NOR-CAL EMS	1004	BLS/ALS Adult Drug Formulary
Nor-Cal EMS Policy & Procedure Manual		Treatment Guidelines
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Approval: Jeffery Kepple MD – MEDICAL DIRECTOR		SIGNATURE ON FILE

Authority

Health and Safety Code Division 2.5, California Code of Regulations, Title 22, Division 9

Introduction to Formulary (Provisos to Formulary)

1. Communications Failure: In the event that an ALS field provider is unable to establish or maintain voice contact with base hospital and reasonably determines that a delay in treatment may jeopardize patient outcome, the provider may initiate any of the medications for which they have been trained and approved to use by Nor-Cal EMS(so they can't use the meds in normal circumstances without base approval?), except those requiring base hospital physician order. Refer to the Communications Failure Policy, in Miscellaneous Policies Module.
2. Responding Outside of the Nor-Cal EMS Region: AEMTs, MICPs and MICNs, (including strike teams), may administer medications as described in their scope of practice when responding to a call or transferring patient outside of the region.
3. MICN Scope of Practice: MICNs may administer medications included in this formulary or those, which have written standardized procedures which have been approved by their Medical Director and Nor-Cal EMS.
4. Medications During Resuscitation: Resuscitation medications should be followed with 10-20 ml NS IVP.
5. Intraosseous, I/O, dosing same as intravenous, I/V.
6. Endotracheal administration of medications is no longer recommended. Use intraosseous access if unable to establish peripheral intravenous access and patient is appropriate for insertion of intraosseous.
7. **Medication administration via any supraglottic device is NOT allowed.**
8. Drug Allergy (hypersensitivity): If the patient has a known allergy to any medication listed in this formulary it is considered a contraindication for administration.
9. Infusion Administration: A rate-metering device (infusion pump, dial-a-flow, etc.) ***SHALL*** regulate ***ALL*** medication infusions.
10. Medication Storage: Store all medications according to manufacturer guidelines.
11. Appropriate documentation for controlled medications.

ACETAMINOPHEN: EMT, AEMT, MICP, MICN

Classification

Analgesic, Antipyretic

Actions:

Reduces Fever and reduces pain

Indications

Define as above 100.4 degrees Fahrenheit or 38 degrees Celsius.
Pain

Contraindications

1. Hypersensitive/allergy to Acetaminophen (for example Acetaminophen, Tylenol).
2. Liver disease, Hepatitis.
3. Orally Less than 6 months of age.
4. IV Less than 2 years of age
5. Alcohol abuse (not a glass of wine with dinner).

Precautions:

1. Only administer if patient can easily swallow and is conscious.
2. This is allowed in patients age 6 months and above.
3. The provider can administer Acetaminophen elixir, capsules and/or tablets.
4. Make sure that the patient has not had Acetaminophen less than 4 hours prior.
5. The total maximum dose for a 24-hour period is 4,000 mg.

Adverse Effects

1. Nausea/Vomiting.
2. Abdominal pain.

Route of Administration

Oral, IV/IO

Adult Dosage

Oral: Tablets or Elixir 500mg to 1000mg
IV: 15mg/kg over 20minutes with a max dose of 1000mg (4000mg in 24hours)

Pediatric Dosage

Greater than 6 months: Orally 15mg/kg max dose 1000mg

IV: 15mg/kg over 20minutes with a max dose of 1000mg (4000mg in 24hours)

ACTIVATED CHARCOAL: AEMT, MICP or MICN

Classification:

Absorbent Trade Name: Acta-char, Insta-char, Liqui-char

Actions:

Prevents and/or inhibits the gastrointestinal absorption of a variety of drugs and chemicals.

Indications:

Potential toxic or harmful ingestion with transport time greater than 30 minutes and time of ingestion less than one hour. If ingestion is a liquid, use only if within 20 minutes of ingestion

Contraindications:

Do not use with petroleum distillates, corrosives, acid or alkalis ingestions. Patient must be awake and alert for oral administration. Base hospital physician order with tricyclic overdose.

Precautions:

There is a risk of aspiration with an altered level of consciousness.

1. Activated charcoal administration is not usually indicated in ingestions greater than 1 hour.
2. Activated charcoal administration can be considered on a case-by-case basis.

Adverse Effects:

Constipation, diarrhea, and vomiting.

Route of Administration:

Oral

Adult Dosage:

1 gm/kg (without Sorbitol), up to 50 grams PO mixed with a glass of water or juice to form slurry.

Do not mix with milk.

Pediatric Dosage:

BHPO ONLY: 25 gms/kg PO

Special Considerations:

Activated Charcoal does not absorb cyanide or organic solvents and has poor absorption of ethanol, methanol, and iron.

ADENOSINE: MICP or MICN

Classification:

Antiarrhythmic Trade Name: Adenocard

Actions:

Transiently blocks conduction through the AV node.

Indications:

First-line drug for conversion of **narrow complex SVT**, including WPW, (does not convert atrial fibrillation, atrial flutter, or ventricular arrhythmias).

Contraindications:

WPW, Sick sinus syndrome, heart blocks, and bradycardias. Base hospital physician order with patients who have had a heart transplant. Use with caution in patients with history of asthma.

Adverse Effects:

The following side effects are usually limited due to the short half-life of this drug (less than 10 seconds); chest pain, SOB, facial flushing and transient heart block. Also may cause transient arrhythmias during conversion from PSVT to sinus rhythm – which may include ventricular tachycardia or asystole.

Route of Administration:

Rapid IV/IO push

Adult Dosage:

6 mg rapid IV push given over 1-2 seconds. May repeat within two (2) minutes at 12 mg rapid IV push. If not converted, may repeat the 12 mg dose one more time. Each dose MUST be immediately followed by a rapid 20 ml saline flush. Maximum total dose-30 mg.

Reduce administration to one 3 mg dose in patients receiving dipyridamole or carbamazepine, or if given via central line access.

Pediatric Dosage:

0.1mg/kg Rapid IV Push with Flush; 2nd and 3rd dose 0.2mg/kg

Special Considerations:

Administer the drug through the IV/IO port closest to the patient followed by a rapid saline flush. Begin recording the EKG before administering the bolus of adenosine.

AMIODARONE: MICP OR MICN

Classification:

Antiarrhythmic Trade name: Cordarone

Action:

Prolongs the action potential duration in all cardiac tissues

Indications:

Ventricular tachycardia, Ventricular fibrillation.

Contraindications:

Cardiogenic shock, Severe sinus node dysfunction resulting in marked sinus bradycardia, Second/third degree AV block, Symptomatic bradycardia, known hypersensitivity.

Precautions:

Heart failure. Avoid using in patients who have a prolonged QT interval or on medications that may cause a prolonged QT interval.

Adverse Effects:

Hypotension, Bradycardia, Increased ventricular beats, Prolonged PR interval, QRS complex, and QT interval. Avoid administering ondansetron due to prolonged QT interval risk.

Dosage/route:

Without a pulse 300 mg IV push. Repeating dose: 150 mg IV push.

With pulse: 150 mg IV/ IO over 10 minutes

Infusion: For inter-facility transfer only. Dose: As per sending facility order.

Pediatric Dosage:

Without a pulse VF/VT unresponsive to Epi and Defibrillation: 5mg/kg IV/IO

With a pulse via BHPO ONLY

ASPIRIN: EMT, AEMT, MICP or MICN

Classification:

Antiplatelet agent Generic name: Salicylic acid

Actions:

Reduces platelet aggregation to minimize myocardial infarct size. Onset of action 5-30 minutes with peak effect between 15 minutes and 2 hrs.

Aspirin is not used in the prehospital setting for analgesic properties.

Indications:

Chest pain/discomfort considered to be cardiac in origin, symptoms of acute MI.

Contraindications:

Bleeding disorders including active GI bleeds and stomach ulcers. Patients taking anticoagulants such as Coumadin, Pradaxa (dabigatran), Xarelto (rivaroxaban), and Eliquis (apixaban) are relative contraindication.

Adverse Effects:

Nausea, vomiting, GI bleeding, peptic ulcers, rash, urticaria and bronchospasm.

Route of Administration:

PO, (***must be chewed***).

Dosage:

PO 324mg PO chewable.

ATROPINE SULFATE: EMT* and AEMT (Optional Scope), MICP or MICN

EMT may use for organophosphate poisoning only.

Classification:

Parasympatholytic, anticholinergic

Actions:

Atropine blocks the action of acetylcholine at the neuromuscular junction of the parasympathetic nervous system, which increases the conduction through the SA and AV nodes of the heart. With organophosphate poisoning, atropine competes for post synaptic receptors at neuromuscular and neuroglandular junctions which block the action of the poison.

Indications:

Symptomatic bradycardias induced by increased vagal tone including sinus bradycardia, 1st, 2nd, and 3rd degree AV heart blocks and organophosphate poisoning

Contraindications:

None when used for life-threatening emergencies.

Precautions:

Hypertension, tachycardia.

Adverse Effects:

Paradoxical bradycardias can occur if less than 0.5 mg is given or if given too slowly. In addition, may worsen 2nd degree Type II heart blocks and wide complex 3rd degree heart blocks. Pupil dilation, dry mouth, blurred vision, tachycardia arrhythmias.

Route of Administration:

IV, IO, IM (may be given IM for organic phosphate poisoning or Nerve Agent Exposure).

Dosage:

1. Bradycardias – 1 mg IV initial dose, may repeat at 1.0 mg every 3-5 minutes up to a total of 3 mg (fully vagolytic dose in most patients) or 0.04 mg/kg.
2. Organophosphate poisoning – 2 to 3 mg IV repeated as needed until symptoms disappear. May require higher doses if excessive pulmonary secretions.
3. Nerve Agent Exposure administered according to level of exposure. May require large doses, adjust per clinical symptoms.

Pediatric Dosage:

Bradycardia: 0.02 mg/kg IV/IO; Max total dose 1mg
Organophosphate/ Nerve Agent exposure: 0.05mg/kg

Toxic Effects:

Anticholinergic toxicity: Mnemonic: Hot - as a Hare; Blind - as a bat; Dry - as a bone; Red - as a beet; Mad – as a hatter.

Special Considerations:

IV and IO Atropine should be followed by 20 ml saline flush immediately. ***EMT OS limited to auto injector for nerve agent exposure only.***

BETA 2 BRONCHODILATORS: EMT*, AEMT, MICP or MICN

EMT may assist patient only.

Classification:

Bronchodilator, sympathomimetic. Trade Name: Albuterol, Proventil, Ventolin, Xopenex

Actions:

Selective beta 2 adrenergic bronchodilator, relaxes bronchial smooth muscle.

Indications:

Bronchospasm associated with asthma, COPD, respiratory distress, allergic reaction, anaphylaxis or toxic gas inhalation. May also be used for the reduction of presumed hyperkalemia in Crush Injury Syndrome,

Precautions:

Tachyarrhythmia (Heart rate greater than 150-160 beats per minute).

Adverse Effects:

Tremors, dizziness, nervousness, headaches, anxiety, palpitations, nausea, tachycardia, hypertension, cardiac arrest and may cause paradoxical bronchiolar constriction.

Route of Administration:

Aerosolized inhalation using 6-10 LPM 02 flow with HHN, mask, MDI or CPAP.

Dosage:

Albuterol unit dose of a 2.5 mg in 3 ml NS/0.083% solution HHN, until medication is gone. May repeat as needed to a maximum dose of (6) unit dose vials, then per base hospital physician order. For continuous treatment titrate to maximum heart rate less than 160 bpm.

Metered Dose Inhaler 4 puffs (equal to 2.5mg nebulized)

Pediatric Dosage:

5mg nebulized

Metered Dose Inhaler 4 puffs (equal to 2.5mg nebulized)

Special Considerations:

1. May not be effective if the patient is taking a beta-blocker.
2. Monitor the patient's pulse and blood pressure during administration.
3. Obtain base hospital physician order if heart rate is greater than 160 BPM.
4. If TB/SARS/ILI/Influenza is suspected, protective respiratory precautions per Cal OSHA guide.

CALCIUM CHLORIDE (Optional): MICP or MICN

Classification:

Electrolyte replacement agent.

Actions:

Contraction of cardiac, skeletal, and smooth muscle.

Indications:

Rapid replacement of calcium in patients with hypocalcemia or hyperkalemia. Antidote for calcium channel blocker toxicity (i.e., verapamil). Prophylactic treatment before intravenous calcium channel blockers to prevent hypotension.

Contraindications:

Not for routine use in ventricular fibrillation, use with caution in patients taking digitalis or other cardiac glycosides.

Adverse Effects:

Bradycardia, asystole, ventricular fibrillation, and hypotension with rapid injection.

Route of Administration:

Slow IV push.

Dosage:

1. Calcium channel blocker overdose: 1 to 4 grams IV titrated to hemodynamic effect per base hospital physician order.
2. Prophylactic treatment prior to verapamil- per base hospital physician order.
3. Hypocalcemia, hyperkalemia per base hospital physician order.
4. Suspected Hyperkalemia with Wide Complex Tachycardia 1 gram IV/IO

Pediatric Dosage:

BHPO: for poisoning 20m/kg

Special Considerations:

1. Flush the IV line in between using calcium chloride and sodium bicarbonate.
2. Observe closely for swelling at IV site, extravasation of the medication into the soft tissues will cause tissue necrosis.
3. For hydrofluoric acid burns may use 2.5% calcium gluconate gel. This is authorized for use by first responders and all levels of EMTs.

DEXTROSE (10%, 25% AND 50%): EMT, AEMT, MICP or MICN

Classification:

Carbohydrate Trade Name: Glucose

Actions:

Raises circulating serum glucose levels.

Contraindications:

None if documented hypoglycemia exists.

Side Effects: Extravasation of the IV will cause tissue necrosis.

Indications:

Symptomatic hypoglycemia, altered LOC unknown origin.

Route of Administration:

IV, IO, Oral

Dosage:

1. D-10% (Preferred for IV/IO) 12.5 grams IV/IO if blood glucose less than 65 mg/dl, may repeat every 5 minutes until BG greater than 65 mg/dl.
2. Oral: 75-100 grams. Apply glucose paste in mouth of conscious patient. Assess patient's ability to swallow prior to administration of medication.

Pediatric Dosage:

Dextrose 10%: 5ml/kg IV/IO (NOTE dose is in volume)
Oral: 75-100 grams. Apply glucose paste in mouth of conscious patient. Assess patient's ability to swallow prior to administration of medication.

Special Considerations:

1. A blood glucose level should be obtained prior to administration of dextrose.
2. Use Oral Glucose only in conscious, alert patients with a gag reflex.
3. Tissue necrosis can be extremely severe. When giving dextrose IV a large vein should be used and IV checked frequently during administration for patency. Notify the physician immediately on arrival to the hospital if infiltration is suspected.
4. Always check blood glucose prior to administration with suspected CVA patients.
5. EMT is limited to Oral Glucose only administration and monitoring D5W on IFT's.

DIAZEPAM: MICP or MICN

Classification:

Anticonvulsant, Benzodiazepine Trade name: Valium

Actions:

Crosses the blood-brain barrier into the cerebral motor cortex to suppress seizure activity and cause CNS slowing. It will stop active seizures, but it does not prevent them. Diazepam does not have any analgesic properties.

Indications:

1. Uncontrolled motor seizures lasting longer than 2 minutes,
2. Status epilepticus
3. Acute anxiety (behavioral emergencies)

Sedative prior to cardioversion or while using transcutaneous pacing.

Contraindications:

Hypotension, respiratory depression, head injury or alcohol intoxication.

Precautions:

Pregnancy – Obtain base hospital physician order prior to administration. Risk Category D. Administer ½ the dose for patients with respiratory disease or age greater than 60 years.

Concurrent use of narcotic pain medications

Adverse Effects:

Respiratory depression and respiratory arrest, hypotension.

Route of Administration:

Slow IV push, deep IM, or IO.

Dosage:

1. IV, IO: Administer 2.5 - 10 mg titrated slowly to effect. If recurrent or persistent seizure.
2. May repeat once to a MAXIMUM of 20 mg with base hospital physician order.
3. IM: Administer 10 mg given (SLOWLY) deep IM may repeat once to a MAXIMUM of 20 mg with base hospital physician order.

Pediatric Dosage:

MAX IV/IO/IM DOSE: under 5 years old 5mg
over 5 years 10mg.
IV/IO/IM: 0.2 mg/kg
Rectal: 0.5mg/rectally

Special Considerations:

1. Have airway equipment and suction readily available.
2. Monitor patient closely for respiratory depression/arrest.
3. Avoid administering through small veins.
4. Inject into the closest IV port possible.

DIPHENHYDRAMINE HYDROCHLORIDE: EMT, AEMT, MICP, or MICN

Classification:

Antihistamine Trade name: Benadryl

Actions:

Blocks histamine from reacting with H1 receptors in the bloodstream during allergic reactions.

Indications:

1. Anaphylaxis,
2. Allergic reactions
3. Motion sickness
4. Nausea/ vomiting
5. Sedation.
6. Dystonic reaction

Contraindications:

Acute asthmatic attack (because it dries up mucus plugs). Caution with pregnant patients.

Side Effects: Drowsiness, confusion, hypotension, dry mouth, wheezing, and palpitations. In large doses, tachycardia and hypertension may occur.

Route of Administration:

Oral, IM, IV, IO

Dosage:

1. IM: 50 mg.
2. IV:1mg/kg max of 50mg
3. Oral Adult:50mg

Pediatric Dosage:

IV/IO/IM: 1mg/kg max dose 25mg

Oral Pediatric older than 1 year (less than 15kg) 12.5mg elixir
Oral Pediatric 15kg-30kg 25mg elixir

Special Considerations:

Concurrent use with alcohol may enhance the side effects. Abuse/misuse of Benadryl has recently been identified.

DOPAMINE INFUSION(Optional): MICP or MICN

Classification:

Endogenous catecholamine Trade Name: Dopastat, Intropin

Actions:

Vasopressive agent that exhibits various responses depending on the dose administered.

Indications:

Hypotension (systolic blood pressure less than 90 and signs and symptoms of shock) ***once volume losses have been replaced***. Use with caution in trauma patients.

Contraindications:

Tachyarrhythmia, ventricular fibrillation and ventricular tachycardia, hypovolemia.

Side Effects: Hypertension, ventricular tachycardia, tachyarrhythmia, nausea and vomiting.

Route of Administration:

IV infusion. Infusion must be given via volume control regulating device.

Dosage:

Mix 400 mg/250 ml NS:5-20mcg/kg (Max dose 20mcg/kg). Start initial dose at 10 mcg/kg/min. Increase as indicated until blood pressure, urine output, & other indicators of end-organ perfusion improve. **REFER TO CHART BELOW**.

Pediatric Dosage:

BHPO only:2-20mcg/kg/min

Special Considerations:

1. Dopamine is a very potent vasopressor agent. Use with caution.
2. Do not mix with Sodium Bicarbonate.
3. Obtain base hospital physician order for use in congestive heart failure.

DOPAMINE DRIP RATES

TABLE 1 – Dopamine Drip Rates: Dopamine 1600 mcg/ml solution 400 mg in 250 ml NS.

Drops per minute based on micro drip tubing (60 gtts/ml)

Pt. Weight (kg)	5 mcg/kg/min	10 mcg/kg/min	15 mcg/kg/min	20 mcg/kg/min
40	8	15	23	30
45	8	17	25	34
50	9	19	28	38
55	10	21	31	41
60	11	23	34	45
65	12	24	37	49
70	13	26	39	53
75	14	28	42	56
80	15	30	45	60
85	16	32	48	64
90	17	34	51	68
95	18	36	53	71
100	19	38	56	75
105	20	39	59	79
110	21	41	62	83

EPINEPHRINE: EMR (Optional Scope auto-injector), EMT (auto injector only, Optional Scope epi draw), AEMT*, MICP or MICN

Classification:

Endogenous catecholamine, sympathomimetic Trade Name: Adrenalin

Actions:

Epinephrine contains both alpha and beta-adrenergic properties. Because of these properties, epinephrine will increase heart rate, increase peripheral vascular resistance (PVR), increase myocardial oxygen consumption, increase blood pressure, and increase automaticity of the heart. It is a positive chronotropic and inotropic drug, as well as a potent bronchodilator.

Indications:

VF, asystole, pulseless VT, PEA, allergic reaction, anaphylaxis, asthma.

Contraindications:

Tachyarrhythmia. No contraindications in cardiac arrest or anaphylactic shock.

Precautions:

Hypertension, coronary artery disease, age greater than 65.

Adverse Effects:

Palpitations, anxiousness, headache, tachyarrhythmia, hypertension, and vomiting.

Route of Administration:

IV, IO, IM, auto-injector, IV infusion.

AEMT basics may give IM only. AEMT Optional Scope may also give IV or IO but not IV infusion.

EMR(OS)/EMT may give IM with an auto injector (EMT OS draw) only for severe allergic reactions and anaphylaxis.

Epinephrine Dosage:

1. Cardiac arrest, including. ventricular fibrillation, pulseless ventricular tachycardia, asystole and PEA: Epinephrine (1:10,000), 1.0 mg IV /IO repeated every 3-5 minutes. If this approach fails, obtain base hospital physician order for Class IIb dosing.
2. Respiratory distress with bronchospasm: Epinephrine (1:1,000) 0.3 – 0.5 mg IM
3. Respiratory distress with stridor: nebulize 1mg(1:1000) with saline to make 5ml
4. Non-Traumatic Shock: IV Infusion: 2-10 mcg/min titrate to effect
5. Non-Traumatic Shock: Push Dose Epi 5-10mcg every 1-5 minutes
    a. Take Epinephrine 1:10,000 concentration (1 mg/10 ml) and waste 9 ml of Epinephrine
    b. In same syringe draw 9 ml of saline from the patient's IV bag & shake well
    c. Mixture now provides 10 ml of Epinephrine at 10mcg/ml (0.01 mg/ml) concentration
    d. Label syringe Epi 10mcg/ml

Allergic Reaction:

1. Epinephrine (1:1,000) 0.01 mg/kg (MAXIMUM single dose 0.5 mg) IM. May repeat every five (5) minutes twice for a total of three (3) doses.
2. Anaphylaxis: Epinephrine (1:10,000) 0.01 mg/kg IV. Maximum single dose 0.5 mg. May repeat every five minutes twice for a total of three doses.
3. **IV INFUSION:** Mix 1.0 mg in 250 ml NS = 4 mcg/ml; **OR** 1.0 mg in 500 ml NS = 2 mcg/ml. Administer 2-10 mcg/min IV, (titrate to effect) with base hospital physician order.

Pediatric Dosage:

Pulseless: 0.01mg/kg (1:10,000) IV/IO every 5 min
Subq dose 0.01mg/kg (1:1,000)
Nebulized: 1mg(1:1,000) with saline to make 5cc
Push Dose: 5-10 mcg every 5 minutes

Special Considerations:

Do not mix with sodium bicarbonate. Epinephrine is slightly light sensitive, keep out of direct sunlight.

TABLE 2 – Epinephrine Infusion Rates

Desired Dose	**1 mg in 500 ml (2 mcg/ml)**			**1 mg in 250 ml 2 mg in 500 ml (4 mcg/ml)**		
mcg/min	mcg/hr	ml/min	ml/hr	mcg/hr	ml/min	ml/hr
1	60	0.5	30	60	0.25	15
2	120	1	60	120	0.5	30
3	180	1.5	90	180	0.75	45
4	240	2	120	240	1	60
5	300	2.5	150	300	1.25	75
6	360	3	180	360	1.5	90
7	420	3.5	210	420	1.75	105
8	480	4	240	480	2	120

FENTANYL: MICP or MICN

Classification:

Opioid analgesic Trade name: Sublimaze

Actions:

1. Potent synthetic analgesic, acting on the opioid receptors.
2. Onset is 1-2 minutes after IV administration with peak effect at 3-5 minutes and duration of 1-2 hours.

Indications:

Moderate to severe pain.

Contraindications:

1. Known allergy or hypersensitivity to fentanyl.
2. Hypotension, systolic blood pressure less than 90 mm/Hg.
3. GCS 14 or less.
4. Severe respiratory disease.

Precautions:

1. Patients over the age of 65.
2. Patients with known or suspected impaired hepatic or renal function.

Side Effects:

1. Hypotension
2. Respiratory depression
3. Altered LOC
4. Nausea/vomiting
5. Muscular rigidity
6. Increased intracranial pressure
7. Bradycardia

Route:

Slow IV push/IO or IM

Dosage:

1. IV/IO, Fentanyl 25-50 mcg may repeat every 10 minutes as needed for maximum single dose of 100 mcg, slow IV.
2. IM/IN, Fentanyl 25-50 mcg, may repeat every 20 minutes up to a maximum of 100 mcg.

Pediatric Dosage:

0.5-1 mcg/kg may repeat every 5 minutes (Max single dose 25mcg, total max dose 100mcg)

Special Considerations:

1. Naloxone, (Narcan) should be readily available to reverse the respiratory depression effects.
2. Chest wall rigidity with rapid administration, can be reversed with Narcan.

GLUCAGON: AEMT, MICP or MICN

Classification:

Antihypoglycemic agent

Actions:

Causes the breakdown of glycogen stores in the liver to promote increased serum glucose levels. It is also a smooth muscle relaxant, (esophageal muscle).

Indications:

1. Hypoglycemia; second line drug of choice after attempting IV access for dextrose administration.
2. Unable to start IV in patient with altered neurologic function with blood glucose less than 75 mg/dl
3. Blood glucose is unobtainable, and hypoglycemia is suspected.

Contraindications:

None

Side Effects:

Occasionally nausea and vomiting.

Route of Administration:

IM, IV, IO

Dosage:

Hypoglycemia 1 mg (1 unit) IM

Beta Blocker OD: 1mg IV/IO

Allergic reaction not responsive to other treatment (on Beta Blockers): 1mg slow IV/IO

Pediatric Dosage:

0.1mg/kg max of 1mg IM

Special Considerations:

With base hospital physician order may be used for the relief of esophageal foreign body obstructions and for beta-blocker medication overdoses. .

HEPARIN INFUSION: MICP – MONITOR INFUSION ONLY, MICN

Classification:

Anticoagulant

Actions:

Inhibits reactions that lead to the clotting of blood and the formation of fibrin clots.

Indications:

1. Pulmonary embolism
2. Peripheral arterial embolism
3. Atrial fibrillation and acute coronary syndromes, to prevent emboli
4. Anticoagulant therapy in and treatment of venous thrombosis and its extension, in low-dose regimen for prevention of postoperative deep venous thrombosis.
5. Treatment of acute Disseminated Intravascular coagulation (DIC)
6. Arterial and cardiac surgery.

Contraindications:

Severe thrombocytopenia, (low platelet count), active bleeding, or suspected CVA.

Adverse Effects:

Excessive or prolonged bleeding.

Route of Administration: IV Infusion per MD order.

Dosage:

1. Infusion (or Infusion's? Depends on meaning) rates must remain constant during transport with no regulation of rates being performed except for the discontinuation of the infusion (e.g., as in a case of bleeding). Turn infusion off only with medical control order. Medication concentration will not exceed 100 Units/ml of IV fluid (25,000 Units/250 ml or 50,000 Units/500 ml). Infusion rates may not exceed 1,600 Units/hr.
2. Use standard Heparin solution; shall be given per MD order.

Note: Heparin comes in various concentrations. This medication shall be double checked by two licensed providers to avoid infusion errors. Double check both medication concentration and infusion rate.

IBUPROFEN (Advil)

Classification:

For fever control

Action:

For fever control

Indications:

For fever control

Contraindications:

1. Hypersensitive/allergy to NSAIDS (for example Ibuprofen, Motrin, Advil).
2. Actively bleeding.
3. Less than 6 months of age.
4. Pregnant.
5. Renal disease or kidney transplant.
6. Dehydration.

Precautions:

1. Hypersensitive/allergy to NSAIDS (for example Ibuprofen, Motrin, Advil).
2. GERD, Peptic Ulcer
3. Anticoagulant use (Warfarin, Xarelto)

Adverse Effects:

1. Nausea/Vomiting.
2. Abdominal pain.
3. Heartburn/GI reflux.

Dosage:

Adult dose of Ibuprofen 400 to 600 mg orally
Pediatric dose older than 6 months: 10mg/kg

IPRATROPIUM Bromide (Atrovent) MICP, MICN

Classification:

Muscarinic Anticholinergic (Parasympatholytic)

Action:

Selectively blocks muscarinic receptors inhibiting parasympathetic stimulation

Indications:

Bronchospasm associated with obstructive lung disease (asthma, COPD)

Contraindications:

Known hypersensitivity to Atrovent or Atropine

Precautions:

1. Use with caution in patients with a history of glaucoma
2. Use with caution in presence of obstruction to GI or urinary tract

Adverse Effects:

1. Increased heart rate
2. "shakiness"
3. Headache
4. Dry mouth
5. Nausea

Dosage Adult and Pediatric:

For moderate to severe respiratory distress associated with asthma /COPD

1. 500 mcg (2.5 ml) Unit dose mixed with 5 mg (5 ml) of albuterol via nebulizer, BVM, or CPAP 1 time
2. **Do Not Repeat Atrovent**

KETAMINE (Optional): MICP or MICN

Classification:

NMDA Agonist

Actions:

NMDA receptor blockade, Binds to Kappa and Mu Opioid receptors

Indications:

Acute pain from traumatic injury or burn

Contraindications:

Any concurrent Opioid, GCS less than 15, Known or suspected Alcohol or drug intoxication Age less than 15, Known or suspected pregnancy

Adverse Effects:

Nausea/ Vomiting. (Tachycardia, Salivation, Laryngospasm at high doses)

Route of Administration:

IV

Dosage:

0.3mg/kg to a max of 30mg mixed into a 50 or 100cc bag of NS or D5W over 5 minutes
May Repeat x1 after 15 minutes- MAXIMUM TOTAL DOSE 60mg

Special Considerations:

Must use waveform ETCo2.

KETORLAC (Optional): MICP or MICN

Classification:

Nonsteriodal Anti-Inflammatory Name Toradol:

Actions:

Reduces hormones that cause inflammation and pain

Indications:

Moderate or significant pain including but not limited to:

- Back, abdominal, or extremity pain.

Contraindications:

Renal disease, Kidney transplant, Hypotension (Less than 90 systolic), History of GI Bleed / Ulcer, current anti coagulation therapy, active bleeding, current steroid use, Pregnancy, Asthma, less than 2 years old, older than 65, severe headaches.

Adverse Effects:

Nausea/ Vomiting. Dizziness, Sweating

Route of Administration:

IV, IM, IO, IN

Dosage:

0.5mg/kg to max of 30mg IN, IM, IV, IO (IV/IO is SIVP over 15 seconds) (IN-Dose ½ in each nostril)

Pediatric Dosage (Greater than 2 years old):

0.5mg/kg to a max of 15mg IN, IM, IV, IO

Special Considerations:

BHPO if age greater than 65 or treating pain outside of back, abdomen or extremity.

LIDOCAINE (XYLOCAINE): AEMT (Optional Scope) MICP or MICN

Classification:

Antiarrhythmic, local anesthetic

Action:

1. Depresses depolarization and automaticity in ventricles with little effect on atrial tissues
2. Suppresses ventricular ectopy. Increases ventricular defibrillation threshold

Indications:

Ventricular tachycardia, Ventricular fibrillation, Malignant PVCs, Pain management for IO, Pretreatment in RSI in patients with head injury.

Contraindications:

2nd degree Mobitz Type II, 3rd degree heart block, high degree blocks PVCs with bradycardia supraventricular dysrhythmias

Precautions:

1. Monitor for CNS toxicity. Exceeding high doses can result in seizures, coma and death.
2. Reduce dosage by 50% in patients greater than 70 years old or with liver disease.

Adverse Effects:

Seizures, hypotension, bradycardia/heart blocks, respiratory and cardiac arrest.

Route of Administration:

IV/IO, IV infusion.

Dosage:

1. Refractory Ventricular fibrillation, pulseless ventricular tachycardia, ventricular tachycardia with pulse:

   Initial dose: 1.5 mg/kg IV, IO. May repeat: 0.75 mg/kg IV, I/O. Max: 3.0 mg/kg

2. Infusion: 1 gram in 250 ml resulting in 4:1 concentration; 2-4 mg/min after arrhythmia suppressed.
3. Pain Management (IO infusion): 0.5 mg/kg 2% Lidocaine (not to exceed 50 mg) slowly through the IO site. Wait approximately 30–60 seconds before flushing with normal saline. If fluids do not flow freely, flush IO site with an additional 10 cc normal saline.

Pediatric Dosage:

VF/VT: 1mg/kg to max of 100mg x1 further per BHPO
IO pain management: 0.5mg/kg Max dose 20mg

LORAZEMPAM: MICP, MICN

Classification:

Benzodiazepine, Trade name: Ativan

Action:

Anixiolytic, sedation

Indications:

Anxiety, sedation

Contraindications:

Hypersensitivity to Benzodiazepines, respirator depression,

Any other Benzodiazepine or Opiate given by EMS then MUST BHPO prior to administration

Precautions:

1. ETOH intoxication
2. Concurrent Opiate or Benzodiazepine use
3. Must be refrigerated or dated and disposed of every 60 days

Adverse Effects:

Seizures, hypotension, bradycardia/heart blocks, respiratory and cardiac arrest.

Route of Administration:

IV/IO

Dosage:

Anxiety 1mg IV/IO SIVP
Sedation 1mg IV/IO SIVP must have Etco2

Special Considerations:

No concurrent use of Opiates or Benzodiazepine for anxiety

MAGNESIUM SULFATE: MICP or MICN

Classification:

Anticonvulsant; electrolyte replacement.

Actions:

CNS depressant, anticonvulsant, causes bronchodilation.

Indications:

1. Eclampsia, ALS Protocol Complications of Pregnancy.
2. Torsades de Pointes.
3. Refractory VF/VT, ALS Protocol Ventricular Fibrillation/Pulseless VT.
4. Ventricular ectopy not responsive to Lidocaine.
5. Tricyclic overdose, ALS Protocol Overdose/Poisoning.

Contraindications:

1. Heart blocks
2. Recent MI
3. Hypotension
4. Respiratory depression
5. Patients who take digitalis or other cardiac glycosides.
6. Fluid overload
7. Evidence of severe cardiac or renal disease (dialysis patients).

Adverse Effects:

Magnesium toxicity: thirst, diaphoresis, depressed or absent Deep Tendon Reflexes, hypotension, respiratory depression, CNS depression, heart blocks, circulatory depression or collapse, flaccid paralysis, urine output less than 30 ml/hr, chest pain, pulmonary edema.

Route of Administration:

IV infusion, IO

Dosage:

1. Eclampsia: Loading dose: 4 Gms over 20 min IVP. Mix 20 ml of 50% solution in 80 ml NS, which yields a 10% solution (10 Gms/100 ml). Give 40 ml IV as loading dose. Maintenance: Continue above solution at 20 ml/hr.
2. Torsades and refractory VF/VT: Loading dose: 1-2 Gm IV over 1-2 minutes. Maintenance: 1-4 gm/hr IV (sufficient to control torsades)
3. Respiratory per BHPO

Special Considerations:

If other solutions are used, a pharmacist must do calculation of dosing. Calcium Chloride should be readily available as an antidote if respiratory depression occurs. Do not mix Magnesium Sulfate with Sodium Bicarbonate.

MIDAZOLAM: AEMT (Optional Scope), MICP or MICN

Classification:

Anticonvulsant, benzodiazepine Trade name: Versed

Actions:

Short acting used as sedative, hypnotic, and anticonvulsant. Excellent amnestic properties but no analgesic properties.

Indications:

1. Uncontrolled motor seizures lasting longer than 2 minutes
2. Status epilepticus.
3. Acute anxiety (behavioral emergencies).
4. Sedative prior to cardioversion or while using transcutaneous pacing.

Contraindications:

1. Narrow angle glaucoma (relative).
2. Shock, hypoperfusion.
3. Alcoholic coma
4. Hypersensitivity

Precautions:

Monitor vital signs carefully. Use with caution in patients with history of COPD, CHF, renal disease or greater than 70 years of age. Administer ½ the dose for patients with respiratory disease or age greater than 60 years.

Adverse Effects:

Laryngospasm/bronchospasm, Respiratory arrest, Amnesia, Altered level of consciousness Bradycardia/tachycardia or PVCs.

Route of Administration:

Slow IV push (1 mg/minute), or deep IM, IO, IN

Dosage:

1. Cardioversion/Pacing: (Adult IV dose), Pre-medicate by titrating to effect in 0.5 mg increments over 3 to 5 minutes, to a MAXIMUM of 5.0 mg.
2. Seizures: IV/IO, titrate 5 mg slow IV push over 2 minutes. May repeat in 2 minutes increments until seizure stops OR to a MAXIMUM of 15 mg/dose. After 10 minutes, if recurrent or persistent symptoms, may repeat once, to a MAXIMUM of 20 mg with base hospital physician order.
3. Seizure IM: 10 mg if unable to establish IV or IO access.
4. Seizure IN: 0.2 mg/kg or maximum of 10 mg/dose, ½ of dose per nostril. May repeat once to a maximum of 20 mg with base hospital physician order.
5. Behavioral emergency IV/IO:1-2mg (Max single dose 2mg)
6. Behavioral emergency IM/IN:2-5mg (Max single dose 5mg)

Pediatric Dosage:

IV/IN: 0.2 mg/kg (Max of 5 mg)
PR: 0.3 mg/kg (max of 10 mg)

MORPHINE SULFATE: AEMT (Optional Scope), MICP or MICN

Classification:

Narcotic analgesic Trade Name: Duramorph, Infumorph

Actions:

1. Analgesic, acting on the opioid receptors.
2. An arterial and venodilator which pools blood and decreases both preload and after load of the heart. This decreases workload on the heart and myocardial oxygen demand. It is
3. A CNS depressant, which helps to alleviate anxiety but may cause respiratory depression.

Indications:

Any patient with a complaint of significant pain, including but not limited to:

1. Burn patients
2. Crush injuries
3. Extremity injuries
4. Non-traumatic abdominal pain
5. Prolonged extrication
6. Renal colic

Contraindications:

1. Hypotension
2. Shock, (compensated and uncompensated)
3. Head injury
4. Compromised respiration

Side Effects:

1. Respiratory depression
2. Hypotension
3. Nausea/vomiting

Route of Administration:

Slow IVP, IM, IO

Dosage:

1. IV: 2-5 mg, every 5-10 minutes max total dose 20mg
2. IM: 5-10 mg every 5-10 minutes max total dose 20mg
3. Chest pain: 2mg increments every 5-10 minutes Max total dose 20mg

Pediatric Dosage:

0.1 mg/kg IV/IO MR every 5-10 minutes (MAX single dose 2.5 mg; MAX TOTAL dose 10 mg)
IM: 0.1mg/kg (Max single dose 5mg; MAX TOTAL dose 10mg)

Special Considerations:

Narcan (Naloxone) should be readily available to reverse the respiratory depression effects of Morphine.
NOTE: Narcan does not reverse the histamine effect, i.e., hypotension.

NALOXONE: EMR (Option Scope), EMT, AEMT, MICP or MICN

Classification:

Narcotic (opiate) antagonist Trade name: Narcan

Actions:

Specific antidote for narcotic agents.

Indications:

Known or suspected narcotic-induced **respiratory depression only**.

Contraindications:

1. Hypersensitivity.
2. Do not give to patients who are intubated.

Precautions:

Use with caution in patients who take narcotic medication routinely.

Side Effects:

1. May precipitate acute narcotic withdrawal syndrome, cardiac arrhythmias, vomiting and hypertension.
2. Routes of Administration: SQ, IM, slow IVP, IO, IN, *(EMR, EMTs and AEMTs, IN only)

Narcan Dosage:

1. IV: 0.5 mg to 2 mg titrated to effect may repeat as needed every 2-3 minutes. Max. dose 4 mg.

   NOTE: If no response after 6 mg has been administered, narcotic-induced toxicity should be questioned.

2. IM: (Adult or greater than 50 kg), 2 mg

Pediatric Dosage:

IM/IN/IV/IO: 0.1mg/kg max dose 2mg

Special Considerations:

Narcan may have a shorter half-life than the narcotic and the patient may need repeat doses. Patient may become combative, prepare to restrain as needed.

Intranasal Narcan (Optional)

Procedure:

Load syringe with 2 mg (2 ml) Naloxone

Attach MAD nasal atomizer

Place atomizer 1.5 cm into the nostril

Briskly compress the syringe to administer 1/2 of the medication.

Remove and repeat into the other nostril until all the medication has been

NITROGLYCERIN (Sublingual and transdermal paste): AEMT, MICP or MICN

Classification:

Vasodilators, nitrate Trade Name: Nitrostat, Nitrolingual spray

Actions:

Relaxes smooth muscle of coronary arteries and veins, thus reducing preload on the heart and increasing perfusion to ischemic myocardial tissue.

Indications:

1. Chest pain suspicious cardiac origin
2. Unstable angina
3. CHF and pulmonary edema secondary to acute myocardial infarction and resulting in respiratory distress.
4. Systolic blood pressure greater than or equal to 90 mmHg.

Contraindications:

1. Increased intracranial pressure/bleeding.
2. Hypotension (systolic blood pressure less than 90 mmHg).
3. Usage of drugs for erectile dysfunction such as; Viagra (sildenafil), Cialis (tadalafil), and Levitra (vardenafil)-like drugs as well as herbals used for same.
4. Usage of Revatio (sildenafil), Adcirca (tadalafil) for pulmonary hypertension.

Precautions:

1. Blood pressure must be monitored closely before and after administration.
2. Caution with Right sided MI
2. Wear gloves when administering nitro paste to prevent accidental absorption to provider's system.

Adverse Effects:

Headache, hypotension, syncope. Abrupt discontinuation of drug can cause coronary vasospasm.

Route of Administration:

Sublingual, transdermal, or infusion.

Dosage:

1. Chest pain, suspected cardiac ischemia: 0.4 mg (gr 1/150) SL, may repeat every 5 minutes X 3 (for a total of four (4) doses), then per base hospital physician order.
2. Respiratory Distress/ CHF: Systolic BP greater than 200: 1.2 mg SL

   Systolic BP 150-200: 0.8 mg SL
   Systolic BP 100-150: 0.4 mg SL
   May repeat every 5 minutes if Systolic BP remains above 100

Special Considerations:

Nitroglycerin Spray: DO NOT Shake. Nitroglycerin Tablets: Once bottle is opened, nitroglycerin tablets expire rapidly; bottle shall be marked with 30-day expiration date when opened. Protect from light and heat, store in a cool, dark place.

Nitroglycerin paste: MICP or MICN

Dosage:

2% paste, one inch of paste applied transdermally to chest, (single dose packets preferred).

Nitroglycerin Infusion: MICP for Interfacility Transport or MICN

0. Titrate infusion by 5-10 mcg/min until desired effect and according to parameters established by physician's orders. If severe hypotension occurs return to prior rate and contact Base Hospital Physician immediately for further orders. See chart below.

Dose Ordered in mcg/min.	NTG/NS [50 mg/250 ml] Run @____ml/hr	NTG/NS [25 mg/250 ml] Run @____ml/hr
5	--	3
10	3	6
15	--	9
20	6	12
30	9	18
40	12	24
50	15	30

1. IV Nitroglycerin should be attached to the closest port near the IV insertion site.
2. Blood pressure must be monitored every five (5) minutes during titration of nitroglycerin infusion.
3. Continuous cardiac monitor.
4. Requires infusion regulating device such as a dial a flow or infusion pump.

ONDANSETRON: MICP OR MICN

Classification:

5-HT3 antagonist, serotonin receptor antagonist Trade name: Zofran

Actions:

Blocking action may take place in CNS at chemoreceptor trigger zone and in peripheral nervous system on terminals of vagus nerve.

Indications:

To treat severe nausea and vomiting. May give prior to transport to prevent nausea/vomiting due to motion sickness. If unsuccessful, also consider diphenhydramine, (Benadryl).

Contraindications:

Known sensitivity to ondansetron or other 5-HT3 antagonists such as granisetron, (Kytril), dolasetron, (Anzemet), or palonosetron, (Aloxi).

Precaution:

Pregnancy: ondansetron is a Category B drug, base hospital physician contact is required.

Use with caution if patient is taking a medication that may cause prolonged QT intervals such as Amiodarone.

Side effects: May cause syncope if given too rapidly, give over 30 seconds if administering IVP. Other side effects may include headache, EPS, hypotension, and arrhythmias.

Route of Administration:

Slow IVP, IM, or oral disintegrating tablets, (ODT)

Dosage:

4 mg increments, may give up to a total of 12 mg. If repeat dosing is required, contact Base Hospital Physician for further orders.

Pediatric Dosage:

IM/IV/IO: 0.15mg/kg to max single dose 4mg. Repeat dose only by BHPO (Base Hospital Physician Order)

Special Considerations:

Treat all causes of nausea/vomiting.

OXYTOCIN (Optional): MICP or MICN

Classification:

Hormone Trade name: Pitocin

Actions:

Causes uterine contraction, lactation, slows postpartum bleeding.

Indications:

Control of postpartum vaginal hemorrhage after the delivery of the infant(s) and placenta.

Contraindications:

History of a previous cesarean section (C-section), prior to delivery of multiple babies, or prior to the delivery of the placenta. Give only after delivery of the infant and the placenta.

Adverse Effects:

Anaphylaxis, cardiac arrhythmias, uterine rupture.

Route of Administration:

IV/ IO infusion

Dosage:

10 units in 500 ml NS (20 milliunits/ml), start infusion at 20-40 milliunits per minute, titrate to effect.

USING 60 gtts TUBING	
Total Dose	500cc bag gtts/min (ml/hr)
20 milliunits/min	60
40 milliunits/min	120

Special Considerations:

Do not use concurrently with other vasopressors.

POTASSIUM CHLORIDE INFUSION: MICP for inter-facility transfers only or MICN

Classification: Electrolyte replacement. Actions: Increases serum potassium.

Indications:

Potassium deficiency.

Contraindications:

Renal failure, hyperkalemia, rhabdomyolysis

Adverse Effects:

Hyperkalemia

Route of Administration

IV INFUSION ONLY, NEVER IV PUSH. May cause cardiac arrest if given too rapidly or in excessive amounts.

Dosage:

Per physician order:

The following parameters shall apply to all patients with pre-existing potassium chloride infusion:

1. Medication concentration shall not exceed **40 mEq** per liter of IV fluid.
2. Infusion rate must remain constant during transport with no regulation of rate being performed by paramedic.
3. INFUSION RATE MAY NOT EXCEED 10 mEq PER HOUR
4. Infusion rate must be regulated by a dial-a-flow or infusion pump.

Special Considerations:

NEVER GIVE IV PUSH OR IM. Localized pain at IV site may occur if administered too rapidly. May add lidocaine to IV infusion per base hospital physician order for localized pain control. Patient shall be on a cardiac monitor when administering potassium chloride. Monitor peripheral IV site for infiltration. Stop infusion if suspected infiltration occurs and contact base hospital physician. Monitor cardiac rhythm for arrhythmias during infusion.

PRALIDOXIME CHLORIDE (Optional): MICP or MICN

Classification:

Oxime: Trade Name: 2-Pam Cl, Protopam Chloride

Actions:

Reactivates cholinesterase that has been inactivated by a Nerve Agent/Organophosphate.

Indications:

Nerve Agent Exposure, includes exposures to organophosphate compounds that produce

The mnemonic "SLUDGEM" signs and symptoms. Pediatric patient, for this policy only, is 9 years and younger.

Contraindications:

Treatment is **NOT TO BE GIVEN PROPHYLACTICALLY**.

Route of Administration:

IM, Auto-injector

Special Considerations:

1. Auto-injectors may be used on EMS personnel if they become exposed and have signs and symptoms of nerve agent exposure.
2. It is important that the auto-injectors are given into a large muscle area and held for ten to fifteen seconds and then massage for ten to fifteen seconds.
3. Accidental injections into the hand WILL NOT deliver an effective dose of the antidote.
4. Dispose of discharged auto-injector in similar fashion as all used sharps.

SODIUM BICARBONATE: AEMT (Optional Scope), MICP or MICN

Classification:

Alkalinizing agent.

Actions:

Returns blood to a normal physiologic pH by increasing the availability of the bicarbonate ion.

Indications:

To correct acid base imbalance, tricyclic overdose, and crush injuries.

Contraindications:

None in the prehospital setting.

Adverse Effects:

increases intravascular volume, decreases serum potassium, increases arterial carbon dioxide, (CO2), levels

Route of Administration:

IV/ IO, infusion.

Dosage:

1. For correcting documented acidosis: 1 mEq/kg repeating half the initial dose every ten minutes per base hospital physician order.
2. For tricyclic overdose, wide QRS complex (>0.12 milliseconds), ventricular arrhythmias, or hypotension unresponsive to IV fluids, may administer Sodium Bicarb 50 mEq in 1000 ml NS IV, per base hospital physician order.
3. For Crush Injury Syndrome, ALS Protocols Module, Sodium Bicarb Infusion, per base hospital physician order.
4. Suspected Hyperkalemia with Wide Complex Tachycardia 50 mEq IV/IO

Special Considerations:

1. Sodium bicarb is extremely caustic to the tissues. Monitor IV site for closely for swelling. Tissue necrosis will occur if medication infiltrated at the IV site. If swelling occurs, discontinue the infusion, and notify the base hospital.
2. Sodium bicarb is not compatible with any other medications. Use a separate IV/IO access for administration.

TRANEXAMIC ACID- TXA (Optional): MICP or MICN

Classification:

Antifibrinolytic agent, antihemophilic agent, hemostatic agent, lysine analog Name Cyklokapron:

Actions:

Works to inhibit the formation of plasmin

Indications:

Trauma patient equal to or greater than 15 years of age, at high risk for on-going internal/external hemorrhage Within three (3) hours of the trauma and meeting one or more of the following criteria.

- Systolic blood pressure of less than 90 mm Hg at any point
- Hemorrhage/Bleeding not controlled by direct pressure, hemostatic agents, or tourniquet.
- Includes multisystem trauma patients with associated spinal or head injury.
- Post Partum Hemorrhage

Contraindications:

Greater than 3 hours post injury, Age less than 15 years, Isolated Head injury, Isolated Spinal shock

Adverse Effects:

Chest tightness, Difficulty Breathing, Blurred vison, Facial Flushing, Hypotension with rapid infusion, Nausea/ Vomiting.

Route of Administration:

IV, IO

Dosage:

1 Gram mixed in 100ml bag NS or D5W, IV/IO over 10 minutes

Special Considerations:

Do not administer IV Push (Will cause Hypotension), Notify receiving facility of time given.

VERAPAMIL (Optional): MICP or MICN

Classification:

Calcium ion antagonist (calcium channel blocker) Trade Names: Calan, Isoptin

Actions:

Blocks the entry of calcium into both cardiac and smooth muscle causing prolonged refractory periods; useful in controlling re-entry arrhythmias such as atrial fibrillation and flutter; vasodilating properties cause an increase coronary artery perfusion, decrease afterload, and a decrease in blood pressure. Has negative inotropic properties which may decrease myocardial O2 consumption.

Indications:

1. Second choice after Adenosine: SVT with narrow QRS complex and adequate blood pressure;
2. Symptomatic atrial fibrillation and flutter with rapid ventricular response.

Contraindications:

Wolf-Parkinson White Syndrome, known sick sinus syndrome, any wide complex tachycardia, heart failure or heart blocks and should be avoided in pts. taking beta blockers.

Adverse Effects:

Hypotension, possible Asystole, Ventricular Fibrillation.

Route of Administration:

Administer slow IV push or slow IO.

Dosage:

1. Pretreat: Calcium Chloride, 1 Gm IV 5 - 10 minutes prior to verapamil per base hospital physician order.
2. Bolus: 2.5 – 5.0 mg slow IV/IO over 1-2 min. (onset of action may take 3-5 minutes), may repeat 5-10 mg in 15-30 minutes.
3. Maximum dose: 30 mg.
4. For patients greater than 70 yrs.: administer 2-4 mg slow IV/IO, over 3- 4 minutes.

Special Considerations:

Closely monitor blood pressure before, during, and after administration. Patient must be on a continuous cardiac monitor.