperkalemia, or beta blocker overdose.

Contraindications:

- Do not routinely use in cardiac arrest.
- Avoid use if pt is taking digoxin.
- Do not mix with or infuse immediately before or after sodium bicarbonate.

Bradycardia

- 1,000 mg (10 mL of a 10% solution) mixed in 50 mL NS or D5W IV/IO over 10 minutes.
  - May repeat in 10 minutes.
  - Do not exceed 1 mL per minute. Flush with 0.9% NaCl before and after administration.

Cardiac Arrest
Wide Complex PEA

- 1,000 mg of 10% solution IV/IO

Crush/Suspension Injury

- 1000 mg mixed in 50 mL NS or D5W over 10 minutes.
- May repeat in 10 minutes, with constant cardiac monitoring.

Hyperkalemia

- 500 – 1000 mg mixed in 50 mL NS or D5W over 10 minutes.
- May repeat dose in 10 minutes, with constant cardiac monitoring.

Calcium Gluconate

Indications:

- Calcium channel blocker overdose, hyperkalemia/ renal failure, wide complex PEA or beta blocker overdose with bradycardia.

Contraindications:

- Hypercalcemia

Bradycardia

- 2,000 mg mixed in 50 mL NS or D5W IV/IO over 5 – 10 minutes.
  - May repeat in 10 minutes.

Cardiac Arrest
Wide Complex PEA
2,000 mg IV/IO push

Crush/Suspension Injury

- 2,000 mg mixed in 50 mL NS or D5W IV/IO over 5 – 10 minutes
  - May repeat in 10 minutes.

Hyperkalemia

- 2,000 mg mixed in 50 mL NS or D5W IV/IO over 5 – 10 minutes.
  - May repeat in 10 minutes.

Dexamethasone

Indications:

- Steroid used to control inflammatory conditions, asthma, croup, allergic reactions or adrenal insufficiency

Adrenal Insufficiency

- 10 mg IV/IO/IM.

Allergic Reaction/Anaphylaxis

- 0.6 mg/kg IV/IO/IM/PO, maximum dose 10 mg – *extended care protocol.*

Asthma/COPD/RAD

- 10 mg IV/IO/IM/PO.

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Dextrose 5%, 10%, 50%
Glucose solutions
 	
Indications:
• Symptomatic hypoglycemia.
• Use in medication infusion medium.
	Diabetic Emergencies (Hypoglycemia)
	• Dextrose 10% (preferred) or 50% IV up to 25 grams.
	  ▪ Recheck blood glucose after 5 minutes.
	  ▪ Repeat up to 25 grams dextrose 10% or 50% if glucose levels < 60 mg/dl with continued altered mental status.
	  ▪ 25 grams = 250 mL of 10% solution.
	  ▪ 1 amp (25 grams) = 50 mL of 50% solution.

Diazepam **(Valium)** **Indications:** • Seizure control. • Sedation. • Anxiolytic.	**Behavioral Emergencies: Anxiety** • 5 mg IV **Bradycardia** **Procedural Sedation for Cardiac Pacing** • 5 mg IV/IO, may repeat 2.5 mg once in 5 minutes. **Continuous Positive Airway Pressure (CPAP)Anxiolytic.** • **Contact Medical Direction for** 5 mg IV (may repeat once in 5 minutes). **Hyperthermia** • 2 mg IV, may repeat once in 5 minutes. **Nerve Agent/Organophosphate Poisoning** • 5 mg IV every 5 minutes **OR** • 10 mg IM **OR** • Diazepam auto-injector (10mg). • Repeat every 10 minutes as needed **Poisoning/Substance Abuse/Overdose** • 2 mg IV, may repeat once in 5 minutes **Restraints: Resistant or Aggressive Behavior** • Contact **Medical Direction** for 2.5 mg IV. • Contact Medical Direction if additional dosing is needed. **Seizure** • May assist with patient's own diazepam gel as prescribed. • 5 – 10 mg IV, then 2.5 mg every 5 minutes (maximum dose 20 mg) **Tachycardia** **For Cardioversion Sedation** • 5 mg IV/IO, may repeat 2.5 mg once in 5 minutes. **Traumatic Brain Injury** 5 mg IV/IO, may repeat once in 5 minutes.

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Diltiazem (Cardizem)
Indications:
• Calcium channel blocker used to treat narrow complex tachycardia/SVT.
Contraindications:
• Heart block, ventricular tachycardia, WPW, and/or acute MI.
• WPW (Wolff-Parkinson-White) Syndrome.
	Tachycardia
	Narrow Complex Tachycardia
	• 0.25 mg/kg IV (maximum dose 20 mg) over 2 minutes.
	  ▪ Consider 10 mg maximum dose for elderly patient or patient with low blood pressure.
	  ▪ May repeat dose in 15 minutes at 0.35 mg/kg (maximum dose 25 mg) if necessary.
	  ▪ Consider maintenance infusion 5 – 15 mg/hour IV.

Diphenhydramine (Benadryl) **Indications:** • Antihistamine used as an adjunctive treatment in allergic reactions. • Antidote for dystonic reaction.	**Allergic Reaction/Anaphylaxis** • 25 – 50 mg IM/IV/IO to treat pruritus. • 25 – 50 mg by mouth – *extended care protocol.* ▪ May repeat every 4 – 6 hours as needed; maximum dose of 300 mg/24 hours. **Nausea/Vomiting** • 25 – 50 mg IV/IM for dystonic reaction. • 25 mg PO – *extended care for motion sickness.* **Poisoning/Substance Abuse/Overdose – Dystonic Reaction** • 25 – 50 mg IV/IM. **Restraints** • For acute dystonic reaction to droperidol or haloperidol 25 – 50 mg IV **OR** 50 mg IM.
Dopamine • **Indications:** A vasopressor used in shock or hypotensive states. • Infusion pump required.	**Use by CCP in IFT per Medical Direction only** **Shock** • 5-20 mcg/kg/min IV/IO
Droperidol **Indications:** • Delirium (off-label) • Antiemetic **Contraindications:** • Do not use if known or suspected prolonged QT interval >450 msec	**Nausea/Vomiting** • 0.625 - 1.25 mg slow IV push over 1 – 2 minutes or IM. • May repeat once in 10 minutes if nausea/vomiting persists **Restraints: Resistant or Aggressive Behavior** • 5 mg IM/IV. • Contact **Medical Direction** if additional dosing is needed **Restraints: Violent/Combative Behavior, OR Delirium with Agitated Behavior:** • 10 mg IM. • Contact **Medical Direction** if additional dosing is needed.

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Epinephrine 1:1,000 (1 mg/mL)

Indications:

- Bronchodilation in Asthma and COPD exacerbation. Primary treatment for anaphylaxis.
- Vasopressor used for bradycardia, post-resuscitative care, shock, anaphylaxis.

MIXING INSTRUCTIONS FOR EPINEPHRINE INFUSIONS
Epinephrine 1:1,000 (1mg/mL) multidose vial (30mL) and withdraw 4 mg (4mL) and add to a 250 mL infusion bag of D5W or 0.9% NaCl. The resulting concentration is 16 mcg/mL

Allergic Reaction/Anaphylaxis

- 0.3 mg IM by autoinjector **OR** 0.3 mg (0.3 mL) IM.
  - May repeat dose x 1. For additional dosing, contact **Medical Direction** (EMT).
- 0.3 mg (0.3 mL) IM.
  - May repeat every 5 – 15 minutes.
  - Maximum of 3 doses.
  - For additional dosing, contact **Medical Direction**.
- For anaphylaxis refractory to IM epinephrine, consider epinephrine infusion 2 – 10 mcg/min IV/IO, titrated to effect. (Infusion pump required.)

Asthma/COPD/RAD

- Consider 0.3 mg IM by autoinjector (preferred) **OR** epinephrine **(1:1,000) (1 mg/mL)** 0.3 mg (0.3 mL) IM.
  - For additional dosing, contact **Medical Direction**.

Bradycardia

- Infusion 2 – 10 mcg/min IV/IO, titrated to effect (Infusion pump required.)

Post-Resuscitative Care

- Infusion 2-10 mcg/min IV/IO titrated to effect. (Infusion pump required.)

Septic Shock

- Infusion 2 – 10 mcg/min IV/IO titrated to MAP ≥ 65 (systolic ≥ 90). (Infusion pump required.)

Shock (Cardiogenic or Distributive)

- Infusion 2-10 mcg/min IV/IO titrated to effect. (Infusion pump required.)

Smoke Inhalation

- 3 mg (mL) in 3 mL 0.9% NaCl via nebulizer for symptomatic patients.

Epinephrine 1:10,000 (0.1 mg/mL)

Indications:

- Vasopressor used in cardiac arrest.
- Push Dose Epinephrine for short transport times or as a bridge to infusion

MIXING INSTRUCTIONS FOR PUSH DOSE EPINEPHRINE:
Add 1 ml (0.1mg) of epinephrine to 9 ml of normal saline in a 10 ml syringe for a concentration of 10mcg/ml

Cardiac Arrest

- 1 mg IV/IO every 3 to 5 minutes.
  - Repeat every other cycle when utilizing high performance CPR.
  - In hypothermic arrest do not administer until temperature is > 30°C (90°F), then increase dosing intervals to twice normal from 30-35°C.

Shock, Bradycardia, and Hypotension during ROSC

- Push Dose Epinephrine (10 mcg/mL concentration)
  - 10-20 mcg (1-2 mL) IV/IO every 2 minutes
  - Titrate to effect
  - Transition to infusion as soon as feasible

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Etomidate (Amidate) **Indications:** • Sedative used in Rapid Sequence Intubation.	**Rapid Sequence Intubation** **{Sedate then} Paralyze** • 0.3 mg/kg IV/IO (maximum 40 mg).
Fentanyl (Sublimaze) **Indications:** • Narcotic analgesic **Contraindications:** • Avoid use if BP < 100 mmHg.	**Acute Coronary Syndrome** • 25 – 50 mcg slow IV push. • Repeat every 5 minutes up to 300 mcg and systolic BP remains ≥100 mmHg. **Bradycardia** **Analgesia for Cardiac Pacing** • 25 – 50 mcg slow IV push. • May repeat every 5 minutes to a total of 300 mcg and systolic BP remains ≥100 mmHg. **Pain Management** • 25 – 100 mcg slow IV push, every 2 – 5 minutes to a total of 300 mcg titrated to pain relief **OR** • 50 – 100 mcg IM/IN, every 5 minutes to a total of 300 mcg titrated to pain relief. • Contact **Medical Direction** for additional dosing. **Nasotracheal and Orotracheal Intubation** **Post Intubation Care** • Fentanyl 50 – 100 mcg IV/IO, may repeat every 15 minutes as needed for analgesia (maximum 300 mcg). • Contact **Medical Direction** for additional dosing. **Rapid Sequence Intubation** **Post-Intubation Care** • Fentanyl 50 – 100 mcg IV/IO, may repeat every 15 minutes as needed for anesthesia (maximum 300 mcg). **Supraglottic Airway** • 50 – 100 mcg slow IV/IO push every 15 minutes, as needed (maximum 300 mcg)

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Glucagon
Indications:
• Converts glycogen to glucose in the liver to increase blood sugar
• Use in patients with no IV access
• Indicated for beta blocker or calcium channel blocker overdose
	Bradycardia
	• 2 – 5 mg IV/IO over 3 – 5 minutes.
	  ▪ May repeat up to 10 mg.
	  ▪ If effective, place on infusion 1 – 5 mg/hr IV/IO via pump.
	Diabetic Emergencies (Hypoglycemia)
	• 1 mg IM.
	  ▪ Recheck glucose 15 minutes after administration of glucagon.
	  ▪ May repeat glucagon 1 mg IM if glucose level is <60 mg/dl with continued altered mental status.

Glucose Oral **Glucose Solutions** **Indications:** • Use in conscious hypoglycemic states. Patient must be able to protect their own airway	• **Diabetic Emergencies (Hypoglycemia)**Administer 1 – 2 tubes commercially prepared glucose gel, OR • 15 to 30 mL (1 – 2 tablespoons) of *Pure VT Maple Syrup* or equivalent, for a standard dose of 15 to 30 grams sugar.

Haloperidol
(Haldol)
Indications:
• Medication to assist with sedation of agitated patients.
• Chemical restraint.
Contraindications:
• Poorly controlled seizure disorder - May lower seizure threshold.
• Neuroleptic malignant syndrome (NMS)
• Parkinson's Disease.
	Restraints
	• Contact **Medical Direction** for 5 mg IM.
	  ▪ May be combined with midazolam, lorazepam or diazepam.
	  ▪ May combine and administer benzodiazepine and haloperidol in one syringe.
	  ▪ Use lower doses in elderly/frail.
	  ▪ Contact **Medical Direction** if additional dosing is needed.

Heparin **Indications:** • STEMI and no affirmative finding from fibrinolytic questionnaire. **Contraindications:** • History of Heparin Induced Thrombocytopenia	**Paramedic** • Maintenance of already established heparin drip.

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Hydrocortisone (Solu-Cortef)
Indications:
• Steroid used for adrenal insufficiency and associated distributive shock.
	Adrenal Insufficiency
	• 100 mg IV/IO/IM (preferred steroid for use in adrenal insufficiency).
	  ▪ May be repeated every 6 hours – *extended care protocol.*
	
	Distributive Shock
	• 100 mg IV/IO/IM.
	  ▪ Stress dose steroid for patient in shock with history of adrenal insufficiency

Hydroxocobalamin (Cyanokit)
Indications:
• Cyanide poisoning
• Vitamin B12 with hydroxyl group complexed to cobalt is displaced by cyanide resulting in non-toxic cyanocobalamin
	Smoke Inhalation
	• Hydroxocobalamin via use of Cyanokit:
	  ▪ Reconstitute: Place the vial of hydroxocobalamin in an upright position; add 0.9% NaCl to the vial (200 mL for 5 grams vial or 100 mL for 2.5 grams vial) using the transfer spike. Fill to the line.
	  ▪ Rock vial for at least 60 seconds (do not shake).
	  ▪ Using vented intravenous tubing, administer IV over 15 minutes.
	  ▪ Depending on clinical response, a second dose may be required.
	  ▪ May color skin or urine red.

Ipratropium Bromide (Atrovent)
Indications:
• Anticholinergic bronchodilator. Blocks the muscarinic receptors of acetylcholine.
• Relief of bronchospasm in patients with reversible obstructive airway disease and bronchospasm.
	Allergic Reaction/Anaphylaxis
	• 0.5 mg ipratropium and 2.5 mg albuterol (DuoNeb) via nebulizer.
	  ▪ May repeat every 5 minutes (maximum 3 doses).
	  ▪ Contact **Medical Direction** for additional dosing.
	
	Asthma/COPD/RAD
	• 0.5 mg ipratropium and 2.5 mg albuterol (DuoNeb) via nebulizer.
	  ▪ May repeat every 5 minutes for continued symptoms (maximum 3 doses).

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Ketamine

Indications:

- Short acting dissociative anesthetic
- Sedative used in Rapid Sequence Intubation.
- Pain control.
- Chemical restraint

Contraindications:

- Contraindicated in patients unable to tolerate hyperdynamic states such as those with known or suspected aortic dissection, myocardial infarction, and aortic aneurysm, and those that cannot tolerate hypertension.
- Avoid in patients with known schizophrenia.

Post Intubation Care

- 1 mg/kg ideal body weight (IBW) every 5 – 15 minutes, as needed.
  - Contact **Medical Direction** for additional dosing.

Pain Management

- 0.25 mg/kg IV infusion (in 50 – 100 mL bag 0.9% NaCl **over 10 minutes**). May be administered via bolus. (Consider lower 0.15 mg/kg dose for frail or elderly patients.) **OR** 0.5 mg/kg IM/IN
  - May repeat ketamine dose every 15 – 20 minutes for a total of 1 mg/kg.
  - Contact **Medical Direction** for additional dosing

- **Rapid Sequence Intubation: Sedation prior to paralysis** 2 mg/kg IV/IO

Restraints: Violent/Combative Behavior or Delirium with Agitation

- Contact **Medical Direction** for 4 mg/kg **IM injection only**.
  - Use 100 mg/mL concentration: maximum dose 500 mg.
  - Repeat 100 mg IM dose in 5 – 10 minutes for continued agitation.

Supraglottic Airway: Sedation Post tube placement

- 1 mg/kg ideal body weight (IBW) IV/IO every 5 – 15 minutes, as needed.

Bradycardia Adult & Pediatric (analgesia for transcutaneous pacing)

- Ketamine 0.25 mg/kg IV/IO every 15 min prn analgesia. Administer slow over 2-3 minutes.

Traumatic Brain Injury

- 4 mg/kg (maximum dose 500 mg) **IM injection only**

Contact **Medical Direction** for additional dosing.

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Ketorolac (Toradol)

Indications:

- A nonsteroidal anti-inflammatory drug used for pain control. Consider as first line in renal colic.

Contraindications:

- Avoid Ketorolac in patients with NSAID allergy, aspirin-sensitive asthma, renal insufficiency, pregnancy, or known peptic ulcer disease.
- Avoid NSAIDS in women who are pregnant or could be pregnant.
- Avoid in patients currently taking anticoagulants such as coumadin.

Pain Management

- **Contact Medical Direction for** 15 mg IV **OR** 30 mg IM.

Lactated Ringers

Contraindications:

- Use Lactated Ringers with **caution** in patients with:
  - Hyperkalemia or severe renal failure (potassium)
  - Severe hepatic failure (impaired lactate clearance)
  - Severe metabolic acidosis or alkalosis (potassium and worsening alkalosis)
  - Lactic acidosis
  - Neonates and infants less than 6 months (lactate effects on neonates)

Lactated Ringers may be used as a direct substitute for Normal Saline with the following exceptions and precautions:

Lactated Ringers (LR) **should NOT** be directly combined with the following drug agents (due to limited data or clear evidence of incompatibility). These medications should be administered at a site separate from where the LR is infusing via a normal saline lock/line, or stop the LR infusion for medication injection, then administer a saline flush, and then restart the LR infusion.

- Amiodarone
- Atropine
- Calcium Chloride
- Dexamethasone
- Diazepam
- Diltiazem
- Epinephrine
- Etomidate
- Fentanyl
- Glucagon
- Ketamine
- Lorazepam
- Metoprolol
- Naloxone
- Pralidoxime
- Sodium Bicarbonate
- Tranexamic Acid

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Lidocaine

Indications:

- Antiarrhythmic used for control of ventricular dysrhythmias.
- Used prior to intubation of patients with suspected increased intracranial pressure (e.g., TBI, ICH) to reduce increases in intracranial pressure
- Anesthetic for nasotracheal intubation and intraosseous access.

Contraindications:

- Do not use lidocaine if CHF, cardiogenic shock, heart block or WPW.

Cardiac Arrest
V-Fib/Pulseless V-Tach

- 1 – 1.5 mg/kg IV/IO.
  - Repeat dose 0.5 – 0.75 mg/kg up to a maximum dose of 3 mg/kg.

Intraosseous Access

- Slowly administer 20 – 50 mg (1 – 2.5 mL) 2% lidocaine through IO device catheter.
  - Allow 2 – 5 min for anesthetic effects, if possible.

Nasotracheal Intubation

- 2% lidocaine jelly.

Post-Resuscitative Care

- Maintenance infusion 1 – 4 mg/min IV/IO (30 – 50 mcg/kg/min) if patient is having frequent PVCs or runs of VT, or if transport time exceeds 30 minutes.

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Lorazepam (Ativan)

Indications:

- Seizure control.
- Sedation.
- Anxiolytic.

Contraindications:

- CNS Depression
- Breastfeeding
- Sleep Apnea
- Hepatic or Renal failure
- Caution if used with opioids

Behavioral Emergencies: Management of Anxiety

- Attempt non-pharmacological interventions first.
- Contact **Medical Direction** to consider:
  - **1 mg PO or IV**

Bradycardia: Procedural Sedation for Cardiac Pacing

- 1 mg IV/IO, may repeat once in 5 minutes **OR**
- 2 mg IM, may repeat once in 10 minutes.

Continuous Positive Airway Pressure (CPAP): Anxiolytic

- Contact **Medical Direction** for 0.5 – 1 mg IV; may repeat once in 5 minutes **OR**
- 1 – 2 mg IM, may repeat once in 10 minutes.

Hospice: Anxiety

- 0.25 – 2 mg PO or SL

Hyperthermia: Uncontrolled shivering during cooling

- 1 mg IV, may repeat once in 5 minutes **OR**
- 2 mg IM, may repeat once in 10 minutes.

Nasotracheal and Orotracheal Intubation: Post Intubation Care

- 1 – 2 mg IV/IO every 15 minutes as needed for sedation (maximum 10 mg)
- Contact **Medical Direction** for additional dosing.

Nerve Agent/Organophosphate Poisoning

- 1 mg IV, may repeat once in 5 minutes **OR**
- 2 mg IM, may repeat once in 10 minutes.

Poisoning/Substance Abuse/Overdose:
Severe agitation, seizures or hyperthermia

- 1 mg IV, may repeat once in 5 minutes **OR**
- 2 mg IM, may repeat once in 10 minutes.

Restraints

- Contact **Medical Direction** for
  - 1 mg IV, **OR**
  - 2 mg IM.
- May combine and administer Benzodiazepine and Haloperidol in one syringe.
- Contact Medical Direction if additional dosing is needed.

Seizure

- 1 - 2 mg IV, may repeat every 5 minutes (maximum dose 8 mg)

Lorazepam (Ativan) *(continued)*	**Supraglottic Airway: Post-Tube Sedation** • Lorazepam 1 – 2 mg IV/IO every 15 minutes as needed (maximum 10 mg) **Tachycardia:** **For Cardioversion Procedural Sedation** • 1 mg IV/IO, may repeat once in 5 minutes **OR** • 2 mg IM, may repeat once in 10 minutes. **Traumatic Brain Injury** • 1 mg IV/IO, may repeat once in 5 minutes **OR** • 2 mg IM, may repeat once in 10 minutes.
Magnesium Sulfate **Indications:** • Elemental electrolyte used to treat seizures due to preeclampsia and eclampsia during the third trimester of pregnancy. • A smooth muscle relaxor used in refractory respiratory distress resistent to beta-agonists. • Torsades de Pointes.	**Asthma/COPD/RAD** • 2 grams in 50 mL D5W or 0.9% NaCl IV/IO over 10 minutes. **Cardiac Arrest – Torsades de Pointes With No Pulse** • 1 – 2 grams IV/IO over 1 – 2 minutes. **Obstetrical Emergencies** • 4 grams in 10 mL D5W or 0.9% NaCl given slow IV push over 5 minutes for patients in the third trimester of pregnancy or post-partum who are seizing or are postictal. **Seizures** • 4 grams in 10 mL D5W or 0.9% NaCl given slow IV push over 5 minutes in the presence of seizure in the third trimester of pregnancy or post-partum. **Tachycardia – Wide Complex Polymorphic Torsades de Pointes** • If pulse present, consider 2 grams IV/IO diluted in 10 mL D5W or 0.9% NaCl over 10 minutes.
Methylprednisolone (Solu-medrol) **Indications:** • Steroid used in respiratory distress to reverse inflammatory and allergic reactions.	**Adrenal Insufficiency** • 125 mg IV/IO/IM. **Allergic Reaction/Anaphylaxis** • 1 mg/kg IV, maximum dose 125 mg every 6 hours – *extended care protocol.* **Asthma/COPD/RAD** • 125 mg IV/IO/IM.
Metoclopramide (Reglan) **Indications:** • Anti-emetic used to control nausea and/or vomiting and as alternative treatment for adrenal insufficiency.	**Nausea/Vomiting** • 5 – 10 mg slow IV push over 1-2 minutes, OR, • 10 mg IM. • May repeat once after 10 minutes if nausea/vomiting persists. • May repeat IM every 4 – 6 hours as needed - *extended care protocol.* • Administer IV slowly, over 1 – 2 minutes, to reduce dystonic reactions.

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Metoprolol (Lopressor) **Indications:** • Use for rate control in narrow complex tachycardia with an irregular rhythm. **Contraindications:** • Contraindicated in patients with HR < 45 bpm, SBP < 100 mmHg, heart block or acute heart failure syndromes (CHF or cardiogenic shock). • Use with caution in patients with bronchospastic disease. • Contraindicated in patients with WPW (Wolff-Parkinson-White) Syndrome.	**Tachycardia: Irregular Narrow Complex** • 5 mg IV/IO over 2 – 5 minutes. ▪ May repeat every 5 minutes to a maximum of 15 mg as needed to achieve a ventricular rate of 90 – 100 BPM.
Midazolam (Versed) **Indications:** • Seizure control. • Sedation. • Anxiolytic. ***(continued)***	**Behavioral Emergencies: Anxiety** • Midazolam 2.5 mg IM/IN; **OR** • Midazolam 1.25 mg IV. **Bradycardia: Procedural Sedation for Cardiac Pacing** • 2.5 mg IV/IO/intranasal, may repeat once in 5 minutes **OR** • 5 mg IM, may repeat once in 10 minutes. **Continuous Positive Pressure Airway (CPAP): Anxiolytic** • Contact **Medical Direction** for authorization. • 2.5 mg IV/intranasal, may repeat once in 5 minutes **OR** • 5 mg IM, may repeat once in 10 minutes. **Hospice: Anxiety** • 2.5 mg IN, may repeat every 10 – 15 minutes as needed to a maximum of 7.5 mg. **Hyperthermia** • 2.5 mg IV/intranasal, may repeat once in 5 minutes **OR** • 5 mg IM, may repeat once in 10 minutes. **Nasotracheal and Orotracheal Intubation** **Post Intubation Care** • 2.5 – 5 mg IV/IO, every 5 – 10 minutes as needed for sedation (maximum 20 mg). • Contact **Medical Direction** for additional dosing.

Midazolam *(continued)* (Versed)

Indications:

- Seizure control.
- Sedation.
- Anxiolytic.

Nerve Agent/Organophosphate Poisoning

- 2.5 mg IV/intranasal, may repeat every 5 minutes **OR**
- 5 mg IM, may repeat every 10 minutes.

Pain Management

- **Antidote:** For dysphoria (emergence reaction) caused by ketamine,
  - 1 – 2 mg IV/IM every 5 minutes as needed.

Poisoning/Substance Abuse/Overdose

- 2.5 mg IV/intranasal, may repeat once in 5 minutes **OR**
- 5 mg IM, may repeat once in 10 minutes.

Rapid Sequence Intubation: Post-Intubation Care

- 2.5 – 5 mg IV, every 5 – 10 minutes as needed for sedation (maximum 20 mg).
- Contact **Medical Direction** for additional dosing.

Rapid Sequence Intubation: Sedation

- 0.2 mg/kg IV/IO (0.1mg/kg IV/IO for patients in shock).

Restraints

- Contact **Medical Direction** for 5 mg IM, **OR** 2.5 mg IV.
- May combine and administer Benzodiazepine and Haloperidol in one syringe.
- Contact Medical Direction if additional dosing is needed.

Seizure

- May assist with patient's own intranasal midazolam as prescribed.
- 10 mg IM (preferred if no IV access established) or intranasal, may repeat 10 mg IM/IN every 10 minutes (maximum dose 20 mg). **Note**: 5 mg/mL concentration is required for IM/intranasal **OR**
- 5 mg IV, may repeat every 5 minutes until seizure activity resolved (maximum dose 20 mg).

Supraglottic Airway

Midazolam 2.5 – 5 mg IV/IO every 5 – 10 minutes, as needed (maximum 20 mg).

Tachycardia: Sedation for Cardioversion

- 2.5 mg IV/IO/intranasal, may repeat once in 5 minutes **OR**
- 5 mg IM, may repeat once in 10 minutes.

Traumatic Brain Injury

- 2.5 mg IV/IO/intranasal, may repeat once in 5 minutes **OR**
- 5 mg IM, may repeat once in 10 minutes.

Vermont Adult Medication Reference

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Morphine Sulfate **Indications:** • Narcotic analgesic **Contraindications:** • Avoid use if BP < 100 mmHg. • Associated with increased mortality in Acute Coronary Syndrome.	**Acute Coronary Syndrome** • 2 – 4 mg IV/IM every 5 minutes to a maximum of 15 mg titrated to pain and systolic BP remains ≥100 mmHg. **Bradycardia: Analgesia for Cardiac Pacing** • 2 – 4 mg IV every 10 minutes to a total of 15 mg and systolic BP ≥100 mmHg. **Pain Management** • 2 – 5 mg IV/IM every 10 minutes to a total of 20 mg titrated to pain relief and if systolic BP is > 100 mmHg. • Contact **Medical Direction** for additional dosing.
Naloxone (Narcan) **Indications:** • Narcotic overdose.	**Altered Mental Status (Unknown Etiology)** • 1 mg (1 mL) per nostril via atomizer for a maximum of 2 mg. May repeat every 3 – 5 minutes if no response to a maximum of 12 mg. • Single spray of NARCAN® Nasal Spray (4 mg/0.1 ml) into one nostril. May repeat every 3 – 5 minutes if no response or patient relapses, to a total of 12 mg. • 0.4 – 2 mg IV/IM/IO/SQ/intranasal, titrated to response. If no response, may repeat initial dose every 3 – 5 minutes to a total of 12 mg. **Cardiac Arrest with suspected opioid overdose** • 2 – 4 mg IV/IO/intranasal **Pain Management** • **Antidote:** For hypoventilation from opiate administration by EMS personnel, administer naloxone 0.4 – 2.0 mg SQ/IV/IO/IM or 2.0 – 4.0 mg intranasal as needed. **Poisoning/Substance Abuse/Overdose** **Narcotic Overdose** • 1 mg (1 mL) per nostril via atomizer for a maximum of 2 mg. May repeat every 3 – 5 minutes if no response to a maximum of 12 mg. • Single spray of NARCAN® Nasal Spray (4 mg/0.1 ml) into one nostril. May repeat every 3 – 5 minutes if no response or if patient relapses, to a total of 12 mg. • 0.4 – 2 mg IV/IM/IO/SQ/intranasal, titrated to response. ▪ If no response, may repeat initial dose every 3 – 5 minutes to a total of 12 mg.

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Nitroglycerin

Indications:

- Vasodilator used in the treatment of chest pain secondary to acute coronary syndrome and CHF
- Infusion pump required for infusion.

Contraindications:

- Avoid in any patient who has used a phosphodiesterase inhibitor for erectile dysfunction and pulmonary hypotension, such as sildenafil (Viagra, Revatio) or vardenafil (Levitra, Staxyn) within 24 hours or tadalafil (Cialis, Adcirca) within 48 hours.
- Avoid in patients receiving IV prostacyclins for pulmonary hypertension.

Acute Coronary Syndrome

- Facilitate administration of patient's own nitroglycerin every 3 – 5 minutes while symptoms persist and systolic BP remains ≥100 mmHg, to a total of 3 doses. Contact **Medical Direction** for additional dosing.
- 0.4 mg SL every 3 – 5 minutes while symptoms persist and if systolic BP remains ≥100 mmHg (MAP ≥ 65).
- 10 – 30 mcg/min IV if symptoms persist (must be on a pump).
  - Increase IV nitroglycerin by 10 mcg/min every 5 minutes while symptoms persist and systolic remains ≥100 mmHg, max rate 200 mcg/min. Two (2) IV lines or equivalent are recommended, and IV nitroglycerin must be on an infusion pump.
- If IV nitroglycerin is not available, consider the application of nitroglycerin paste 1 – 2 inches transdermal.

Congestive Heart Failure

- Contact **Medical Direction** for online order to facilitate administration of the patient's own nitroglycerin, while symptoms persist and systolic BP is ≥ 140 mmHg (EMT).
- 0.4 mg SL every 3 – 5 minutes while symptoms persist and systolic BP is ≥140 mmHg.
- Contact **Medical Direction** to consider nitroglycerin:
  - For systolic BP of 140 – 160 mmHg: nitroglycerin 0.4 mg SL.
  - For systolic BP of 160 – 200 mmHg: nitroglycerin 0.8 mg SL (2 tabs/sprays).
  - For systolic BP > 200 mmHg: nitroglycerin 1.2 mg SL (3 tabs/sprays).
  - The above doses may be repeated every 5 minutes until symptomatic improvement or systolic BP is 140 mmHg.
- Titrate IV drip until symptomatic improvement or systolic BP of 140 mmHg:
  - For systolic BP of 140 – 160 mmHg: IV nitroglycerin start at 50 mcg/min.
  - For systolic BP of 160 – 200 mmHg: IV nitroglycerin start at 100 mcg/min.
  - For systolic BP > 200 mmHg: IV nitroglycerin start at 200 mcg/min.
  - Note: It is recommended two (2) IV lines in place and the IV nitroglycerin must be on an infusion pump. Maximum dose of 400 mcg/min.
- If patient improves after SL, may apply nitroglycerin paste 1" – 2" transdermal.

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Nitrous Oxide **Indications:** • Non-narcotic analgesic gas **Contraindications:** • Contraindicated in abdominal pain, head/facial/chest/ abdominal trauma, headache/migraine, altered mental status, pregnancy, pneumothorax, head injury, or diving emergency patients. • Not to be used if patient has received an opiate. • **Must have approval of District Medical Advisor** • Requires use of scavenger/ventilation fan and open window.	**Pain Management for isolated extremity injuries (suspected fractures) or global soft tissue injuries (e.g., burns or road rash) or uncomplicated back/flank pain or renal colic (kidney stone)** • Patient must be able to self-administer this medication for pain control as needed.
Norepinephrine (Levophed) **Indications:** • Alpha and Beta 1 receptor adrenergic receptor agonist vasopressor • Infusion pump required.	**Post Resuscitation Care** • Infusion 1 – 30 mcg/min IV/IO, titrated to effect. **Septic Shock** • Infuse 1 – 30 mcg/min IV/IO (preferred 1st line agent). **Shock** • Infusion 1 – 30 mcg/min (preferred 1st line agent).
Normal Saline (0.9% NaCl) **Indications:** • Isotonic vehicle for dilution and/or dissolution of drugs for IV, IM, or SC injection or flushing of indwelling access • Isotonic fluid use for fluid resuscitation	**Use per Protocol**

Ondansetron (Zofran) Anti-emetic
 	
Indications:
• Anti-emetic used to control nausea and/or vomiting.
	Nausea/Vomiting
	• 4 mg PO/ODT/IV/IM
	  ▪ May give IV solution by oral route.
	  ▪ Paramedics repeat once after 10 minutes if nausea/vomiting persists.

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Oxygen **Indications:** • Indicated in any condition with increased cardiac workload, respiratory distress, or illness or injury resulting in altered ventilation and/or perfusion. Goal oxygen saturation 94 – 98%. • Indicated for pre-oxygenation whenever possible prior to endotracheal intubation. Goal oxygen saturation 100%.	**Administer oxygen as appropriate with a target of achieving 94-98% saturation:** • 1 – 4 liters/min via nasal cannula. • 6 – 15 liters/min via NRB mask. • 15 liters via BVM / ETT / supraglottic airway.
Oxymetazoline (Afrin) **Indications:** • Alpha adrenergic agonist provides vasoconstriction for epistaxis **Contraindications:** • Heart disease (increased BP, HR, palpitations). • Pregnancy.	**Epistaxis/Nosebleed** • 2 sprays into the affected nostril followed by direct pressure.
Oxytocin (Pitocin) **Indications:** Post-partum hemorrhage after placental delivery.	**Normal Labor and Delivery** • 10 units IM. **Obstetrical Emergencies** • 10 units IM
Phenylephrine (Neo-Synephrine) Contraindications: • Cardiac disease (increased BP, HR, palpitations) • Use of MAO inhibitors; risk of hypertensive reaction • Pregnancy	**Epistaxis/Nosebleed** • 2 sprays into affected nostril followed by direct pressure **Nasotracheal Intubation** • Pre-medicate nasal mucosa with a vasoconstricting nasal decongestant spray such as neo-synephrine, if available.

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Pralidoxime (2-PAM)
 	
Indications:
• Antidote for Nerve Agents or Organophosphate Overdose.
• Administered with Atropine.
	Nerve Agent
	• 1 – 2 gram IV.
	  ▪ Reconstitute pralidoxime 1 gram vial with 20 mL sterile water for injection.
	  ▪ Dilute reconstituted pralidoxime 1 gram in 100 mL of 0.9% NaCl (may dilute 1-2 grams in this manner).
	  ▪ Infuse over 5 minutes (1 gram dose) to 10 minutes (2 gram dose).
	• Maintenance infusion:
	  ▪ Reconstitute pralidoxime 1 gram vial with 20 mL sterile water or 0.9% NaCl for injection.
	  ▪ Dilute reconstituted pralidoxime 1 gram in 100 mL of 0.9% NaCl.
	  ▪ Infuse 1 gram over 15 – 30 minutes, followed by continuous infusion at 500 mg/hr, to a maximum of 12 grams/day.

Prochlorperazine (Compazine)
 	
Indications:
• Anti-Emetic used to control Nausea and/or Vomiting.
	Nausea/Vomiting
	• 5 – 10 mg slow IV push over 1-2 minutes, **OR**,
	• 10 mg IM
	  ▪ May repeat once after 10 minutes if nausea/vomiting persists.
	  ▪ May repeat IM every 4 – 6 hours as needed – *extended care protocol*.
	  ▪ Administer IV slowly, over 1 – 2 minutes, to reduce dystonic reactions.

Proparacaine (Alcaine) **Indications:** • Topical anesthetic	**Eye Injuries** • 2 drops to affected eye; repeat every 5 minutes as needed.
Rocuronium **Indications:** • Non-depolarizing paralytic agent used as a component of rapid sequence intubation, when succinylcholine is contraindicated and for post intubation paralysis. • Onset of action is longer than succinylcholine, up to 3 minutes, patient will NOT fasciculate.	**Rapid Sequence Intubation** **Post Intubation Paralytic** • 1 mg/kg IV/IO via **on-line Medical Direction** only. **Rapid Sequence Intubation** **{Sedate then} Paralyze** • 1 mg/kg IV/IO.

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Sodium Bicarbonate **Indications:** • A buffer used in acidosis to increase the pH in Cardiac Arrest, Hyperkalemia or Tricyclic (Cyclic) Overdose, crush syndrome **Contraindications** • Do not routinely use in cardiac arrest • Avoid extravasation	**Poisoning/Substance Abuse/Overdose** **Tricyclic (Cyclic) with symptomatic dysrhythmias, (eg. tachycardia and wide QRS):** • 1 – 2 mEq/kg IV/IO. **Cardiac Arrest: Wide Complex PEA or Pre-Existing Metabolic Acidosis** • 1 – 2 mEq/kg IV/IO **Crush/Suspension Injury** • 1 mEq/kg (maximum dose 50 mEq) IV/IO bolus over 5 minutes. ▪ Infusion secondary to initial bolus: 150 mEq in 1000 mL D5W at a rate of 250 mL/hour or 4mL/min – *extended care protocol.* **Hyperkalemia** • 1 mEq/kg (maximum dose 50 mEq) IV/IO bolus over 5 minutes.
Succinylcholine Paralytic Agent **Indications:** • Paralytic Agent used as a component of rapid sequence intubation. **Contraindications** • Avoid in patients with burns >24 hours old, chronic neuromuscular disease (e.g., muscular dystrophy), ESRD, or other situation in which hyperkalemia is likely.	**Rapid Sequence Intubation** **{Sedate then} Paralyze** • 1.5 mg/kg IV/IO immediately after sedation.
Tetracaine **Indications:** • Topical anesthetic	**Eye Injuries** • 2 drops to affected eye; repeat every 5 minutes as needed.
Tranexamic Acid (TXA) **Indications:** • See Tranexamic Acid (TXA) Protocol – Adult 4.7 • **Must have approval of District Medical Advisor to use TXA.**	**Obstetrical Emergencies** • Mix 1 gram TXA in 50 - 100 mL 0.9% NaCl. Infuse via wide-open IV/IO bolus over approximately 10 minutes. ▪ Notify receiving facility of TXA administration prior to arrival. **Tranexamic Acid** • Mix 1 gram TXA in 50 - 100 mL 0.9% NaCl. Infuse via wide-open IV/IO bolus over approximately 10 minutes. ▪ Notify receiving facility of TXA administration prior to arrival.

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Vasopressin **Indications:** • Posterior pituitary hormone (ADH) vasoconstrictor • Used in cardiac arrest, vasodilatory shock	**Use by CCP in IFT per Medical Direction only** **Cardiac Arrest** • **40 Units IV/IO x 1** **Shock** • 0.02-0.1 units/min IV infusion per interfacility transfer orders, typically a second line pressor
Vecuronium **Paralytic Agent** **Indications:** • Long-acting non-depolarizing paralytic agent. **Contraindications:** • Avoid in patients with chronic neuromuscular disease (e.g., muscular dystrophy).	**Rapid Sequence Intubation** **Post Intubation Paralysis** • 0.1 mg/kg IV/IO **via on-line Medical Direction only**. **Rapid Sequence Intubation** **{Sedate then} Paralyze** • 0.1 mg/kg IV/IO.