GD-097-PHS-EMS

Drug Profiles

As Recommended by the Bureau of EMS and Trauma System

ADHS

PREPAREDNESS

Arizona Department of Health Services

DISCLAIMER

These guidelines are designed to be a resource document for use by Medical Direction Authorities, as defined by A.R.S. § 36-2205, responsible for the administrative, organizational and on-line medical direction of pre-hospital Emergency Medical Care Technicians (EMCTs). It is specifically recognized that documented regional or local variations from the guidelines contained within are not only acceptable, but also appropriate, depending on the individual circumstances of the involved areas and organizations.

By Statute and Rule, all advanced life support pre-hospital EMCTs shall have administrative and on-line medical direction. These guidelines are not meant to act as a substitute, proxy or alternative to that medical direction. Any conflict between these guidelines and the EMCT's medical direction shall default to the Administrative or on-line medical direction.

These guidelines are deemed by the Bureau of EMS and Trauma System to be within the acceptable standard of medical care. It is specifically recognized that there are acceptable documented regional or local variations from these procedures and protocols, which may also satisfy the standard of care. This manual does NOT define, limit, expand, or otherwise purport to establish the legal standard of care.

Drugs listed as IV administration can be given IO.

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DRUG PROFILE	AZDHS
Adenosine	5/21/2020

PHARMACOLOGY & ACTIONS

- Slows conduction through the AV node.
- Most cases of PSVT involve AV nodal reentry, adenosine is capable of interrupting the AV nodal circuit and stopping the tachycardia, restoring normal sinus rhythm.

INDICATIONS

- To convert hemodynamically stable narrow complex regular tachycardia with a pulse.

ABSOLUTE CONTRAINDICATIONS

- Second or third degree heart block.
- Poison or drug-induced tachycardia.
- Know hypersensitivity.
- Adenosine allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause brief asystole, dizziness, facial flushing, headache, nausea, and transient shortness of breath.
- IV adenosine has been shown to produce bronchospasm in asthmatic patients.
- If the patient becomes hemodynamically unstable, cardioversion should occur.

ADMINISTRATION

IV	**Onset**: 20–30 seconds	**Peak Effect**: 20–30 seconds	**Duration**: 30 seconds

GUIDELINES CONTAINING ADENOSINE

- **Tachycardia with a Pulse: Adult & Pediatric**

DRUG PROFILE	AZDHS
Albuterol Sulfate	5/21/2020

PHARMACOLOGY & ACTIONS

- Relatively selective beta2-adrenergic bronchodilator.
- Beta-2 agonist that relaxes bronchial smooth muscle, resulting in bronchial dilation.
- Some beta-1 overlap with clinically significant cardiac effects such as tachycardia.
- Shift potassium intracellular, resulting in lower serum potassium.

INDICATIONS

- Treatment of bronchospasm.
- Treatment of hyperkalemia.

ABSOLUTE CONTRAINDICATIONS

- Albuterol sulfate allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause dizziness, anxiety, palpitations, headache, sweating, and muscle tremors.
- Clinically significant arrhythmias may occur especially in patients with underlying cardiovascular disorders.
- Relative contraindication include symptomatic tachycardia, tachyarrhythmias , or anginal chest pain.

ADMINISTRATION

SVN	**Onset**: 5–15 minutes	**Peak Effect**: 1–1.5 hours	**Duration**: 3–6 hours

GUIDELINES CONTAINING ALBUTEROL

- **Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric**
- **Anaphylaxis and Allergic Reaction: Adult & Pediatric**
- **Hyperglycemia: Adult & Pediatric**
- **Extremity Trauma: Adult & Pediatric**
- **Dermal Chemical Burns: Adult & Pediatric**

DRUG PROFILE	AZDHS
Amiodarone	5/21/2020

PHARMACOLOGY & ACTIONS

- Multiple effects on sodium, potassium, and calcium channels.
- Prolongs action potential and repolarization.
- Decreases AV conduction and sinus node function.
- Also has some alpha- and beta-adrenergic blocking properties.

INDICATIONS

- Ventricular fibrillation.
- Pulseless ventricular tachycardia.
- Regular wide complex tachycardia with a pulse.
- Irregular wide complex tachycardia.

ABSOLUTE CONTRAINDICATIONS

- Second or third degree AV blocks.
- Amiodarone allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause hypotension and bradycardia.

ADMINISTRATION

IV	**Onset**: 1–2 minutes	**Peak Effect**: 10 minutes	**Duration**: variable

GUIDELINES CONTAINING AMIODARONE

- **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**
- **Tachycardia with a Pulse: Adult & Pediatric**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**

DRUG PROFILE	AZDHS
Aspirin / Acetylsalicylic Acid / ASA	5/21/2020

PHARMACOLOGY & ACTIONS

- Aspirin inhibits prostaglandin and disrupts platelet function.
- It is also a mild analgesic and anti-inflammatory.

INDICATIONS

- Adult patients with suspected acute coronary syndrome.

ABSOLUTE CONTRAINDICATIONS

- Active GI bleeding.
- If patient has taken 324 mg within the last 24 hours.
- Aspirin allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause GI discomfort and nausea.
- May cause wheezing.

ADMINISTRATION

Oral	**Onset**: 5–30 minutes	**Peak Effect**: 1–2 hours	**Duration**: 4–6 hours

GUIDELINES CONTAINING ASPIRIN

- **Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult**

DRUG PROFILE	AZDHS
Atropine Sulfate	5/21/2020

PHARMACOLOGY & ACTIONS

- Blocks action of acetylcholine as competitive antagonist at muscarinic receptor sites in smooth muscle, secretory glands, and the CNS.
- Blocks parasympathetic response, allowing sympathetic response to take over.
- Positive chronotropic properties with little to no inotropic effects.
  - Increases heart rate.
  - Increases conduction through AV node.
- Atropine reverses the muscarinic effects of cholinergic poisoning by the following mechanisms:
  - Reverses bronchorrhea and bronchoconstriction.
  - Reduces motility and tone of GI tract.
  - Reduces action and tone of the urinary bladder (may cause urinary retention).
  - Dilates pupils.
  - Decreases sweat production.

INDICATIONS

- Symptomatic bradycardia.
- Nerve agent/organophosphate and carbamate insecticide toxicity.

ABSOLUTE CONTRAINDICATIONS

- Bradycardia without evidence of cardiopulmonary compromise.
- Atropine allergy.

PRECAUTIONS & SIDE EFFECTS

- Avoid in hypothermic bradycardia.
- Paradoxical bradycardia may result from doses less than 0.5 mg, use in caution in pediatric patients.

ADMINISTRATION

IV/IM	**Onset**: immediate	**Peak Effect**: 2–4 minutes	**Duration**: 4 hours

GUIDELINES CONTAINING ATROPINE

- **Bradycardia: Adult & Pediatric**
- **Acetylcholinesterase Inhibitor Poisoning (Nerve Agents, Organophosphates, and Carbamates): Adult & Pediatric**

DRUG PROFILE AZDHS

Atropine & pralidoxime (combined) autoinjector (DuoDote®) 1/20/2022

PHARMACOLOGY & ACTIONS

- Pralidoxime reactivates acetylcholinesterase which has been inactivated by phosphorylation due to an organophosphorus nerve agent or insecticide. Reactivation is clinically important because only a small proportion of active acetylcholinesterase is needed to maintain vital functions.

INDICATIONS

- Indicated for the treatment of poisoning by organophosphorus nerve agents as well as organophosphorus insecticides.

ABSOLUTE CONTRAINDICATIONS

- None.

PRECAUTIONS

- Pralidoxime is not effective in the treatment of poisoning due to phosphorus, inorganic phosphates, or organophosphates not having anticholinesterase activity.
- Pralidoxime is not indicated as an antidote for intoxication by pesticides of the carbamate class since it may increase the toxicity of carbaryl.

ADMINISTRATION

IM/IV/IO	**Onset**: Within 16 mins.	**Peak Effect**: 35 minutes.	**Duration**: 4 hours.

GUIDELINES CONTAINING ATROPINE & PRALIDOXIME (COMBINED) AUTOINJECTOR

- **Acetylcholinesterase Inhibitor Poisoning (Nerve Agents, Organophosphates, and Carbamates): Adult & Pediatric**

DRUG PROFILE	AZDHS
Calcium Chloride	5/21/2020

PHARMACOLOGY & ACTIONS

- Increases extracellular and intracellular calcium levels.
- Stimulates release of catecholamines.
- Increases cardiac contractile state (positive inotropic effect).
- Essential to a number of physiologic processes including transmission of nerve impulses, contraction of cardiac, smooth and skeletal muscles.
- Has stabilizing effect on myocardial cell membranes in setting of hyperkalemia.

INDICATIONS

- Suspected hyperkalemia.
- Antidote for calcium channel blocker overdose.

ABSOLUTE CONTRAINDICATIONS

- Do not use in setting of suspected digoxin toxicity.
- Hypercalcemia.
- Suspected severe hypokalemia (life-threatening cardiac arrhythmias may occur).
- Calcium chloride allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause discomfort at injection site.
- Will precipitate if mixed with sodium bicarbonate.

ADMINISTRATION

IV	**Onset**: immediate	**Peak Effect**: unknown	**Duration**: varies

GUIDELINES CONTAINING CALCIUM CHLORIDE

- **Hyperglycemia: Adult & Pediatric**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**
- **Extremity Trauma: Adult & Pediatric**
- **Dermal Chemical Burns: Adult & Pediatric**

DRUG PROFILE	AZDHS
Calcium Gluconate 2.5% Topical Gel	5/21/2020

PHARMACOLOGY & ACTIONS

- Calcium gluconate combines with hydrofluoric acid to neutralize the fluoride ion, forming insoluble calcium fluoride.
- This helps stop the fluoride ion from penetrating into tissue and bone, preventing further damage.
- The gel does NOT treat or heal HF burns that have already developed.

INDICATIONS

- Used after contact with hydrofluoric acid to mitigate or prevent the related pain and potential tissue burns and bone damage.

ABSOLUTE CONTRAINDICATIONS

- For cutaneous/skin application only.
- Calcium gluconate allergy.

PRECAUTIONS & SIDE EFFECTS

- Personnel should wear appropriate HF-protective gloves (neoprene) and other safety equipment before assisting patient with application of gel.
- If possible, the patient should wash area and apply the gel themselves.
- Consider placing surgical glove over gel when applied to distal upper extremities.

ADMINISTRATION

	Onset: immediate	**Peak Effect**: varies	**Duration**: unknown

GUIDELINES CONTAINING CALCIUM GLUCONATE GEL

- **Dermal Chemical Burns: Adult & Pediatric**

DRUG PROFILE	AZDHS
Calcium Gluconate	5/21/2020

PHARMACOLOGY & ACTIONS

- Increases extracellular and intracellular calcium levels.
- Stimulates release of catecholamines.
- Increases cardiac contractile state (positive inotropic effect).
- Essential to a number of physiologic processes including transmission of nerve impulses, contraction of cardiac, smooth and skeletal muscles.
- Has stabilizing effect on myocardial membranes in setting of hyperkalemia.

INDICATIONS

- Suspected hyperkalemia.
- Calcium channel blocker overdose.

ABSOLUTE CONTRAINDICATIONS

- Do not use in the setting of suspected digoxin toxicity.
- Hypercalcemia.
- Sarcoidosis.
- Suspected severe hypokalemia (life-threatening cardiac arrhythmias may occur).
- Calcium gluconate allergy.

PRECAUTIONS & SIDE EFFECTS

- Risk of digitalis toxicity.
- SQ or IM administration can cause severe tissue necrosis and tissue sloughing.
- Can induce serious cardiac dysrhythmias.

ADMINISTRATION

IV	**Onset**: 1–3 minutes	**Peak Effect**: immediate	**Duration**: 30–120 minutes

GUIDELINES CONTAINING CALCIUM GLUCONATE

- **Hyperglycemia: Adult & Pediatric**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age <8**
- **Extremity Trauma: Adult & Pediatric**
- **Dermal Chemical Burns: Adult & Pediatric**

DRUG PROFILE	AZDHS
Dexamethasone Sodium Phosphate	5/21/2020

PHARMACOLOGY & ACTIONS

- Improves lung function and myocardial performance.
- Stabilization of lysosomal and cell membranes, inhibition of compliment-induced granulocyte aggregation.
- Rightward shift in oxygen-hemoglobin dissociation curve.
- Inhibition of prostaglandin and leukotriene production, increase in surfactant production, decrease in pulmonary edema, relaxation of bronchospasm.

INDICATIONS

- Reactive airway disease: Acute exacerbation of bronchial asthma.
- Anaphylaxis.

ABSOLUTE CONTRAINDICATIONS

- Systemic fungal infections.
- Preterm infants.
- Dexamethasone allergy.

PRECAUTIONS & SIDE EFFECTS

- If given IV should be given as slow IV push.
- Sodium retention, fluid retention, potassium loss, hypokalemic alkalosis, hypertension, convulsions, hyperglycemia, myocardial rupture following recent myocardial infarction.

ADMINISTRATION

IV/IM	**Onset**: 4–8 hours	**Peak Effect**: 6–12 hours	**Duration**: 24–72 hours

GUIDELINES CONTAINING DEXAMETHASONE

- **Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric**
- **Pediatric Stridor (e.g., Croup)**

DRUG PROFILE	AZDHS
Dextrose	5/21/2020

PHARMACOLOGY & ACTIONS

- Rapidly increases blood glucose.

INDICATIONS

- Hypoglycemia.

ABSOLUTE CONTRAINDICATIONS

- None in prehospital setting.
- Dextrose allergy.

PRECAUTIONS & SIDE EFFECTS

- Extravasation of dextrose may cause tissue necrosis.
- Use caution during administration.
- If extravasation does occur, immediately stop administration of drug.
- Report extravasation of the medication to receiving hospital personnel and document.
- If there is any evidence of malnutrition or alcohol abuse, thiamine, if available, should precede the administration of dextrose (adult patients only).

ADMINISTRATION

IV	**Onset**: < 1 minute	**Peak Effect**: variable	**Duration**: variable

PROTOCOLS CONTAINING DEXTROSE

- **Hypoglycemia: Adult & Pediatric**

DRUG PROFILE	AZDHS
Diazepam	5/21/2020

PHARMACOLOGY & ACTIONS

- Benzodiazepine drug.
- Decreases seizures by increasing the seizure threshold.
- Sedative.
- Amnestic effect.

INDICATIONS

- Active seizures.
- Sedation prior to cardioversion, cardioversion, etc.

ABSOLUTE CONTRAINDICATIONS

- Severe respiratory depression.
- Diazepam allergy.

PRECAUTIONS & SIDE EFFECTS

- Since diazepam can cause respiratory depression and/or hypotension, the patient must be monitored closely. Diazepam should not be given to adult patients without a good IV line in place and a bag valve mask ready.
- Paradoxical excitement or stimulation sometimes occurs.
- Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- If patient received rectal dose prior to EMS arrival, further benzodiazepine administration should be administered with caution.

ADMINISTRATION

IV	**Onset**: 1–5 minutes	**Peak Effect**: 15 minutes	**Duration**: 15–60 minutes
IM	**Onset**: 15–30 minutes	**Peak Effect**: 30–45 minutes	**Duration**: 15–60 minutes

GUIDELINES CONTAINING DIAZEPAM

- **Hyperthermia/Heat Exposure: Adult & Pediatric**

DRUG PROFILE AZDHS

Diltiazem 5/21/2020

PHARMACOLOGY & ACTIONS

- Calcium channel blocker.
- Inhibitory effects on cardiac conduction system, principally at the AV node, slowing the ventricular rate associated with Atrial Fibrillation and Atrial Flutter.
- Inhibits extracellular calcium ion influx across membranes of myocardial cells and vascular smooth muscle cells, resulting in inhibition of contraction and thereby dilating main coronary and systemic arteries.

INDICATIONS

- Narrow complex tachyarrhythmias – atrial fibrillation/atrial flutter.
- SVT not responding to adenosine.

ABSOLUTE CONTRAINDICATIONS

- Heart block/bradycardia.
- Systolic blood pressure < 90 mmHg.
- Sick sinus syndrome.
- Ventricular tachycardia.
- Diltiazem allergy.

PRECAUTIONS & SIDE EFFECTS

- Prolongation of AV node conduction may result in second- or third-degree AV block.
- Should not be administered to compromised myocardium (severe CHF, AMI, or cardiomyopathy).
- Use caution when giving to hypotensive patients.

ADMINISTRATION

IV	**Onset**: 3 minutes	**Peak Effect**: 7 minutes	**Duration**: 1–3 hours

GUIDELINES CONTAINING DILTIAZEM

- **Tachycardia with a Pulse: Adult & Pediatric**

DRUG PROFILE	AZDHS
Diphenhydramine	5/21/2020

PHARMACOLOGY & ACTIONS

- Histamine H1-receptor antagonist (blocks histamine receptors) of effector cells in respiratory tract, blood vessels, and GI smooth muscle.
- Also has anticholinergic actions, making it useful in treating or preventing acute dystonic reactions to antipsychotic drugs. These reactions include: oculogyric crisis, acute torticollis, and facial grimacing.

INDICATIONS

- Treatment of allergic reactions.
- Treatment or prevention of acute dystonic reactions to antipsychotic drugs.

ABSOLUTE CONTRAINDICATIONS

- Known hypersensitivity.
- Newborns.
- Diphenhydramine allergy.

PRECAUTIONS & SIDE EFFECTS

- Usually causes sedation, however it may paradoxically cause excitation in children.
- May have additive sedation effect with alcohol or other CNS depressants.
- May cause hypotension when given IV.

ADMINISTRATION

IV	**Onset**: 10–15 minutes	**Peak Effect**: 1 hour	**Duration**: 6–8 hours

GUIDELINES CONTAINING DIPHENHYDRAMINE

- **Anaphylaxis and Allergic Reaction: Adult & Pediatric**
- **Poisoning/Overdose Universal Care: Adult & Pediatric**

DRUG PROFILE AZDHS

Dopamine (1 of 2 pages) 5/21/2020

PHARMACOLOGY & ACTIONS

- Endogenous catecholamine.
- Acts on both dopaminergic and adrenergic neurons.
- Dose dependent effects:
  - 1–2 mcg/kg/min - dilates renal and mesenteric blood vessels, typically no effect on heart rate or blood pressure.
  - 2–10 mcg/kg/min - beta effects on heart which increases cardiac output without greatly increasing heart rate or blood pressure.
  - 10–20 mcg/kg/min - alpha peripheral effects causing peripheral vasoconstriction, which results in increase in systemic vascular resistance (SVR) and increased blood pressure.
  - 20–40 mcg/kg/min - alpha effects reverse dilatation or renal and mesenteric vessels with resultant decreased flow. Increases heart rate and oxygen demand to undesirable limits.

INDICATIONS

- Treatment of refractory cardiogenic or distributive shock.

ABSOLUTE CONTRAINDICATIONS

- Hypovolemia.
- Dopamine allergy.

PRECAUTIONS & SIDE EFFECTS

- May induce tachyarrhythmias, in which case infusion should be decreased or stopped.
- High doses (10 mcg/kg) may cause peripheral vasoconstriction.
- Should not be added to sodium bicarbonate or other alkaline solutions since dopamine will be inactivated in alkaline solutions.
- Consider hypovolemia and treat this with appropriate fluids before administration of dopamine.
- Dopamine is best administered by an infusion pump to accurately regulate rate. It may be hazardous when used in the field without an infusion pump. Monitor closely.

ADMINISTRATION

IV	**Onset**: immediate	**Peak Effect**: 5–10 minutes	**Duration**: effects during infusion

PROTOCOLS CONTAINING DOPAMINE

- **Shock: Adult & Pediatric**
- **Bites and Envenomations: Adult & Pediatric**

DRUG PROFILE AZDHS

Dopamine (2 of 2 pages) 5/21/2020

Dopamine Dosage Chart

800 mg dopamine per 500 mL NS (400 mg dopamine per 250 mL) NS for a concentration of 1600 mcg dopamine per mL. The following table assumes using a 60 drops per mL (microdrop) infusion set.

DOPAMINE TABLE

PT WEIGHT		DESIRED DOSE (drops/min)		
Lbs	Kg	5 mcg/kg/min	10 mcg/kg/min	20 mcg/kg/min
88	40	8	15	30
100	45	8	17	34
110	50	9	19	38
120	55	10	21	41
132	60	11	23	45
143	65	12	24	49
154	70	13	26	53
165	75	14	28	56
176	80	15	30	60
187	85	16	32	64
198	90	17	34	68
209	95	18	36	71
220	100	19	38	75
231	105	20	39	79
242	110	21	41	83
253	115	22	43	86
264	120	23	45	90
275	125	23	47	94
286	130	24	49	98
297	135	25	51	102
308	140	26	53	106

USING THE DOPAMINE TABLE:

Find patient weight and then move across row to the column for the desired dose. Set dial-a-flow to the corresponding flow rate.

DRUG PROFILE AZDHS

Epinephrine 5/21/2020

PHARMACOLOGY & ACTIONS

- Catecholamine with alpha and beta effects which increases heart rate and blood pressure.
- Potent bronchodilator.

INDICATIONS

- Cardiac Arrest.
- Bradycardia.
- Anaphylaxis.
- Shock.
- IM for severe refractory wheezing.
- Nebulized for croup and bronchiolitis.

ABSOLUTE CONTRAINDICATIONS

- Uncontrolled hypertension is a relative contraindication.
- Epinephrine allergy.

PRECAUTIONS & SIDE EFFECTS

- Epinephrine increases cardiac work and can precipitate angina, myocardial infarction or major dysrhythmias in an individual with ischemic heart disease.

ADMINISTRATION

IV	**Onset**: < 2 minutes	**Peak Effect**: < 5 minutes	**Duration**: 5–10 minutes
IM	**Onset**: 3–10 minutes	**Peak Effect**: 20 minutes	**Duration**: 20–30 minutes

GUIDELINES CONTAINING EPINEPHRINE

- **Bradycardia: Adult & Pediatric**
- **Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric**
- **Anaphylaxis and Allergic Reaction: Adult & Pediatric**
- **Shock: Adult & Pediatric**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**
- **Pediatric Respiratory Distress – Wheezing < 2 Years Old (Bronchiolitis)**
- **Pediatric Stridor (e.g., Croup)**
- **Neonatal Resuscitation page 1 of 2**
- **Neonatal Resuscitation page 2 of 2**
- **Bites and Envenomations: Adult & Pediatric**

DRUG PROFILE	AZDHS
Etomidate	5/21/2020

PHARMACOLOGY & ACTIONS

- Sedative and hypnotic.
- Appears to act similar to GABA by depressing the activity of the brain stem reticular activating system.
- No analgesic properties.

INDICATIONS

- Induction of anesthesia for rapid sequence intubation.

ABSOLUTE CONTRAINDICATIONS

- Known hypersensitivity.
- Etomidate allergy.

PRECAUTIONS & SIDE EFFECTS

- Not intended for prolonged infusion due to suppression of cortisol and aldosterone production.

ADMINISTRATION

IV	**Onset**: 10–20 seconds	**Peak Effect**: < 1 minute	**Duration**: 3–5 minutes

GUIDELINES CONTAINING ETOMIDATE

None.

DRUG PROFILE	AZDHS
Fentanyl	5/21/2020

PHARMACOLOGY & ACTIONS

- Opioid agonist-analgesic.
- Inhibits ascending pain pathways, thus altering response to pain, increases pain threshold.
- Produces analgesia, respiratory depression, and sedation.

INDICATIONS

- Severe pain of any etiology.

ABSOLUTE CONTRAINDICATIONS

- Oxygen saturation less than 90% or significant respiratory depression.
- Fentanyl allergy.

PRECAUTIONS & SIDE EFFECTS

- Fentanyl causes neurologic and respiratory depression. Respiratory depression may be worse in patients with underlying lung disease or concomitant use of other depressant drugs such as benzodiazepines or alcohol. Respiratory support must be available when administering fentanyl.
- Fentanyl can be reversed with naloxone.
- When fentanyl is given to treat pain, the goal is reduction of pain not total elimination of pain.

ADMINISTRATION

IV	**Onset**: immediate	**Peak Effect**: 3–5 minutes	**Duration**: 30–60 minutes

GUIDELINES CONTAINING FENTANYL

- **Management of Acute Pain: Adult & Pediatric**
- **Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult**

DRUG PROFILE	AZDHS
Glucagon	5/21/2020

PHARMACOLOGY & ACTIONS

- Increases serum glucose by releasing glycogen stores from the liver.
- Glucagon will only work if there are sufficient stores of glycogen in the liver, and will not work if patient is malnourished.
- Counteracts effects of beta blocker or calcium channel blocker overdose.

INDICATIONS

- Hypoglycemia.
- Symptomatic bradycardia from beta blocker or calcium channel blocker overdose.

ABSOLUTE CONTRAINDICATIONS

- Glucagon is not the first line treatment for hypoglycemia and should ONLY be used in patient with symptomatic hypoglycemia when the EMCT is unable to obtain IV access.
- Glucagon allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause nausea and vomiting.
- Slower onset than IV dextrose.

ADMINISTRATION

IM	**Onset**: 5–20 minutes	**Peak Effect**: 30 minutes	**Duration**: 1–2 hours

GUIDELINES CONTAINING GLUCAGON

- Hypoglycemia: Adult & Pediatric

DRUG PROFILE	AZDHS
Glucose, oral	5/21/2020

PHARMACOLOGY & ACTIONS

- Monosaccharide carbohydrate.
- After absorption from GI tract, glucose is distributed in the tissues and provides a prompt increase in circulating blood sugar.

INDICATIONS

- Hypoglycemia.

ABSOLUTE CONTRAINDICATIONS

- Glucose allergy.

PRECAUTIONS & SIDE EFFECTS

- Altered level of consciousness.
- Ascertain the patient's ability to swallow an oral preparation of glucose without airway compromise.
- Must be swallowed, not absorbed sublingually or buccally.

ADMINISTRATION

PO	**Onset**: 10 minutes	**Peak Effect**: variable	**Duration**: variable

GUIDELINESS CONTAINING GLUCOSE

- **Hypoglycemia: Adult & Pediatric**

DRUG PROFILE AZDHS

Hydroxocobalamin (Cyanokit) 5/21/2020

PHARMACOLOGY & ACTIONS

- Precursor to Vitamin B12.
- Hydroxocobalamin binds cyanide ions to form Cyanocobalamin (vitamin B12) which is then excreted in the urine.

INDICATIONS

- Known or suspected cyanide poisoning.
- Closed-space smoke inhalation exposure with:
  - Shock
  - Cardiac arrest
  - Altered level of consciousness

ABSOLUTE CONTRAINDICATIONS

- Hydroxocobalamin allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause transient elevation of blood pressure.
- Will cause red colored urine (for up to 5 weeks) and red colored skin (for up to 2 weeks). The red color of the blood serum and urine will interfere with colorimetric laboratory tests for several days.

ADMINISTRATION

IV	**Onset**: 2–15 minutes	**Peak Effect**: variable	**Duration**: variable

GUIDELINES CONTAINING HYDROXOCOBALAMIN (CYANOKIT)

- **Suspected Cyanide Poisoning: Adult & Pediatric**

DRUG PROFILE	AZDHS
Ipratropium Bromide	5/21/2020

PHARMACOLOGY & ACTIONS

- Antagonizes action of acetylcholine on the bronchial smooth muscle in the lungs, causing bronchodilation.

INDICATIONS

- Bronchoconstriction – asthma and COPD.
- Ipratropium may be given in a combination with albuterol anytime albuterol is indicated.

ABSOLUTE CONTRAINDICATIONS

- Ipratropium bromide allergy.

PRECAUTIONS & SIDE EFFECTS

- Use with caution in patients with narrow angle glaucoma.
- Side effects may include palpitations, dizziness, anxiety, headache, eye pain, urinary retention, and anxiety.

ADMINISTRATION

SVN	**Onset**: 5–15 minutes	**Peak Effect**: 1.5–2 hours	**Duration**: 4–6 hours

GUIDELINES CONTAINING IPRATROPIUM

- **Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric**

DRUG PROFILE	AZDHS
Ketamine	5/21/2020

PHARMACOLOGY & ACTIONS

- Ketamine is a non-competitive NMDA receptor antagonist.
- It functions as a dissociative, amnestic, analgesic, and anesthetic agent.

INDICATIONS

- Delirium with agitated behavior.
- Induction agent for intubation.
- Pain control.

ABSOLUTE CONTRAINDICATIONS

- Angina.
- CHF.
- Pregnancy.
- Ketamine allergy.

PRECAUTIONS & SIDE EFFECTS

- Transient periods of apnea (1-2 minutes) have occurred with IV ketamine administration, especially with rapid infusion.
- May cause laryngospasm.
- May cause hypersalivation, increased airway secretions.
- May cause emergence reaction.
- May cause nystagmus.
- Use with caution in patients with schizophrenia.

ADMINISTRATION

IV	**Onset**: < 1 minute	**Peak Effect**: 30 seconds – 5 minutes	**Duration**: 10–45 minutes
IM	**Onset**: 3–4 minutes	**Peak Effect**: 3–12 minutes	**Duration**: 25–60 minutes

GUIDELINES CONTAINING KETAMINE

- **Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric**
- **Management of Acute Pain: Adult & Pediatric**

DRUG PROFILE	AZDHS
Lidocaine	5/21/2020

PHARMACOLOGY & ACTIONS

- Antiarrhythmic drug that decreases automaticity by slowing the rate of depolarization.
- Terminates re-entry by decreasing conduction in re-entrant pathways.
- Local anesthesia for pain control caused by infusion of fluids or medications via an intraosseous (IO) site.

INDICATIONS

- Cardiac Arrest due to Ventricular Fibrillation of Pulseless Ventricular Tachycardia.
- Wide complex tachycardia with a pulse.
- Pain management after IO insertion in conscious patients.

ABSOLUTE CONTRAINDICATIONS

- Bradycardia.
- Lidocaine allergy.

PRECAUTIONS & SIDE EFFECTS

- At higher doses may cause CNS stimulation, seizure, depression, and respiratory failure.
- Toxicity is more likely in elderly patients and patients with Congestive Heart Failure or impaired liver function.

ADMINISTRATION

IV	**Onset**: < 3 minutes	**Peak Effect**: 5–10 minutes	**Duration**: 10–20 minutes

GUIDELINES CONTAINING LIDOCAINE

- **Tachycardia with a Pulse: Adult & Pediatric**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**

DRUG PROFILE	AZDHS
Lorazepam	5/21/2020

PHARMACOLOGY & ACTIONS

- Benzodiazepine that functions as a CNS depressant, anticonvulsant, and sedative.

INDICATIONS

- Seizures.
- Sedation.
- Agitation/delirium with agitated behavior.
- Uncontrolled shivering in hyperthermia.

ABSOLUTE CONTRAINDICATIONS

- Neurologic or respiratory depression.
- Acute angle glaucoma.
- Lorazepam allergy.

PRECAUTIONS & SIDE EFFECTS

- Respiratory depression and/or hypotension can occur, the patient should be monitored closely.
- Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- Elderly patients may have more profound respiratory and/or CNS depression, half dose should be administered.

ADMINISTRATION

IV	**Onset**: 1–2 minutes	**Peak Effect**: < 15 minutes	**Duration**: 6–8 hours
IM	**Onset**: 15–30 minutes	**Peak Effect**: 2–3 hours	**Duration**: 6–8 hours

GUIDELINES CONTAINING LORAZEPAM

- **Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric**
- **Bradycardia: Adult & Pediatric**
- **Seizures: Adult & Pediatric**
- **Hyperthermia/Heat Exposure: Adult & Pediatric**

DRUG PROFILE	AZDHS
Magnesium Sulfate	5/21/2020

PHARMACOLOGY & ACTIONS

- Smooth muscle relaxant.
- Decreases early after depolarizations and reduces arrhythmias.
- Decreases seizures in eclampsia and preeclampsia, possibly via cerebral vasodilation.
- CNS depressant.

INDICATIONS

- Eclampsia and preeclampsia.
- Torsades de pointes.
- Severe bronchospasm in patients with asthma or COPD.

ABSOLUTE CONTRAINDICATIONS

- Magnesium allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause hypotension and respiratory depression in large doses.
- Caution with use in patients with renal insufficiency or chronic renal failure/dialysis.

ADMINISTRATION

IV	**Onset**: immediate	**Peak Effect**: variable	**Duration**: 1 hour

GUIDELINESS CONTAINING MAGNESIUM SULFATE

- **Tachycardia with a Pulse: Adult & Pediatric**
- **Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric**
- **Seizures: Adult & Pediatric**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Age 8 and Older**
- **Cardiac Arrest (VF/VT/Asystole/PEA): Pediatric Age < 8**
- **Childbirth**
- **Obstetrical/Gynecological Conditions**

DRUG PROFILE	AZDHS
Methylene blue	01/20/2022

PHARMACOLOGY & ACTIONS

- Used in the treatment of methemoglobin (MetHgb) toxicity. Converts MetHgb back to normal hemoglobin and reverses hypoxia. Acts as reducing agent to convert iron in methemoglobin from Fe^{3+} to Fe^{2+} regenerating normal hemoglobin.

INDICATIONS

- Treatment of symptomatic methemoglobinemia.

ABSOLUTE CONTRAINDICATIONS

- Known glucose-6-phosphate dehydrogenase (G6PD) deficiency.
- Hemolysis or history of hemolytic anemia.

PRECAUTIONS & SIDE EFFECTS

- Side effects: Chest pain, vomiting, flushing, confusion and headache.
- Pulse oximetry will be transiently unreliable (very low) immediately after administration.

ADMINISTRATION

IV/IO	**Onset**: Within 1-2 minutes.	**Peak Effect**: 30 minutes.	**Duration**: 30-60 minutes.

GUIDELINES CONTAINING METHYLENE BLUE

- Methemoglobin Toxicity: Adult & Pediatric

DRUG PROFILE	AZDHS
Methylprednisolone Sodium Succinate	5/21/2020

PHARMACOLOGY & ACTIONS

- Potent synthetic steroid that inhibits many substances that cause inflammatory response.
- Controls or prevents inflammation by controlling rate of protein synthesis, suppressing migration of polymorphonuclear leukocytes (PMNs) and fibroblasts, reversing capillary permeability, and stabilizing lysosomes at cellular level.

INDICATIONS

- Acute bronchospastic disease (asthma or COPD).
- Adrenal Insufficiency.

ABSOLUTE CONTRAINDICATIONS

- Traumatic brain injury (high doses).
- Methylprednisolone sodium succinate allergy.

PRECAUTIONS & SIDE EFFECTS

ADMINISTRATION

IV	**Onset**: 1–6 hours	**Peak Effect**: 8 hours	**Duration**: 18–36 hours

GUIDELINES CONTAINING METHYLPREDNISOLONE SODIUM SUCCINATE

- **Bronchospasm (due to Asthma and Obstructive Lung Disease): Adult & Pediatric**
- **Shock: Adult & Pediatric**

DRUG PROFILE	AZDHS
Midazolam	5/21/2020

PHARMACOLOGY & ACTIONS

- Benzodiazepine that functions as a CNS depressant, anticonvulsant, and sedative.

INDICATIONS

- Seizures.
- Sedation.
- Agitation/delirium with agitated behavior.
- Uncontrolled shivering in hyperthermia.

ABSOLUTE CONTRAINDICATIONS

- Respiratory and/or CNS depression.
- Midazolam allergy.

PRECAUTIONS & SIDE EFFECTS

- Midazolam has more potential than the other IV benzodiazepines to cause respiratory depression. Respiratory depression and/or hypotension can occur, the patient should be monitored closely.
- Most likely to produce respiratory depression in patients who have taken other depressant drugs, especially alcohol and barbiturates, or when given rapidly.
- Elderly patients may have more profound respiratory and/or CNS depression, half dose should be administered.

ADMINISTRATION

IV/IN	**Onset**: immediate	**Peak Effect**: 3–5 minutes	**Duration**: < 2 hours
IM	**Onset**: 15 minutes	**Peak Effect**: 30–60 minutes	**Duration**: 1–6 hours

GUIDELINES CONTAINING MIDAZOLAM

- **Hyperthermia/Heat Exposure: Adult & Pediatric**
- **Agitated or Violent Patient/Behavioral Emergency: Adult & Pediatric**
- **Bradycardia: Adult & Pediatric**
- **Seizures: Adult & Pediatric**

DRUG PROFILE	AZDHS
Morphine Sulfate	5/21/2020

PHARMACOLOGY & ACTIONS

- Narcotic analgesic.
- Alleviates pain by acting on the pain receptors in the brain, elevates pain threshold.
- CNS depressant, depresses brainstem respiratory centers.
- Increases venous pooling, vasodilates arterioles, reducing preload and afterload.
- Histamine release.

INDICATIONS

- Analgesia.

ABSOLUTE CONTRAINDICATIONS

- Respiratory and/or CNS depression.
- Hypotension.
- Morphine sulfate allergy.

PRECAUTIONS & SIDE EFFECTS

- Morphine causes neurologic and respiratory depression. Respiratory depression may be worse in patients with underlying lung disease or concomitant use of other depressant drugs such as benzodiazepines or alcohol.
- Morphine can be reversed with naloxone.
- Check and document vital signs and patient response after each dose.
- When morphine is given to treat pain, the goal is reduction of pain not total elimination of pain.

ADMINISTRATION

IV	**Onset**: seconds	**Peak Effect**: 20 minutes	**Duration**: 2–4 hours

GUIDELINES CONTAINING MORPHINE SULFATE

- **Management of Acute Pain: Adult & Pediatric**
- **Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult**

DRUG PROFILE	AZDHS
Naloxone	5/21/2020

PHARMACOLOGY & ACTIONS

- Naloxone is a narcotic antagonist which competitively binds to opioid receptors in the brain.
- Displaces opioid molecules, reversing the effect of opioids on the brain.

INDICATIONS

- Reversal of acute opioid toxicity.

ABSOLUTE CONTRAINDICATIONS

- Naloxone allergy.

PRECAUTIONS & SIDE EFFECTS

- May precipitate acute withdrawal symptoms in patients who chronically use opioids.
- Agitation, tachycardia, pulmonary edema, nausea, vomiting, and seizures (in neonates.)
- Be prepared to restrain the patient as they may become violent with reverse of the narcotic effect.
- The duration of some narcotics is longer than Naloxone.
- Repeated doses of Naloxone may be required for some opioid toxicities.

ADMINISTRATION

IV	**Onset**: < 2 minutes	**Peak Effect**: < 2 minutes	**Duration**: 20–120 minutes
IM/IN	**Onset**: 2–10 minutes	**Peak Effect**: 2–10 minutes	**Duration**: 20–120 minutes

GUIDELINES CONTAINING NALOXONE

- **Altered Mental Status: Adult & Pediatric**
- **Opioid Poisoning/Overdose: Adult & Pediatric**

DRUG PROFILE	AZDHS
Nitroglycerin	5/21/2020

PHARMACOLOGY & ACTIONS

- Potent smooth muscle relaxant.
- Causes systemic venodilation, decreasing preload.
- Arterial vasodilation, decreasing afterload.
- Coronary artery vasodilation.
- Increases blood flow to the myocardium.
- Decreases myocardial oxygen demand.

INDICATIONS

- Chest pain, particularly when Acute Coronary Syndrome is suspected.
- Hypertensive Emergency.
- Congestive Heart Failure with pulmonary edema.

ABSOLUTE CONTRAINDICATIONS

- Hypotension.
- Recent use of erectile dysfunction medications (48 hours).
- Nitroglycerin is **not to be given** to children in the prehospital setting.
- Nitroglycerin allergy.

PRECAUTIONS & SIDE EFFECTS

- Generalized vasodilatation may cause profound hypotension and reflex tachycardia.
- May cause profound hypotension in patients taking medication for erectile dysfunction.
- Common side effects include throbbing headache, flushing, dizziness and burning under the tongue.
- Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.

ADMINISTRATION

SL	**Onset**: immediate	**Peak Effect**: 5-10 minutes	**Duration**: 20-30 minutes

GUIDELINES CONTAINING NITROGLYCERIN

- **Chest Pain/Acute Coronary Syndrome/ST-segment Elevation Myocardial Infarction (STEMI): Adult**
- **Pulmonary Edema: Adult & Pediatric**

DRUG PROFILE	AZDHS
Norepinephrine (Infusion Pump Only)	5/21/2020

PHARMACOLOGY & ACTIONS

- Catecholamine that stimulates beta-1 and alpha-1 receptors in the sympathetic nervous system.
- Results in vasoconstriction, increased blood pressure, enhanced contractility, and increased heart rate.

INDICATIONS

- Hypotension unresponsive to IV fluid resuscitation.

ABSOLUTE CONTRAINDICATIONS

- Hypotension caused by hypovolemia (blood volume deficit).
- Norepinephrine allergy.

PRECAUTIONS & SIDE EFFECTS

- Ensure adequate fluid replacement before starting norepinephrine.
- Administer through largest vein possible to reduce risk of tissue necrosis if it extravasates.
- Monitor blood pressure closely.
- Must be administered via infusion pump.

ADMINISTRATION

IV (infusion pump only)	**Onset**: immediate	**Peak Effect**: < 1 minute	**Duration**: 1–2 minutes

GUIDELINES CONTAINING NOREPINEPHRINE

- **Shock: Adult & Pediatric**
- **Bites and Envenomations: Adult & Pediatric**

DRUG PROFILE	AZDHS
Ondansetron	5/21/2020

PHARMACOLOGY & ACTIONS

- Selectively blocks serotonin 5-HT3 receptors in the brain.
- Primary effect is in the GI tract.
- No effect on dopamine receptors and therefore does not cause extrapyramidal symptoms.

INDICATIONS

- Nausea or vomiting.

ABSOLUTE CONTRAINDICATIONS

- Patients with prolonged QT.
- Patients < 1 month old.
- Ondansetron allergy.

PRECAUTIONS & SIDE EFFECTS

- May cause QT prolongation, avoid use in patients with prolonged QT syndrome.

ADMINISTRATION

IV/PO/SL	**Onset**: 10–30 minutes	**Peak Effect**: 1.5 hours	**Duration**: 8 hours

GUIDELINES CONTAINING ONDANSETRON

- **Nausea/Vomiting: Adult & Pediatric**

DRUG PROFILE	AZDHS
Oxytocin	5/21/2020

PHARMACOLOGY & ACTIONS

- Binds to oxytocin receptor sites on surface of uterine smooth muscles.
- Increases force and frequency of uterine contractions.

INDICATIONS

- Postpartum hemorrhage due to uterine atony.

ABSOLUTE CONTRAINDICATIONS

- Known hypersensitivity.
- Oxytocin allergy.

PRECAUTIONS & SIDE EFFECTS

- Shock, tachycardia, dysrhythmias.
- Anaphylaxis.
- Nausea and vomiting.
- If used prior to delivery, can cause uterine rupture, uterine spasm, lacerations, and fetal damage.
- Clotting disorders, electrolyte disturbances.

ADMINISTRATION

IV/IM	**Onset**: seconds	**Peak Effect**: variable	**Duration**: 1 hour after discontinued

GUIDELINES CONTAINING OXYTOCIN

None.

DRUG PROFILE	AZDHS
Phenylephrine Nasal Spray 0.5%	5/21/2020

PHARMACOLOGY & ACTIONS

- Stimulates alpha receptors in the blood vessels of the nasal mucosa which causes their constriction and thereby decreases the risk of nasal bleeding.

INDICATIONS

- Facilitation of nasotracheal intubation.
- Epistaxis.

ABSOLUTE CONTRAINDICATIONS

- Phenylephrine allergy.

PRECAUTIONS & SIDE EFFECTS

- Each bottle is single patient use only.
- Hypertension, palpitations.
- Tremors.

ADMINISTRATION

IN	**Onset**: seconds	**Peak Effect**: 30 minutes	**Duration**: 30 minutes–4 hours

GUIDELINES CONTAINING PHENYLEPHRINE NASAL SPRAY

None.

DRUG PROFILE	AZDHS
Pralidoxime Autoinjector	5/21/2020

PHARMACOLOGY & ACTIONS

- Binds to organophosphates and breaks alkyl phosphate-cholinesterase bond (removes phosphate group from cholinesterase) to restore activity of acetylcholinesterase.
- Must be administered before the alkyl phosphate-cholinesterase bond becomes permanent (this is referred to as aging).

INDICATIONS

- Poisoning by organophosphate insecticides and related nerve gases (e.g., tabun, sarin, soman).

ABSOLUTE CONTRAINDICATIONS

- Pralidoxime allergy.

PRECAUTIONS & SIDE EFFECTS

- Rapid injection may cause laryngospasm, tachycardia, and muscle rigidity - intubation may be required.
- Speeds the effect of atropine when used together.
- Excitement and manic behavior can occur immediately after recovery from unconsciousness.

ADMINISTRATION

IM	**Onset**: variable	**Peak Effect**: 10–20 minutes	**Duration**: variable

GUIDELINES CONTAINING PRALIDOXIME

None.

DRUG PROFILE	AZDHS
Proparacaine Ophthalmic	5/21/2020

PHARMACOLOGY & ACTIONS

- Site of action is at the ophthalmic pain nerve cell membrane.
- Alleviates pain by limiting the sodium ion permeability in these nerve cell membranes; this elevates the threshold stimulus needed to trigger action potential in these cells. When the action is sufficiently well developed, block of conduction is produced.

INDICATIONS

- Induction of topical anesthesia prior to irrigation of eyes with or without adjuncts, e.g., Morgan's lens.

ABSOLUTE CONTRAINDICATIONS

- Known hypersensitivity.
- Proparacaine allergy.

PRECAUTIONS & SIDE EFFECTS

- Each bottle is single patient use only.
- Pupillary dilation, local irritation, softening and erosion of cornea (rare). Severe hyperallergic corneal reaction with corneal sloughing (extremely rare).
- Allergic dermatitis conjunctiva and eyelids (rare).

ADMINISTRATION

Eye Drops	**Onset**: 30–120 seconds	**Peak Effect**: 30–120 seconds	**Duration**: 5–10 minutes

GUIDELINES CONTAINING PROPARACAINE HYDROCHLORIDE OPHTHALMIC

- **Dermal Chemical Burns: Adult & Pediatric**

DRUG PROFILE	AZDHS
Propranolol	01/20/2022

PHARMACOLOGY & ACTIONS

- Propranolol is a nonselective beta-adrenergic receptor blocking agent possessing no other autonomic nervous system activity.

INDICATIONS

- Ventricular dysrhythmias caused by hydrocarbon inhalation/exposure (i.e. huffing).

ABSOLUTE CONTRAINDICATIONS

- Sinus bradycardia and greater than first degree block.
- Known hypersensitivity to propranolol hydrochloride.

PRECAUTIONS & SIDE EFFECTS

- Precautions: Caution against coadministration with epinephrine if in cardiac arrest following huffing.
- Side effects: May precipitate bronchospasm in asthmatics. May cause or exacerbate bradycardia, heart block, hypotension and CHF.

ADMINISTRATION

IV/IO	**Onset**: Within 5 minutes.	**Peak Effect**: 5-10 minutes.	**Duration**: 2-5 hours.

GUIDELINES CONTAINING PROPRANOLOL

- Hydrocarbon Poisoning: Adult & Pediatric

DRUG PROFILE	AZDHS
Rocuronium	5/21/2020

PHARMACOLOGY & ACTIONS

- Non-depolarizing neuromuscular blocker.
- Binds to nicotinic cholinergic receptor sites at the motor end plate. Antagonizes acetylcholine binding at these sites, resulting in neuromuscular blockade.

INDICATIONS

- Induction of paralysis to facilitate endotracheal intubation.

ABSOLUTE CONTRAINDICATIONS

- Known hypersensitivity.
- Rocuronium allergy.

PRECAUTIONS & SIDE EFFECTS

- Use ideal body weight for dosing.
- Slightly elevates heart rate and blood pressure.
- Tachycardia may occur in children.

ADMINISTRATION

IV	**Onset**: 30–60 seconds	**Peak Effect**: 1–3 minutes	**Duration**: 30–60 minutes

GUIDELINES CONTAINING ROCURONIUM

None.

DRUG PROFILE AZDHS

Sodium bicarbonate 7.5%–8.4% 5/21/2020

PHARMACOLOGY & ACTIONS

- Sodium bicarbonate reacts with hydrogen ions, forming water and carbon dioxide, correcting metabolic acidosis.
- Increases blood and urinary pH by releasing a bicarbonate ion, which in turn neutralizes hydrogen ion concentrations.

INDICATIONS

- Cardiac arrest when hyperkalemia or tricyclic antidepressant (TCA) overdose is suspected.
- Tricyclic antidepressant overdose.
- Extremity trauma, crush syndrome.

ABSOLUTE CONTRAINDICATIONS

- Sodium bicarbonate allergy.

PRECAUTIONS & SIDE EFFECTS

- Administration of sodium bicarbonate may result in metabolic alkalosis, which may be difficult to reverse.

ADMINISTRATION

IV	**Onset**: immediate	**Peak Effect**: < 15 minutes	**Duration**: 1–2 hours

GUIDELINES CONTAINING SODIUM BICARBONATE

- **Extremity Trauma: Adult & Pediatric**

DRUG PROFILE	AZDHS
Sodium nitrite	01/20/2022

PHARMACOLOGY & ACTIONS

- Interacts with hemoglobin to form methemoglobin which has a higher binding affinity for cyanide and prevents it from entering cells and causing toxicity. Similar mechanism for severe hydrogen sulfide poisoning.

INDICATIONS

- Antidote for cyanide poisoning (should be used with sodium thiosulfate).
- Rarely considered for treatment in confirmed hydrogen sulfide poisoning.

ABSOLUTE CONTRAINDICATIONS

- Hypotension.
- Hypoxia.

PRECAUTIONS & SIDE EFFECTS

- Side effects: Hypoxia (cyanosis due to formation of methemoglobin), tachycardia (due to hypoxia), tachypnea, syncope, vasodilation, vomiting, dizziness, headache and flushing.
- Precaution: Use with caution for significant carbon monoxide poisoning or smoke inhalation.

ADMINISTRATION

IV/IO	**Onset**: Within minutes.	**Peak Effect**: ~ 30 minutes.	**Duration**: ~ 60 minutes.

GUIDELINES CONTAINING SODIUM NITRITE

- **Suspected Cyanide Poisoning: Adult & Pediatric**
- **Sulfide Poisoning: Adult & Pediatric**

DRUG PROFILE AZDHS

Sodium nitrite & sodium thiosulfate (combined) (Nithiodote®) 01/20/2022

PHARMACOLOGY & ACTIONS

- Interacts with hemoglobin to form methemoglobin which has a higher binding affinity for cyanide and prevents it from entering cells and causing toxicity. Similar mechanism for severe hydrogen sulfide poisoning.
- When used with sodium nitrite for cyanide poisoning, removes cyanide from cyanide-methemoglobin complex to form thiocyanate, which is then excreted by the kidneys.
- Is a reducing agent for some toxic ingestions (see below).

INDICATIONS

- Antidote for cyanide poisoning.
- See drug profiles for separate indications of sodium nitrite and sodium thiosulfate.

ABSOLUTE CONTRAINDICATIONS

- Hypoxia (sodium thiosulfate is okay, sodium nitrite is not).
- Hypotension (sodium thiosulfate is okay, sodium nitrite is not).

PRECAUTIONS & SIDE EFFECTS

- Side effect: May cause hypoxia (cyanosis due to formation of methemoglobin), tachycardia (due to hypoxia), tachypnea, syncope, vasodilation, vomiting, dizziness, headache and flushing.
- Side effect: May cause hypotension, vomiting, headache and muscle cramps.
- Precaution: Use with caution for significant carbon monoxide poisoning or smoke inhalation.

ADMINISTRATION

IV/IO	**Onset**: Within 5 mins.	**Peak Effect**: 5-10 minutes.	**Duration**: 2-5 hours.

GUIDELINES CONTAINING SODIUM NITRITE & SODIUM THIOSULFATE (COMBINED)

- **Suspected Cyanide Poisoning: Adult & Pediatric**

DRUG PROFILE	AZDHS
Sodium thiosulfate	01/20/2022

PHARMACOLOGY & ACTIONS

- When used with sodium nitrite for cyanide poisoning, removes cyanide from cyanide-methemoglobin complex to form thiocyanate, which is then excreted by the kidneys.
- Is a reducing agent for some toxic ingestions (see below).

INDICATIONS

- Antidote for cyanide poisoning (when used with sodium nitrite).
- Can be used following ingestion of bromates, chlorates, chromates and iodine.

ABSOLUTE CONTRAINDICATIONS

- None.

SIDE EFFECTS

- Nausea, vomiting, headache and muscle cramps.

ADMINISTRATION

IV/IO	**Onset**: Within minutes.	**Peak Effect**: Varies based on dose.	**Duration**: Varies based on dose.

GUIDELINES CONTAINING SODIUM THIOSULFATE

- **Suspected Cyanide Poisoning: Adult & Pediatric**

DRUG PROFILE AZDHS

Succinylcholine 5/21/2020

PHARMACOLOGY & ACTIONS

- Depolarizing neuromuscular blocker.
- Acts on the motor end plate receptors, producing depolarization or fasciculations, and inhibiting subsequent neuromuscular transmission for the duration of the medication (short acting).
- Muscles are unable to be stimulated by acetylcholine.

INDICATIONS

- Induction of paralysis to facilitate endotracheal intubation.

ABSOLUTE CONTRAINDICATIONS

- Malignant hyperthermia (may result in irreversible trismus).
- Known or suspected hyperkalemia.
- Penetrating eye injury (increases intraocular pressure).
- Inability to control the airway and/or support ventilations.
- Paraplegia/quadraplegia.
- Musculoskeletal disorders such as muscular dystrophy, spinal muscular atrophy.
- Prolonged immobilization.
- Stroke with residual motor dysfunction.
- Succinylcholine allergy.

PRECAUTIONS & SIDE EFFECTS

- Use with caution in patients with anticipated difficult airway.
- Has no effect on consciousness - sedatives should be used in conjunction with succinylcholine administration.

ADMINISTRATION

IV	**Onset**: 30–60 seconds	**Peak Effect**: 1–3 minutes	**Duration**: 7–10 minutes

GUIDELINES CONTAINING SUCCINYLCHOLINE

None.

DRUG PROFILE	AZDHS
Tetracaine	5/21/2020

PHARMACOLOGY & ACTIONS

- Local ocular anesthetic that blocks sodium ion channels required for the initiation and conduction of neuronal impulses, thereby effecting corneal local anesthesia.
- Used as a topical ophthalmic anesthetic to facilitate ocular irrigation and to provide analgesia.

INDICATIONS

- Chemical ocular exposure requiring irrigation.

ABSOLUTE CONTRAINDICATIONS

- Tetracaine allergy.

PRECAUTIONS & SIDE EFFECTS

- Each bottle is single use only.
- Patients should be advised that their eyes will be insensitive up to 20 minutes and that care should be taken to avoid ocular contact.

ADMINISTRATION

Eye Drops	**Onset**: immediate	**Peak Effect**: 15–30 seconds	**Duration**: 10–20 minutes

GUIDELINES CONTAINING TETRACAINE

- **Dermal Chemical Burns: Adult & Pediatric**

DRUG PROFILE	AZDHS
Thiamine (vitamin B1)	5/21/2020

PHARMACOLOGY & ACTIONS

- Required for carbohydrate metabolism, converts glucose into energy.
- Chronic alcohol intake interferes with the absorption, intake, and utilization of thiamine.
- Patients who are malnourished, or have chronic alcohol abuse, may develop Wernicke's encephalopathy if given IV glucose without concomitant administration of thiamine.

INDICATIONS

- Thiamine should precede the administration of Dextrose or Glucagon in any adult patient if there is any evidence of malnutrition or alcohol abuse.

ABSOLUTE CONTRAINDICATIONS

- Thiamine allergy.

PRECAUTIONS & SIDE EFFECTS

- None in prehospital setting.

ADMINISTRATION

IV	**Onset**: hours	**Peak Effect**: 3–5 days	**Duration**: unknown

GUIDELINES CONTAINING THIAMINE

None.

DRUG PROFILE	AZDHS
Tranexamic Acid (TXA)	9/16/2021

PHARMACOLOGY & ACTIONS

- A synthetic derivative of lysine that inhibits fibrinolysis by blocking the lysine binding sites on plasminogen.
- A competitive inhibitor of plasminogen activation, which produces antifibrinolytic effects preserving and stabilizing fibrins matrix structure thus preventing clot breakdown rather than promoting new clot formation.
- Reversibly binds to plasminogen at the lysine binding site, thus preventing the binding of plasmin to fibrin.
- Inhibits the activation of plasminogen to plasmin, thereby preventing fibrinolysis and the breakdown of clots.

INDICATIONS

- Unstable patients with evidence of hemorrhagic shock.

ABSOLUTE CONTRAINDICATIONS

- Suspected CVA, MI or PE.
- Hypersensitivity to medication.

PRECAUTIONS & SIDE EFFECTS

- This medication should not replace guideline-based patient management of TBI or other trauma.
- Hypotension (if administered via IVP).
- Must be administered within 3 hours of injury.
- History of blood clots.
- Giddiness, allergic dermatitis, diarrhea, nausea, vomiting, blurred vision.

ADMINISTRATION

IV/IO	**Onset**: 5-15 minutes	**Peak Effect**: 1-2 minutes	**Duration**: 3 hours

GUIDELINES CONTAINING TRANEXAMIC ACID

- **General Trauma Management: Adult and Pediatric**
- **External Hemorrhage Management: Adult & Pediatric**