APPENDIX F

FORMULARY

APPENDIX F

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APPENDIX F

ADENOSINE (ADENOCARD®)

Protocol C3

CLASSIFICATION

1. Antiarrhythmic.

INDICATION

2. Conversion of stable narrow-complex SVT to sinus rhythm.
3. Conversion of unstable narrow-complex reentry tachycardia to sinus rhythm.
4. Regular and monomorphic wide-complex tachycardia, thought to be or previously defined to be reentry SVT.

CONTRAINDICATION

1. Second and third degree heart blocks, sick sinus syndrome, unless patient has a pacemaker.
2. Hypersensitivity to adenosine.

DOSAGE AND ADMINISTRATION

1. Adult: 6 mg by rapid IV over 1-3 seconds followed by a rapid NS flush of 20 ml, then elevate extremity. If no response within 1 - 2 minutes, give 12 mg by same method as before. **Max Dose by Protocol:** 18 mg ***Note Max Dose by AHA: 30 mg***
2. Pediatric: 0.1 mg/kg up to 6 mg rapid IV over 1-3 seconds followed by a rapid NS flush of 5 - 10 ml. If no response within 1 - 2 minutes, give 0.2 mg/kg up to 12 mg by the same method as before. **Max dose:** 0.3 mg/kg.
3. Place IV in antecubital for best absorption using at least an 18-gauge catheter

ALBUTEROL (PROVENTIL®, VENTOLIN®, SALBUTAMOL®)

Protocol M3, R2, R3, P4 and Procedure PCR-3

CLASSIFICATION

1. Bronchodilator, beta-2 selective, sympathetic agonist.

INDICATION

1. Wheezing, allergic reactions, asthma, COPD.
2. Suspected hyperkalemia.
3. Crush Injury Syndrome.

CONTRAINDICATION

1. Known hypersensitivity.

DOSAGE AND ADMINISTRATION

1. Adult:
   a. SVN:
   b. Asthma/COPD/allergic reaction:
      i. Albuterol 2.5 mg with Atrovent 0.5 mg in 2.5 ml NS via SVN. May repeat combination of albuterol and Atrovent.
      ii. Additional doses of albuterol 2.5 mg in 3 ml NS can be given continuously.
   c. Anaphylaxis/Renal Dialysis with hyperkalemia/ Crush Injury: 2.5 mg in 3 ml NS can be given continuously.
   d. MDI: EMT may assist with patient's own metered dose inhaler, as indicated to a total of 5 doses then call Medical control for medical direction.
2. Pediatric: Use blow-by if < 5 years old.
   a. Albuterol 2.5 mg with Atrovent 0.25 mg in 3 ml NS SVN. May repeat once.
   b. Additional doses of albuterol 2.5 mg in 3 ml can be given continuously.

AMIODARONE (CORDARONE®)

Protocol C6, P3

CLASSIFICATION

1. Antiarrhythmic.

INDICATION

1. Shock refractory VF/pulseless VT.
2. Polymorphic VT/wide complex tachycardia of uncertain origin.
3. Control of hemodynamically unstable VT when cardioversion is unsuccessful.
4. Acceptable for termination of ectopic or multifocal atrial tachycardia with preserved LV function.
5. Used for rate control in treatment of atrial fibrillation or flutter when other therapies are ineffective.

CONTRAINDICATION

1. Patients with a hypersensitivity to amiodarone (cordarone).
2. Patients with cardiogenic shock, marked sinus bradycardia, 2nd or 3rd degree AV block unless a pacemaker is available.

DOSAGE AND ADMINISTRATION

1. Cardiac Arrest.
   a. First dose: 300 mg IV, IO. Second dose if needed after 3 - 5 minutes: 150 mg IV, IO.
   b. Pediatric: 5 mg/kg IV, IO up to a **max dose** of 300 mg. May repeat to total daily dose of 15 mg/kg.
2. Wide complex tachycardia.
   a. Mix 150 mg in 100 ml D5W and infuse IV/IO over 10 minutes (15 mg per minute).
   b. May repeat every 10 minutes as needed.
   c. Consult Medical Control if arrhythmia persists beyond second dose.
3. **ACLS Max Single Dose: 450 mg bolus**
   ACLS Max 24 Hour Dose: 2.2 g
4. **PALS Max Single Dose: 300 mg**
   PALS Max 24 Hour Dose: 15 mg/kg (2.2 g)

ASPIRIN (CHEWABLE)

Protocol C1

CLASSIFICATION

1. Antiplatelet effect.

INDICATION

1. Suspected ischemic chest pain.
2. Suspected acute coronary syndrome.

CONTRAINDICATION

1. Patients with known allergy to salicylates.
2. Possible hemorrhagic stroke.

DOSAGE AND ADMINISTRATION

1. Adult: 162 mg, or if not already taking ASA then give 324 mg. Ensure aspirin is not enteric coated.
   Max Dose: 324 mg.
2. **Pediatric: Not indicated.**

APPENDIX F

ATIVAN® (LORAZEPAM)

Protocol M9, M10, P5

CLASSIFICATION

1. Benzodiazepines

INDICATION

1. Anxiety,
2. Acute seizures
3. Sedation of aggressive patients

CONTRAINDICATIONS

1. Allergy or hypersensitivity,
2. Severe respiratory failure,
3. Acute intoxication
4. Acute narrow-angle glaucoma
5. Pregnancy and breast feeding.

DOSAGE

1. 2 - 4 mg every 3 - 5 minutes for Seizures
2. Pediatric 0.1 mg/kg for Seizures, **max dose** not to exceed adult dose.

ATROPINE

Protocol M10, M13, C3, P2 and Procedure PCR-6

CLASSIFICATION

1. Parasympathetic blocker, anticholinergic.

INDICATION

1. Symptomatic bradycardic rhythms associated with hypotension, decreased mentation, ventricular irritability (PVC's), chest pain.
2. May be beneficial in AV nodal block, but not likely to be effective for type 2 second-degree or third-degree AV block.
3. Unlikely to be therapeutic in PEA or asystole.
4. Organophosphate anticholinesterase poisoning.
5. Nerve Agent poisoning.

CONTRAINDICATION

1. Atrial fibrillation, flutter.
2. Heart rate > 60.
3. Bradycardia secondary to increased ICP (i.e. stroke, head trauma).

DOSAGE AND ADMINISTRATION

1. Bradycardia:
   a. 0.5 mg IV every 3 - 5 minutes as needed, not to exceed a total dosage of 0.04 mg/kg. **Max dose:** 3 mg.
   b. Use shorter dosing interval (3 minutes) & higher doses in severe clinical conditions.
   c. ET: 1 mg diluted in 10 ml NS.
   d. Pediatric: 0.02 mg/kg.
      i. Minimum single dose: 0.1 mg.
      ii. **Max child single dose:** 0.5 mg. **Max child total dose:** 1 mg.
      iii. **Max adolescent single dose:** 1 mg, **Max adolescent total dose:** 2 mg.
      iv. May double for 2nd IV dose.
      v. ET: 0.05 mg/kg diluted in 5 ml NS.
2. Anticholinesterase/organophosphate/nerve agent poisoning.
   a. Adult: 1 mg IV every 1 minute until symptoms (bradycardia, bronchial secretions, etc.) clear. **Max dose:** 10 mg.
   b. Pediatric: Age <12 years old start with 0.5 mg IV, IO and repeat every 1 minute until symptoms clear. **Max dose:** 10 mg. Age > 12 years old follow adult dosing.

ATROVENT® (IPRATROPIUM BROMIDE)

Protocol R2, R3, P4

CLASSIFICATION

1. Anticholinergic bronchodilator.

INDICATION

1. Bronchospasms secondary to COPD, asthma and reactive airway disease.

CONTRAINDICATION

1. Allergy to soy products or peanuts.

USE WITH CAUTION

1. Glaucoma.

DOSAGE AND ADMINISTRATION

1. Adult: 0.5 mg to be added to Albuterol/NS SVN, may repeat once. **Max dose:** 1 mg
2. Pediatric: 0.25 mg to be added to Albuterol/NS SVN, may repeat once. **Max dose:** 0.5 mg

CALCIUM CHLORIDE (10%)

CLASSIFICATION

1. Electrolyte.

INDICATION

1. Bradycardic renal dialysis patients secondary to hyperkalemia exhibiting tall, peaked T waves, prolongation of QRS, low P waves.
2. Calcium channel blocker or beta-blocker overdose.
3. Antidote for Magnesium Sulfate.
4. Crush Injury Syndrome hyperkalemia.

CONTRAINDICATION

1. Ventricular fibrillation.
2. Digitalis intoxication (may result in asystole).
3. Hypercalcemia.

DOSAGE AND ADMINISTRATION

1. Adult: 500 - 1000 mg (5 - 10 ml) IV, IO. May be repeated as needed.
2. Pediatric: 20 mg/kg IV, IO SLOWLY. **Max dose** 1000 mg.

CALCIUM GLUCONATE (10%)

Protocol M10, C3, T4,

CLASSIFICATION

1. Electrolyte - calcium salt.

INDICATION

1. Suspected hyperkalemia- ECG exhibiting tall, peaked T waves, prolongation of QRS, low P waves.
2. Calcium channel blocker or beta-blocker overdose.
3. Antidote for Magnesium Sulfate toxicity.
4. Crush Injury Syndrome hyperkalemia.

CONTRAINDICATION

1. Ventricular fibrillation.
2. Digitalis intoxication (may result in asystole).
3. Hypercalcemia.

DOSAGE AND ADMINISTRATION

1. Adult: 1 - 2 g IV over 5 minutes. May be repeated in 10 minutes if needed.
2. Pediatric: 60 mg/kg IV, IO SLOWLY. **Max dose** 800 mg or 3 g per episode.

DEXTROSE

5% (D_5W), 25% ($D_{25}W$), 50% ($D_{50}W$)

Protocol M2, M4, M5, E1, E2, P5

CLASSIFICATION

1. Simple carbohydrate.

INDICATION

1. Suspected hypoglycemia.
2. Coma of unknown origin.
3. Crush Injury Syndrome.

CONTRAINDICATION

1. Increased intracranial pressure.
2. Hyperglycemia.

DOSAGE AND ADMINISTRATION

1. Adult: 50 ml of D50W (25 g) IV, IO may repeat x1.
2. Pediatric: Under 2 years of age, give 2 - 4 ml/kg of D25W IV, IO if blood glucose < 60.
   2 years of age or older, give 1 - 2 ml/kg of D50W IV, IO if blood glucose < 60.
   a. Titrate and/or repeat until patient at baseline and blood glucose remains > 60mg/dL
3. D_5W – Adult: Route and indication dependent.
4. D_5W – Pediatric: 20 ml/kg, repeat PRN. May give up to 3 rapid infusions if inadequate perfusion.

DILTIAZEM (CARDIZEM®)

Protocol C3

CLASSIFICATION

1. Calcium – channel blocker.

INDICATION

1. To control ventricular rate in symptomatic A-fib/A-Flutter.
2. Use after adenosine to treat refractory reentry SVT in patients with narrow complex QRS.

CONTRAINDICATION

1. Sick Sinus Syndrome.
2. 2nd or 3rd degree heart block.
3. A-fib associated with WPW or short PR syndrome.
4. Hypotension – systolic < 90.
5. Cardiogenic shock.
6. Hypersensitivity.
7. Wide complex tachycardia.
8. Avoid use in patients on oral beta-blockers.

DOSAGE AND ADMINISTRATION

1. Adult: Initial dose – 15 - 20 mg IV over 2 minutes. Second dose after 15 minutes, if needed is 20 - 25 mg IV over 2 minutes.
   ACLS: Single bolus 0.35 mg/kg
2. Pediatric: Contact Medical Control.

APPENDIX F

DIPHENHYDRAMINE (BENADRYL®)

Protocol M3, M7, C1, T2, T3, T4, T5, T8, T9

CLASSIFICATION

1. Antihistamine, sedative.

INDICATION

1. Antihistamine.
   a. Anaphylaxis, use as an adjunct to epinephrine.
   b. Uncomplicated allergic conditions.
2. Dystonic or extrapyramidal reactions to phenothiazines.

CONTRAINDICATION

1. Hypersensitivity.
2. Asthmatic attack.

DOSAGE AND ADMINISTRATION

1. Adult: 25 - 50 mg IV, IO or deep IM: **Max single dose:** 100 mg. **Max 24 hour dose:** 400 mg.
2. Pediatric: 1 - 2 mg/kg IM, slowly IV, IO **Max single dose:** 2 mg/kg up to 50 mg.
   Max 24 hour dose: 300 mg

DOPAMINE (INTROPIN®)

Protocol M6, C3, C4, C7

CLASSIFICATION

1. Alpha/beta adrenergic stimulator. Sympathomimetic. Dopaminergic.

INDICATION

1. Symptomatic hypotension secondary to non-hypovolemic states.
2. Low cardiac output states such as cardiogenic, anaphylactic, septic or neurogenic shock.
3. Symptomatic bradycardia after atropine/pacing.

CONTRAINDICATION

1. Uncorrected tachyarrhythmia due to hypovolemia.
2. Ventricular fibrillation.
3. Hypovolemic Shock.

DOSAGE AND ADMINISTRATION

1. Dopamine must be diluted prior to administration; mix 400 mg in 250 ml NS with a mini-drip (1600 mcg/ml).
   a. Begin at 2.5 - 5 mcg/kg/min. **Max dose** 20 mcg/kg/min. Titrate to maintain BP >90/S (100/S for rales).
   b. Usual infusion rate ranges from 2 - 20 mcg/kg/min, titrating to individual patient response.
2. May use: DUGGAN FORMULA.
   a. Estimate the patient's weight in pounds.
   b. Cross off the 3rd digit of the weight in pounds to get gtts/min, i.e. 183 pounds = 18.
   c. At 18 gtts/min, you will be administering 5 - 6 mcg/kg/min.
3. May use: Patient weight in kg.
   Patient weight in kg.

mcg/ kg/min	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg	*	*	*	1.5	2	3	4	5	5	6	7	8
5 mcg	*	1	2	4	6	8	9	11	13	15	17	19
10 mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1.4	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	38	45	53	60	68	75

Microdrops per minute (or ml/hr).

APPENDIX F

EPINEPHRINE® (ADRENALIN)

Protocol M3, R2, C3, C6, C7, P2, P3, P4

CLASSIFICATION

1. Beta adrenergic and alpha stimulator.

INDICATION

1. Cardiac arrest: VF, pulseless VT, asystole, PEA.
2. Anaphylactic shock.
3. Severe allergic reactions.
4. Status asthmaticus.
5. Bradycardia unresponsive to atropine, TCP, dopamine.
6. Croup.
7. Upper airway obstruction edema.
8. Hypotension.

CONTRAINDICATION

1. Chest pain accompanied by ectopic beats or tachycardia.
2. Do not mix with sodium bicarbonate.
3. Do not use to treat VT secondary to cocaine.

DOSAGE AND ADMINISTRATION

1. Adult:
   a. Cardiac Arrest: 1 mg IV, IO (10 ml of 1:10,000) every 3 - 5 minutes; follow with 20 ml NS flush and elevate arm for 10 - 20 seconds after dose. If no IV/IO, mix 2 - 2.5 mg of 1:1000 with 10 ml NS, give down ET tube.
   b. Bradycardia: mix 1 mg in 250 ml NS; administer at 2 - 10 mcg/minute, titrating to effect.
   c. Acute allergic reaction: 0.3 - 0.5 mg 1:1000 IM.
   d. Anaphylaxis:
      i. 0.5 mg IV, IO (5 ml of 1:10,000).
      ii. If no IV/IO, mix 2 - 2.5 mg of 1:1000 with 5 ml NS..
      iii. 0.5 mg of 1:1000 IM.
   e. Asthma: 0.1 mg/kg of 1:1000 IM. Up to a **max dose** of 0.3 ml.
   f. Upper airway edema due to obstruction: 0.3 mg of 1:1000 IM or 0.3 mg of 1:10,000 IV.
   g. Hypotension Push-dose: 1 ml of 1:10,000 cardiac amp epinephrine in 9 ml NS.
2. Pediatric:
   a. Croup: Racemic Epi 1:1000.
      i. 2 ml (undiluted) given blow-by under 6 years of age.
      ii. 3 ml (undiluted) given blow-by 6 years of age or older.
   b. Cardiac arrest/Bradycardia/Anaphylaxis: 0.01 mg/kg of 1:10,000 solution (0.1 ml = 0.01 mg of 1:10,000 solution – **max dose** 1 mg) IV, IO. ET - use 0.1 mg/kg (1:1000 0.1 ml/kg).
   c. Anaphylaxis:
      i. IM: 1:1,000 0.3 - 0.5 mg for pediatric patients >66 pounds refer to pediatric tape.
      ii. IV, IO:1:10,000 0.3 mg
   d. Allergic Reaction/Asthma: 0.01 mg/kg to **max dose** of 0.3 mg IM (0.01 mg = 0.01 ml of 1:1000).
   e. Upper airway edema due to obstruction: 0.01 mg/kg IV, IO.

APPENDIX F

ETOMIDATE (AMIDATE®)

Procedure PCR-6

CLASSIFICATION

1. Non-narcotic, non-barbiturate, sedative hypnotic.

INDICATION

1. Induction agent for RSI in adults and pediatric patients > 10 years old.
2. Sedation prior to cardioversion.

CONTRAINDICATION

1. Known hypersensitivity to the agent.
2. Not recommended for pregnant or nursing mothers.

DOSAGE AND ADMINISTRATION

1. Adult **Max dose:** 0.3 mg/kg IV, IO over 30-60 seconds.
2. Pediatric: Contact Medical Control. 0.3 mg/kg IV, IO over 30 - 60 seconds. **Max dose:** 20 mg.

Doses of Etomidate at a concentration of 2 mg/ml given at 0.3 mg/kg for various weights															
Weight lb.	60	70	80	90	100	110	120	130	140	150	170	190	210	230	250
Weight kg.	27	32	36	41	45	50	55	59	64	68	77	86	95	105	114
Dose mg	8	10	11	12	14	15	16	18	19	20	23	26	29	31	34
Dose ml	4.1	4.8	5.5	6.1	6.8	7.5	8.2	8.9	9.5	10.2	11.6	13	14.3	15.7	17

FENTANYL (SUBLIMAZE®)

Protocol C1, T2, T3, T5, T8, T9 and Procedure PCR-6

CLASSIFICATION

1. Narcotic analgesic.

INDICATION

1. Severe pain.
2. Acute low back pain with muscle spasm.

CONTRAINDICATIONS

1. Known hypersensitivity.
2. Head trauma with increased ICP.
3. Altered state of consciousness.
4. Severe liver or renal insufficiencies.

DOSAGE AND ADMINISTRATION

1. Adults:
   a. Pain Management: 50 mcg to 100 mcg increments IV, IO, IN, IM every 5-10 minutes. **Max dose:** 300 mcg if BP >100/S.
   b. Post-RSI: 1 mcg/kg IV, IO q 10-15 minutes as needed.
2. Pediatrics: 1 - 2 mcg/kg IV, IO, IN, IM. **Max dose** 50 mcg/dose.

GLUCAGON (GLUCAGEN®)

Protocol M5, M6, M10

CLASSIFICATION

1. Anti-hypoglycemic agent/hormone.

INDICATION

1. Blood glucose < 80, especially if IV insertion is difficult or impossible.
2. Beta-blocker or calcium channel blocker overdose.
3. Foreign body in esophagus.

CONTRAINDICATION

1. Known hypersensitivity.

DOSAGE AND ADMINISTRATION

1. Draw blood glucose sample.
2. Adult:
   a. For hypoglycemia: 1 mg IM. **Max dose:** 1 mg
   b. For beta-blocker OD: 3 - 10 mg IV slowly over 3 – 5 minutes. **Max dose:** 10 mg
3. Pediatric: children ≤ 20 kg give 0.5 mg; children >20 kg give 1 mg IM.

GLUCOSE, ORAL (GLUTOSE®)

Protocol M5

CLASSIFICATION

1. Monosaccharide.

INDICATION

1. Patients with altered mental status.
2. Hypoglycemia.

CONTRAINDICATION

1. Unconsciousness.
2. Known diabetic who has not taken his insulin for days.
3. Unable to swallow.

DOSAGE AND ADMINISTRATION

1. Adult: Squeeze glucose from tube onto tongue depressor and insert tongue depressor into patient's mouth between cheek and gum. Alternatively, let patient squeeze the oral glucose into his/her own mouth to swallow.
2. Pediatric: Titrate to effect.

HEPARIN (HEMOCHRON®, HEP-LOCK®)

Protocol C1

CLASSIFICATION

1. Anticoagulant

INDICATION

1. Treatment of ST-Elevation Myocardial Infarction

CONTRAINDICATION

1. Known hypersensitivity
2. Thrombocytopenia
3. Active bleeding

DOSAGE AND ADMINISTRATION

1. Adult: 60units/kg. **Max dose:** 4000 units
2. Pediatric: Not indicated

KETAMINE (KETALAR®)

Protocol G5, T2, T8, T9 and Procedure PCR-6

CLASSIFICATION

1. Dissociative agent
2. Sedative

INDICATION

1. Excited delirium
2. Trauma

CONTRAINDICATION

1. Age < 12 months
2. Non-acute pain/trauma
3. Allergy to ketamine
4. Known pregnancy
5. Unavailability of appropriate monitoring

a. MUST MONITOR

i. 4-lead EKG

ii. ETCO2
iii. SPO2

DOSAGE AND ADMINISTRATION

1. Excited Delirium - 4 mg/kg IM or 2 mg/kg IV, IO
2. Pain Management - Adult: 0.2 mg/kg IV or 0.5 mg/kg IM. May repeat X 1 in 10 min for continued pain.
3. Pediatric: 0.2 mg/kg IV, IO, IN, IM every 10 minutes as needed for refractory pain.
4. Pre RSI - Adult: 1.5 mg/kg IV, IO.
5. Pre RSI - Pediatric: **Max dose**: 6 mg/kg/dose IM. **Max dose**: 2 mg/kg/dose IV, IO.
6. Post RSI - Adult: 0.5 mg/kg IV, IO q 10-15 minutes as needed.

LASIX® (FUROSEMIDE)

Protocol C2

CLASSIFICATION

1. Potent diuretic.

INDICATION

1. Congestive heart failure
2. Pulmonary edema

CONTRAINDICATIONS

1. Pregnancy
2. Dehydration.

DOSEAGE AND ADMINISTRATION

1. 40 mg or double the patient daily dose, IV, IO. **Max dose:** 100 mg
2. Pediatric Dosage: 1 mg/kg. **Max dose**: 6 mg/kg/dose.

LEVOPHED® (NOREPINEPHRINE)

Protocol M6, M10, C3, C4

CLASSIFICATION

1. Catecholamine

INDICATION

1. Symptomatic hypotension secondary to non-hypovolemic states.
2. Low cardiac output states such as cardiogenic, anaphylactic, septic or neurogenic shock.

CONTRAINDICATION

1. Uncorrected tachyarrhythmia due to hypovolemia.
2. Ventricular fibrillation.
3. Hypovolemic Shock.

DOSAGE AND ADMINISTRATION

1. Adult: Add 4mg to 1000ml of D5W. Each ml contains 4mcg. Initial dose 2ml-3ml per minute adjust to maintain blood pressure above 80mmHg but no higher than 40mmHg over preexisting systolic pressure.
2. **Pediatric: Not indicated**

LIDOCAINE 2% (XYLOCAINE®)

Procedure PCR-6, PCR-12

CLASSIFICATION

1. Antiarrhythmic.

INDICATION

1. Cardiac arrest from VF/VT.
2. Stable VT, wide-complex tachycardias of uncertain type, wide complex PSVT (Indeterminate).
3. Block development of increasing ICP secondary to intubation.
4. As anesthetic flush prior to IO infusion for patients that are awake.

CONTRAINDICATION

1. Known hypersensitivity.

2. Heart blocks.

DOSAGE AND ADMINISTRATION

1. Cardiac Arrest from VF/VT, use as follows:
   a. Initial dose: 1 - 1.5 mg/kg IV, IO bolus.
   b. For refractory VF: may give additional 0.5 - 0.75 mg/kg IV, IO, repeat in 5 - 10 minutes; **max** is 3 doses or **max** total of 3 mg/kg.
   c. ET dose: 2 - 3 mg/kg in 10 ml NS.
2. Perfusing arrhythmia of stable VT, wide complex tachycardia of uncertain type, significant ectopy, use as follows:
   a. 0.5 - 0.75 mg/kg up to 1 - 1.5 mg/kg IV, IO.
   b. Repeat 0.5 - 0.75 mg/kg IV, IO every 5 - 10 minutes, **max total dose** is 3 mg/kg.
3. Maintenance infusion: Mix 1 g in 250 ml of NS = 4 mg/ml or use premixed solution at 1 - 4 mg/min.

MICRODROPS/MINUTE	mg/min
60	4
45	3
30	2
15	1

NOTE: In patients with liver disease or severe congestive heart failure, administer half of the above recommended doses for maintenance dose (not initial).

4. Rapid Sequence Intubation for reactive airway or increased ICP prophylaxis: 1.5 mg/kg IV.
5. Pediatric: 1 mg/kg IV, IO, **OR** 2 - 3 mg/kg in 5 ml NS ET.
6. IO anesthesia-Adult: 20 - 50 mg IO prior to infusion. Contraindicated in Pediatric patient.

LIDOCAINE 2%, JELLY (XYLOCAINE JELLY, 2%®)

PROCEDURE PCR-5

CLASSIFICATION

1. Topical anesthetic.

INDICATION

1. Nasal/oral endotracheal intubation.
2. Nasogastric tube placement.

CONTRAINDICATION

1. Known hypersensitivity to local anesthetics.

DOSAGE AND ADMINISTRATION

1. Apply moderate amount to external surfaces of endotracheal/nasogastric tubes prior to placement.

MAGNESIUM SULFATE (CHLOROMAG®)

Protocol M8, M9, M10, R2

CLASSIFICATION

1. Antiarrhythmic, anticonvulsant, CNS depressant, electrolyte.

INDICATION

1. Seizures due to pre-eclampsia, eclampsia.
2. Life threatening ventricular arrhythmias due to digitalis toxicity, tricyclic overdose.
3. Torsades de Pointes.
4. Respiratory distress (Asthma).

CONTRAINDICATION

1. Impaired renal function.
2. Myocardial damage or heart block.
3. Dialysis patients.
4. Hypocalcemia.

DOSAGE AND ADMINISTRATION

1. Seizures due to eclampsia: 4 - 8 g in 10 ml NaCl slow IV over 5 minutes. Must be given slowly to avoid cardiac or respiratory distress.
2. Cardiac arrest or Pulseless Torsades: 1 - 2 g in 10 ml NS, IV, IO. (**Max dose**: 2 g).
3. Torsades with a pulse: 1 - 2 g in 50-100 ml NS, IV, IO. (**Max dose**: 2 g). Infused over 5 - 60 minutes.
4. Asthma: 25 - 50 mg/kg in 10 ml NS, IV, IO. (**Max dose**: 2 g). Infused over 15 - 30 minutes.
5. Pediatric dose:
   a. Pulseless VT with Torsades: 25 - 50 mg/kg IV, IO in 10 ml NS, IV, IO. (**Max dose**: 2 g).
   b. Torsades with a pulse: 25 - 50 mg/kg IV, IO in 10 ml NS, IV, IO. (**Max dose**: 2 g). Infused over 10 - 20 minutes.
6. OB/GYN Emergencies (Hypertensive disorders of pregnancy).

MOTRIN® (IBUPROFEN)

Protocol P5

CLASSIFICATION

1. Nonsteroidal anti-inflammatory drug (NSAID)
2. Antipyretic

INDICATION

1. Fever greater than 100.4

CONTRAINDICATION

1. Hypersensitivity
2. STEMI patient
3. GI bleed
4. NSAID or ASA induced Asthma

DOSAGE AND ADMINISTRATION

1. Adult: Not indicated
2. Pediatric: 10mg/kg. **Max single dose:** 400 mg. **Max 24 hour dose:** 1200 mg

MORPHINE SULFATE (ROXANOL®)

Protocol C1, C2, T2, T3, T4, T5, T8, T9 and Procedure PCR-5, PCR-6

CLASSIFICATION

1. Narcotic analgesic.

INDICATION

1. Severe pain, i.e.; myocardial infarction, burns, isolated extremity injuries, abdominal pain.
2. Adjunct in treating pulmonary edema.

CONTRAINDICATION

1. Known hypersensitivity.
2. Head trauma.
3. Altered states of consciousness.
4. Systolic BP < 100.

DOSAGE AND ADMINISTRATION

1. Adult: STEMI- 2-4 mg IV. May give additional doses of 2mg IV up to 50 mg at 5-15 minute intervals.
   a. NSTE-ACS- 1-5 mg IV only if symptoms not relieved by nitrates or if symptoms recur.
   b. Other Pain Management- 2.5-15 mg slow IV, IO, IM every 5-10 minutes, titrating to effect. **Max dose:** 30 mg
2. Pediatric: 0.1mg/kg IV, IO, IM not to exceed 10 mg. Contact Medical Control for additional doses.

NARCAN® (NALOXONE)

Protocol M2, M11, E1, E2 and Procedure PCR-14

CLASSIFICATION

1. Narcotic antagonist.

INDICATION

1. Respiratory depression secondary to narcotics, synthetic narcotic agents, and related drugs.

2. Effective against Codeine, Darvon, Demerol, Dilaudid, Fentanyl, Heroin, Methadone, Morphine, Nubain, Percodan, Stadol, Talwin.
3. Suspected acute opiate overdose with respiratory depression.
4. Treatment of coma of unknown origin with apnea/hypoventilation or in neonatal resuscitation.

CONTRAINDICATION

1. Known hypersensitivity.

DOSAGE AND ADMINISTRATION

1. 0.4-4 mg, IV, IO, IM, 4 mg via IN (2 mg each nostril) OR single dose MPD approved pre-filled atomizer. **Max dose:** 10 mg
2. It is not necessary to wake the patient; just give enough to make them breathe on their own.
3. If no response is observed after 10 mg, consider different etiology of respiratory depression or unconsciousness.
4. Higher doses may be ordered if no initial response.
5. Pediatric: 0.1 mg/kg IN, IV, IM, IO titrate until patient begins to breathe. **Max dose:** 2 mg

NITROGLYCERIN

Protocol C1, C2 and Procedure PCR-3

CLASSIFICATION

1. Vasodilator.

INDICATION

1. Chest pain.
2. Congestive heart failure with pulmonary edema and adequate BP.

CONTRAINDICATION

1. Known hypersensitivity.
2. Systolic BP <100.

DOSAGE AND ADMINISTRATION

1. Do not prime metered dose spray.
2. Tablet and Metered dose spray SL (sublingually – under the tongue) delivers 0.4 mg.
3. ACS dose: 0.4 mg SL tablet or spray, may be given every 5 minutes until pain subsides as long as systolic BP remains >100.
4. CHF dose:
   a. If patient is in mild distress and BP>100/S:
      Give nitroglycerin 0.4 mg SL tablet or spray, may repeat every 3 to 5 minutes, if patient remains symptomatic. **Max dose:** 1.2 mg.
   b. If patient in moderate distress, or severe distress without AMS and BP>100/S:
      Give nitroglycerin 0.4 mg SL tablet or spray, may repeat with 0.4 mg SL tablet or 0.8 mg SL spray every 3 - 5 minutes, if patient remains symptomatic. **Max dose:** 1.2 mg.
5. Nitro Paste 1 inch
   a. Given for long transport
   b. Return of chest pain after administration of nitro sublingual x3

OXYGEN

CLASSIFICATION
1. Naturally occurring atmospheric gas.

INDICATION
1. Confirmed or suspected hypoxia.
2. Ischemic chest pain.
3. Respiratory insufficiency.
4. Apneic or passive oxygenation during cardiac arrest.

CONTRAINDICATION
1. None.

DOSAGE AND ADMINISTRATION
1. Via nasal cannula, non-rebreather mask, ET tube, BVM, or by whatever means to maintain highest O_2 saturation possible.

PHENERGAN® (PROMETHAZINE)

Protocol M2, M7, C1, T2, T3, T4, T5, T8, T9, E1, E2

CLASSIFICATION
1. Phenothiazine
2. Antiemetic

INDICATION
1. Nausea with vomiting
2. Potentiation of narcotic pain management

CONTRAINDICATION
1. Comatose patients
2. Hypersensitivity to phenothiazines
3. Asthma

DOSAGE AND ADMINISTRATION
1. Adult: 6.25 mg IV, IM. **Max dose:** 12.5 mg IV, IM
2. Pediatric: Not indicated

PITOCIN® (OXYTOCIN)

Protocol M8

CLASSIFICATION
1. Hormone

INDICATION
1. Postpartum hemorrhage

CONTRAINDICATION
1. Any condition other than postpartum bleeding
2. Fetus(es) and placenta have not delivered
3. Previous C-Section

DOSAGE AND ADMINISTRATION
1. Adult: 20units in 1000ml D5W or NaCl
2. **Pediatric: Not indicated**

RACEPINEPHRINE (RACEMIC EPINEPHRINE®)

Protocol P4

INDICATION

1. Croup

CONTRAINDICATION

1. Epiglottitis

Dosage and administration

1. Pediatric (Croup) 0.3-0.5ml diluted in 3ml NaCL nebulized.

ROCURONIUM (ZEMURON®)

Procedure PRC-6

CLASSIFICATION

1. Non-depolarizing neuromuscular blocker.

INDICATION

1. Maintenance of paralysis AFTER intubation to assist ventilation during prolonged transport.
2. Initial means of paralysis for adult and pediatric patients with contraindications for succinylcholine (i.e. crush injury patients, personal or family history of malignant hyperthermia, inherited myopathies such as muscular dystrophy and pre-existing hyperkalemia).

CONTRAINDICATION

1. Known sensitivity to rocuronium.

DOSAGE AND ADMINISTRATION

1. Adult: 1 mg/kg IV, IO.
2. Pediatric: 1 mg/kg IV, IO.

SODIUM BICARBONATE

Protocol M10

CLASSIFICATION

1. Class II-b alkalizing agent.

INDICATION

1. Correction of known hyperkalemia.
2. Correct known bicarbonate responsive acidosis; e.g. diabetic ketoacidosis or overdose of tricyclic antidepressant, aspirin, cocaine or diphenhydramine.
3. Prolonged resuscitation with effective ventilation; on return of spontaneous circulation after long arrest interval.
4. Crush Injury Syndrome.

CONTRAINDICATION

1. Metabolic alkalosis.

DOSAGE AND ADMINISTRATION

1. Adult: 1 mEq/kg of solution IV, IO.
2. For CIS: IV – 1000 ml NS with sodium bicarbonate 100 mEq (label bag) mixed in. Volume replacement and pre-alkalization should take place immediately after CIS identified. Set drip rate to infuse at 1500 ml/hour.
3. Pediatrics: Neonates or ≤ 5 kg: give 1 mEq/kg of 4.2% solution.
   Children > 5 kg: give 1 mEq/kg of 8.4% solution up to 50 mEq.

SOLUMEDROL® (METHYLPREDNISOLONE)

Protocol M3, R2, R3, P4

CLASSIFICATION

1. Anti-inflammatory/corticosteroid.

INDICATION

1. Moderate to severe asthma / COPD exacerbations.
2. Moderate to severe allergic reactions.
3. Moderate to severe angioedema.
4. Anaphylaxis.

CONTRAINDICATION

1. Known hypersensitivity.

DOSAGE AND ADMINISTRATION

1. Adult: 125 mg IV, IO, single dose only.
2. Pediatric: 2 mg/kg IV, IO. **Max dose** 60 mg/dose.
3. Incompatible with Diphenhydramine (Benadryl), flush between medications.

SUCCINYLCHOLINE (ANECTINE®)

Procedure PCR-6

CLASSIFICATION

1. Ultra short acting skeletal muscle relaxant, depolarizing neuromuscular blocker.

INDICATION

1. To facilitate endotracheal intubation in patients with an intact gag reflex.

CONTRAINDICATION

1. Known hypersensitivity.
2. Acute glaucoma, penetrating eye injuries.
3. Suspected hyperkalemia.
4. 24 hours or more post burn.
5. 7 days or more post Crush Injury Syndrome.

DOSAGE AND ADMINISTRATION

1. Adult: 1.5 mg/kg IV, IO.
2. Pediatric: 2 mg/kg IV, IO.

THIAMINE (BETALIN®)

Protocol M5

CLASSIFICATION

1. Vitamin

ACTIONS

1. Allows normal breakdown of glucose.

INDICATIONS

1. Coma of unknown origin, alcoholism, delirium tremens

CONTRAINDICATIONS

1. None in the emergency setting

PRECAUTIONS

1. Rare anaphylactic reactions have been reported

SIDE EFFECTS

1. Rare, if any

DOSAGE AND ADMINISTRATION

1. 100 mg IV, IO, IM
2. Pediatric Dosage: Rarely indicated.

APPENDIX F

TYLENOL® (ACETAMINOPHEN)

Protocol P5

CLASSIFICATION

1. Antipyretic.
2. Analgesic.

INDICATION

1. Fever.
2. Pain Management

CONTRAINDICATION

1. Hypersensitivity.
2. Severe liver disease.

DOSAGE AND ADMINISTRATION

1. Adult >50 kg: Single Dose 1000 mg orally
2. **Max Dose:** Adult >50 kg: 24 hours 4000 mg orally
3. Pediatric <50 kg: Single dose 15 mg/kg orally or by rectal suppository.
4. **Max Dose:** Pediatric <50 kg: 24 hours 75 mg/kg

ADVERSE REACTION

1. Nausea and vomiting, Rash.

VALIUM® (DIAZEPAM)

Protocol M8, M9

CLASSIFICATION

1. Anticonvulsant, anti-anxiety, sedative.

INDICATION

1. Seizures secondary to head trauma/alcohol withdrawal.
2. Status epilepticus.
3. Prior to pacing, cardioversion, and Rapid Sequence Intubation for relief of anxiety, tension, and diminish recall of procedures.

Envenomation resulting in muscle spasm.

1. Severe anxiety.

CONTRAINDICATION

1. Known hypersensitivity.
2. Patients that have used other CNS depressants.

DOSAGE AND ADMINISTRATION

1. Adult: 2 – 10 mg IV, IO, IM, refer to dosage regimen referenced in appropriate protocol section.
2. Pediatric: 0.2 mg/kg IV, IO in increments no greater than 2 mg to a **max dose** of 10 mg. Wait 1 - 2 minutes between doses to observe effect.
   Rectally, 0.5 mg/kg to a **max dose** of 20 mg. Wait at least 5 minutes between doses. Contact Medical Control for repeat dose.

APPENDIX F

VERSED® (MIDAZOLAM)

Procedure PCR-5, PCR-6, PCR-14

CLASSIFICATION

1. Tranquilizer (Benzodiazepine).

INDICATION

1. Premedication prior to cardioversion (IV/IM).
2. Acute anxiety states (IV/IM).
3. Premedication prior to use of paralytics (IV/IM).
4. Post-intubation sedation (IV/IM).
5. Seizures (IV/IN/IM).

CONTRAINDICATION

1. History of hypersensitivity.
2. Narrow angle glaucoma.
3. Shock, alcoholic coma.

DOSAGE AND ADMINISTRATION

1. Adult: Give 2-5 mg IM, IO, IN 0.1 mg/kg or 10 mg (whichever is less) IV, IO, IM if unable to start an IV/IO.
   a. Post-RSI: 0.1 mg/kg IV, IO q 10-15m minutes as needed.
   b. Give half doses if > 60 years old.
2. Pediatric: May use midazolam 0.2 mg/kg IM OR 0.1 mg/kg IV slowly over 2 minutes in no greater than 2 mg increments not to exceed 5 mg.
3. Adult and Pediatric IN route for seizures: 0.2 mg/kg of a 5 mg/ml concentration.

NOTE: IV first – line route for adults, IN first-line route for pediatrics.

Patient age (years)	Weight (kg)	INTRANASAL Midazolam volume in ml of 5 mg/ml concentration	
		IN volume (ml) 5 mg/ml	Dose (mg)
Neonate	3 kg	0.3 ml	0.6 mg
< 1 yr	6 kg	0.4 ml	1.2 mg
1 yr	10 kg	0.5 ml	2 mg
2 yr	14 kg	0.7 ml	2.8 mg
3 yr	16 kg	0.8 ml	3.2 mg
4 yr	18 kg	0.9 ml	3.6 mg
5 yr	20 kg	1 ml	4 mg
6 yr	22 kg	1 ml	4.4 mg
7 yr	24 kg	1.1 ml	4.8 mg
8 yr	26 kg	1.2 ml	5.2 mg
9 yr	28 kg	1.3 ml	5.6 mg
10 yr	30 kg	1.4 ml	6 mg
11 yr	32 kg	1.4 ml	6.4 mg
12 yr	34 kg	1.5 ml	6.8 mg
Small teenager	40 kg	1.8 ml	8 mg
Adult or full-grown teenager	≤ 50 kg	2 ml	10 mg

APPENDIX F

ZOFRAN® (ONDANSETRON)

Protocol M2, M7, M11, C1, T2, T3, T4, T5, T8, T9, E1, E2

CLASSIFICATION

1. Antiemetic, antinauseant.

INDICATION

1. Nausea and or vomiting.

CONTRAINDICATION

1. Hypersensitivity to medication/class/compound.

DOSAGE

1. Adult: **Max dose:** 8 mg oral disintegrating tablet (ODT) or 4 mg IV slowly over 30 seconds - 5 minutes/IM.
2. Pediatric: > 11 years old 8 mg ODT or 4 mg IV slowly over 30 seconds - 5 minutes.
3. Pediatric: 4 - 11 years old 4 mg ODT or 0.1 mg/kg IV up to 4 mg slowly over 30 seconds - 5 minutes. Contact Medical Control.

ADMINISTRATION

1. ODT – Place on tongue immediately after opening blister pack. Handle with dry hands only. Do not cut or chew. Administration with water is not necessary. Tablet is fragile and will dissolve in seconds on tongue
2. IV – Administer undiluted in not less than 30 seconds, preferably over 2 - 5 minutes.
3. IM – Administer undiluted intramuscularly as a single injection for adults.