



The Johns Hopkins Hospital  
Department of Emergency Medicine

IV Drug Information

2016



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## Nursing Antibiotic Reference

Revised for Dept. of Emergency Medicine 3/2016 Umbreen Murtaza, Pharm.D. & Melinda Ortmann, Pharm.D.

DRUG	RECONSTITUTION	COMPATIBLE FLUIDS	FLUID VOLUME	INFUSION TIME	COMMENT
Ampicillin	10ml NS or SWFI	NS only	≤1gm=50ml >1gm=100ml	30 min	
Cefazolin	10ml NS or SWFI	D5W, NS	50-100 ml	30 min	Syringes can be administered over 3 min
Cefepime	10 ml NS or SWFI	D5W, NS	100 ml	30 min	
Cefotetan	10 ml NS or SWFI	D5W, NS	100 ml	30 min	
Ceftriaxone	IM: 250mg- 0.9ml IM: 1gm- 3.6ml IV: 1gm vial –10ml NS or SWFI	D5W, NS	50-100 ml	30 min	
Ciprofloxacin	Pre-mixed 400 mg		250 ml	60 min	
Clindamycin	Pre-mixed 600 mg		50 ml	30 min	
Gentamicin	None needed	NS	50-100 ml	30-60 min	
Metronidazole	Pre-mixed 500 mg		100 ml	60 min	
Moxifloxacin	Pre-mixed 400mg		250 ml	60 min	
Oxacillin	10ml NS or SWFI	D5W, NS	50-100 ml	30 min	
Penicillin G	10ml NS or SWFI	D5W, NS	0-2m units= 50 ml 2.1- 6m units= 100 ml	30 min	
Vancomycin	10 - 20 ml NS or SWFI	D5W, NS	≤ 1250 mg = 250 ml > 1250 mg = 500 ml	1 – 1.25 hr 2.5 hr	

### Nursing Intramuscular Administration

DRUG	RECONSTITUTION	COMPATIBLE FLUIDS	CONCENTRATION	COMMENT
Ampicillin	3.4 mL in 1 gm	NS, SWFI	250 mg/mL	Give immediately
Benzotropine	None	N/A	1 mg/mL	
Buprenorphine	None	N/A	0.3 mg/mL	
Cefazolin	2.5 mL in 1 gm	SWFI	330 mg/mL	
Cefepime	2.4 mL in 1 gm	D5W, NS, SWFI, 1% lidocaine	280 mg/mL	
Cefotetan	3 mL in 2 gm	SWFI	500 mg/mL	
Ceftriaxone	0.9 mL in 250 mg <i>OR</i> 3.6 mL in 1 gm	D5W, NS, SWFI, 1% lidocaine	250 mg/mL	<b>Note:</b> vial sizes and volumes are different
Clindamycin	None	N/A	150 mg/mL	IM dose <b>NOT</b> to exceed 600 mg
Diazepam	None	N/A	5 mg/mL	
Diphenhydramine	None	N/A	25 mg/mL	
Epinephrine	None	N/A	1 mg/mL	
Fosphenytoin	None	N/A	50 mg/mL	Delayed absorption in Status Epilepticus
Furosemide	None	N/A	10 mg/mL	
Gentamicin	None	N/A	40 mg/mL	
Glucagon	None	N/A	1 mg/mL	
Haloperidol	None	N/A	5 mg/mL	

### Nursing Intramuscular Administration

DRUG	RECONSTITUTION	COMPATIBLE FLUIDS	CONCENTRATION	COMMENT
Hydralazine	None	N/A	20 mg/mL	IM for emergency only
Hydromorphone	None	N/A	Up to 10 mg/mL	
Hydroxyzine	None	N/A	50 mg/mL	<b>IM only</b>
Lorazepam	None	N/A	2 mg/mL	
Magnesium Sulfate	None	N/A	Varies by age	Adult conc: 25-50% Ped conc: <20%
Methergine	None	N/A		<b>IM is preferred route</b>
Methylprednisolone	2 mL in 125 mg	Diluent Provided	62.5 mg/mL	
Metoclopramide	None	N/A	5 mg/mL	
Midazolam	None	N/A	1 mg/mL <b>OR</b> 5 mg/mL	<i>Note: vial sizes and volumes are different</i>
Morphine	None	N/A	2 mg/mL, 8 mg/mL	
Naloxone	None	N/A	0.4 mg/mL	
Ondansetron	None	N/A	2 mg/mL	
Oxacillin	5.7 mL in 1 gm	SWFI	167 mg/ mL	
Oxytocin	None	N/A	10 units/mL	
Phenobarbital	None	N/A	130 mg/mL	IM for emergency only
Prochlorperazine	None	N/A	5 mg/mL	
Promethazine	None	N/A	25 mg/mL	
PenicillinG Benzathine	None	N/A	1.2 million units/mL	

Revised for Dept. of Emergency Medicine 3/2016  
Umbreen Idrees Murtaza, PharmD & Melinda Ortmann, PharmD

## Electrolyte Replacement

♥ = Cardiac Monitor required


### Magnesium

<b>Magnesium sulfate:</b> See MED013 in HPO for details
<b>Cardiac arrest (hypomagnesemia/ torsades de pointe):</b> ♥ 2 gm diluted in 10 ml of D5W or NS administered IV push (1 gm/min)
<b>Hypomagnesemia (not cardiac arrest):</b> ♥ 2 gm in 50 mL NS or D5W IVPB administered over 1-2 hours 4 gm in 100 mL NS or D5W IVPB administered over 2-4 hours 6 gm in 100 mL NS or D5W IVPB administered over 3-6 hours
<b>Acute asthma exacerbation:</b> 2 gm in 50 mL NS or D5W administered over 20-30 minutes
<b>Seizures in preeclampsia/eclampsia:</b> ♥ 4 - 5 gm IV in 20-50 ml NS over 4 - 30 minutes If no IV access: 10 gm IM (divided doses)
<b>Migraine</b> 2 gm administered over 20 min

### Phosphate




<b>Sodium phosphate:</b>
10-20 mM should be infused over 4-6 hr
<b>Potassium phosphate:</b>
10-20 mM should be infused over 4-6 hours
<b>Sodium and potassium phosphate</b>
Neutra-phos 1 packet PO TID (1 packet contains potassium 7.1 mEq and phosphate 8 mM)

## Potassium

<b>Potassium Chloride IV</b>  (if > 10 mEq/hr):	
<b>Premixed minibags: 10 mEq in 100 mL</b> See ICPM IV Potassium Policy for additional detail	
<u>Peripheral line:</u> usual rate of 10 mEq/hr	<u>Peripheral line:</u> maximum rate of 20mEq/hr
<u>Central line:</u> usual rate of 20 mEq/hr	<u>Central line:</u> maximum rate of 40 mEq/hr

## Calcium

For additional information please refer to ICPM policies for electrolyte replacement

<b>Calcium Chloride:</b>  <b><i>FOR EMERGENCIES ONLY</i></b>
<b>Hyperkalemia in cardiac arrest:</b> 1 amp (1 gm) IV push  ***CALCIUM CHLORIDE IS ONLY FOR USE WITHIN ACLS GUIDELINES
<b>Calcium Gluconate:</b> Maximum dose = 5 amps
<b>Hypocalcemia (symptomatic)/Hyperkalemia / CCB overdose:</b>  1-3 amps (1 - 3 gm) undiluted slow IV push over 5-30 minutes
<b>Hypocalcemia (asymptomatic):</b>  1- 2 gm in 50 ml D5W or NS administered over 30 minutes 3-5 gm in 100- 250 ml D5W or NS administered over 60 minutes

### Standard Intravenous Fluids by Location

IV Solution		Location
0.45% NaCl (1000 mL)		Central Stores
D10W (1000 mL)		Central Stores
D5 -0.45% NS (1000 mL)		Central Stores
D5- 0.9% NS (1000 mL)		Central Stores
Lactated Ringers and D5-LR		Central Stores
With 10 mEq KCl	D5 -0.2% NS (1000 mL)	Central Stores
	D5 – 0.45% NS (1000 mL)	Central Stores
With 20 mEq KCl	0.9% NS (1000 mL)	Central Stores
	0.45% NS (1000 mL)	Central Stores
	D5 -0.45% NS (1000 mL)	Central Stores
	D5 – 0.9% NS (1000 mL)	Central Stores
	D5W (1000 mL)	Central Stores
With 40 mEq KCl	D5 – 0.45% NS(1000 mL)	Central Stores

**\*\* All other IV fluids not listed here must be ordered from Pharmacy\*\***



## Neuromuscular Blockers

These drugs can be used **only** in the following situations:

Rapid sequence intubation

Currently mechanically ventilated patients

Neuromuscular Blocker	Dose	Location	Considerations
Succinylcholine	IV: 1-1.5 mg/kg IM: 3-4 mg/kg (max 150 mg)	Critical Care/ ICU/ Main and EACU Refrigerator	Can cause hyperkalemia  Prolonged duration of action when given IM
Vecuronium	0.1 mg/kg	Critical Care/ ICU Pyxis	Must be reconstituted
Rocuronium	1-1.2 mg/kg	Critical Care/ ICU Refrigerators	
Pancuronium	0.1 mg/kg	Pharmacy	Not ideal agent for RSI

## JHH Thrombolytic Agents

Appropriate Uses	Drug Name Dose Availability	Drug Location	Administration
Acute Ischemic Stroke	Alteplase 100 mg	CC 1-4 Pyxis Main ED Pyxis	0.9 mg/kg (Max dose: 90 mg) Administer 10% of total dose as bolus via infusion pump Total dose to be infused over 1 hr
Acute Pulmonary Embolism (Hemodynamically Unstable)	Alteplase 100 mg	CC 1-4 Pyxis Main ED Pyxis	100 mg IV infused over 2 hrs
Pulmonary Embolism in PEA Arrest	Alteplase 100 mg	CC 1-4 Pyxis Main ED Pyxis	50 mg given IV Push over 2 min Administer heparin 5000 units IV push immediately following May repeat dose in 30 min if no response
STEMI	Tenecteplase	Critical Care Refrigerators	See weight based dosing on tenecteplase page

**\*\*\*See Individual Medications Pages for Additional Information\*\*\***

## Procedural Sedation Guidelines

### Criteria for Use:

1. For additional information, please refer to JHH ICPM Policy for Moderate and Deep Sedation (PAT001)
2. Indicated for procedures requiring moderate or deep sedation with anesthetic agents:
  3. Etomidate
  4. Ketamine
  5. Propofol

### Nursing Role and Responsibility

6. RN may NOT administer **propofol, ketamine, OR etomidate** for procedural sedation
7. Prior to initiation of procedural sedation with **propofol, ketamine, OR etomidate**, the RN must verbally verify that Attending is credentialed in Deep Sedation and document on sedation flow sheet
8. RN may assist with setup, but may only act as a scribe during the procedure.
9. RN is not responsible for monitoring the patient during the procedure

### Attending Physician Role and Responsibility

- Credentialed Attending must remain in the room with the patient until patient returns to baseline (*see JHH ICPM Policy for criteria*)
- Credentialed Attending is responsible for monitoring the patient throughout the procedure and completing pre- and post-procedure assessments

# INDEX OF INDIVIDUAL DRUG INFORMATION

SEE Policy MDU036 for RN titration Instructions

Alteplase (Activase) (TPA)  
Amiodorone (Cordarone)

Diltiazem (Cardizem)  
Dobutamine  
Dopamine

Epinephrine  
Esmolol (Brevibloc)

Fosphenytoin (Cerebyx)

Glucagon

Heparin

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Labetalol (Trandate)  
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Sodium Bicarbonate  
Sodium 2% (Mixed Acetate &  
Chloride)

Tenecteplase (TNKase)  
Vasopressin (Pitressin)

## Alteplase - Activase® – Tissue Plasminogen Activator (TPA)

**\*\*Medication stocked in CC 1-4 and Main ED Pyxis Machines\*\***

Drug Name Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Alteplase 100 mg	100 ml SW (supplied with vial)	100 mg/100 ml	1 mg/ml

### Indication and Dose:

Acute MI - See Tenecteplase /TNKase®

### Pulmonary Embolism (hemodynamically unstable)

100 mg IV infused over 2 hours

### Pulmonary Embolism in PEA Arrest (Massive PE)

50 mg IVP over 2 min and may repeat in 30 min (max = 100 mg)

Must administer Heparin 5000 units IV bolus after each dose

### Ischemic Stroke- (within 4.5 hours of symptom onset based on patient criteria)

0.9 MG/KG (max: 90 MG) IV infused over 60 min, with 10% given as a bolus

See BAT packet/Acute Ischemic Stroke Order Set for total dose and bolus calculation

### Special Considerations:

Do not mix with other medications

**Amiodarone - Cordarone®** \*Use *FILTER For Infusion*\*

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
Amiodarone 450 mg / 9 ml	250 ml NS (D5W)	450 mg / 259 ml	1.74 mg / ml

**Indication and Dose:**

Pulseless VT/VF

Bolus: 300 mg IV push undiluted

May repeat 150 mg in 3 – 5 minutes

Stable VT or Atrial Fibrillation

Bolus: 150 mg diluted in 50 - 100 ml D5W and infused over 10 minutes

May repeat 150 mg every 10 minutes as needed

Maintenance:

Step 1: 1 mg/min for 6 hours

Step 2: 0.5 mg/min for 18 hours

**Special Considerations:**

Order replacement drip in glass bottle or non-PVC bag from pharmacy within 2 hours

## Diltiazem - Cardizem® (Refrigerator)

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Diltiazem 125 mg / 25 ml	100 ml NS (D5W)	125 mg / 125 ml	1 mg/ ml

### Indication and Dose:

Atrial Fibrillation, A- Flutter, PSVT (refractory to adenosine)

Loading Dose: 0.25 mg/kg (usual dose 10-20 mg) over 2 min  
In 15 minutes may repeat: 0.35 mg/kg over 2 min

Maintenance Infusion: 5 – 15 mg/hr  
RN May NOT Titrate

## Dobutamine

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Dobutamine 500 mg <i>Peripheral line</i> <i>OK</i>	Pre-mixed bag	500 mg / 250 ml	2000 mcg / ml

### Indication and Dose:

Congestive Heart Failure – to increase contractility and cardiac output

Continuous Infusion: 5 – 25 mcg/kg/min  
RN May NOT titrate



## Dopamine

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
Dopamine 400 mg <i>peripheral line</i> <i>OK</i>	Pre-mixed Bag	400 mg / 250 ml	1600 mcg / ml

### Indication and Dose:

#### Hypotension

Continuous infusion: 5 - 25 mcg/kg /min

RN MAY titrate per provider instruction by 1-5 mcg/kg/min every 2 min to maintain MAP goal

### Special Considerations:

Arterial line recommended

## Epinephrine - Adrenalin®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Epinephrine 2 mg/2ml (1:1000 conc) <i>Peripheral line OK</i>	100 ml NS (D5W)	2 mg/102 ml	19.61 mcg/ml
Epinephrine 30 mg/ 30 ml <i>central line only***</i>	500 ml NS (D5W)	30 mg / 530 ml	56.6 mcg/ ml

### Indication and Dose:

Severe Hypotension (not a first-line vasopressor as continuous infusion)

Continuous infusion: 0.01 - 1 mcg/kg/min

RN MAY titrate per provider instruction by 0.01- 0.02 mcg/kg/min every 2 min to maintain MAP goal

Anaphylaxis / Asthma:

0.3 – 0.5 mg IM (1:1000 conc vial)

Cardiac arrest:

1 mg IVP every 3-5 minutes (1:10,000 prefilled syringe)

Intracardiac (IC) Epinephrine for Trauma Arrest

Thoracotomy pt during open cardiac massage ONLY

1 mg IC every 3-5 min (1:1000 conc vial) – Attach 22 gauge 1 or 1.5 inch needle for administration

Special Consideration:

Arterial line recommended

## Esmolol - Brevibloc®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Esmolol 2.5 gm	Pre-mixed Bag	2.5 gm / 250 ml	10 mg / ml

### **Indication and Dose:**

Aortic Dissection – Use with nitroprusside

PSVT, A-Fib, A-Flutter – for rate control

Load: 500 mcg/kg IVP over 1 min

(may re-load between each step below to a max of 3 loading doses)

Maintenance:

Initiate dose at 50 mcg/kg/min

RN MAY titrate per provider instruction by 25-50 mcg/kg/min every 5 minutes to maintain

MAP or HR goal

### **Special Consideration:**

Arterial line recommended

## Fosphenytoin - Cerebyx®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Fosphenytoin 500 mg PE / 10mL	100 mL NS	Order dependent	**Order dependent** Concentration must be > 10mg/mL in order to program pump

### Indication and Dose:

**\*\*Fosphenytoin is dosed in phenytoin Equivalents (PE)**

**\*\*Fosphenytoin is converted to phenytoin in the body**

#### Seizures/Status

IV Loading Dose: 15-20 mg PE/kg at rate of 150 mg PE/min

#### Loading/Maintenance (Non-seizing)

IV Loading Dose: 15-20 mg PE/kg over 30 minutes

Maintenance IV Dose: Based on phenytoin levels or patient's maintenance dose

#### IM administration:

Dosing equivalent to IV

### Special Considerations:

Patient must be on cardiac monitor

BP and HR every 15 min during infusion

No IV filter required

Doses < 1 gram should be mixed in 50 mL NS

### Precautions:

Hypotension, bradycardia

Glucagon **\*\*\* *Glucagon Infusions will be prepared by Pharmacy*\*\*\***

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Glucagon 10 mg	100 mL D5W	10 mg / 110mL	0.091 mg/ml

**Indication and Dose:**

Beta-blocker/Calcium channel blocker toxicity (not responsive to fluids, vasopressors)

IV loading dose: 3-10 mg IV push

Maintenance dose: 3-5 mg/hr IV continuous (titrate to a maximum of 10 mg/hr)

**Special Consideration:**

Cost approximately \$1500 PER HOUR

Infusion is appropriate for patients who fail vasopressors infusions

Causes dose-dependent nausea and vomiting (risk for aspiration)

## Heparin

**\*\*\*Use Heparin Order Set in EPIC\*\*\***

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Heparin 25,000 Units	Pre-mixed bag	25,000 Units / 250 ml	100 Units / ml

### Indication and Dose:

#### Acute Coronary Syndromes

\*\*SEE HEPARIN NOMOGRAM – LOW for patient specific doses

Dosage adjustments based on aPTT levels

#### Venous Thromboembolism / Pulmonary Embolism

\*\*SEE HEPARIN NOMOGRAM – STANDARD for patient specific doses

Dosage adjustments based on aPTT levels

### Special Considerations:

Provider should select the “RN Managed” heparin order set in EPIC  
aPTT levels must be drawn 6 hrs after start of infusion

**Intralipid**    **\*\* MUST Request From Pharmacy\*\***

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Intralipid 20%	500 mL pre-mix bag	Enter as basic infusion	N/A

**Indication and Dose:**

Local anesthetic systemic toxicity (cardiac arrest or significant clinical instability)

Bolus: 1.5 mL/kg IV infused over 1 minute (use syringe- NOT pump)

Initial Infusion:

-Patients > 65 kg, initiate infusion at 999 ml/hr

-Patients ≤65 kg, initiate infusion at 15 mL/kg/hr

Refractory Patients: (*continued clinical instability after 3-5 minutes of infusion*)

-Patients > 33 kg, change infusion rate to 999 ml/hr

-Patients ≤33 kg, change infusion rate to 30 mL/kg/hr

Special Considerations:

If patient is in cardiac arrest, continue compressions to allow for drug circulation

**\*\*\*Continue infusion for at least 10 minutes after circulatory stability is obtained\*\***

DO NOT use in egg or soy allergy

**Insulin – Regular**    ***\*\*\* Insulin Drips will be prepared by Pharmacy\*\*\****

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
Insulin R 100 units / ml	100 ml NS	100 units/101 ml	0.99 unit/ ml

**Indication and Dose:**

**Hyperglycemia / DKA**

Usual dose: 0.1 units/kg/hour IV. Order should be placed in EPIC in “units/hr”

RN may NOT titrate. Titration by provider based on hourly BG values

**Special Considerations/Precautions:**

Monitor blood glucose hourly /potassium every 2-4 hours



**Isoproterenol** \*\*\* *Isoproterenol Infusions will be prepared by Pharmacy*\*\*\*

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
1 mg/5 ml	100 ml NS (D5W)	1 mg/105 ml	9.52 mcg/ml

**Indication and Dose:**

**Bradycarrhythmias/AV nodal block**

Usual dose: 0.02 mcg/kg/min

Titrate by 0.01 -0.02 mcg/kg/min every 5 minutes to desired heart rate (max 0.2 mcg/kg/min)

RN may NOT titrate.

**Special Considerations/Precautions:**

May cause hypotension

Labetalol - Trandate® **\*\*\* Labetalol Infusions will be prepared by Pharmacy\*\*\***

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Labetalol 500 mg / 100 ml	100 ml NS (D5W)	500 mg / 200 ml	2.5 mg / ml

**Indication and Dose:**

Hypertensive Emergency

Load: Usual dose 10-20 mg IV bolus over 2 minutes, may repeat in 10 minute intervals to maximum of 300 mg

Maintenance: 0.5 – 6 mg /min (Maximum dose - 6 mg /min)

RN MAY titrate per provider instruction by 0.5 mg/min every 10 minutes to maintain MAP or HR goal

## Levetiracetam - Keppra®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Levetiracetam 500 mg / 5 ml	100 ml NS (D5W)	Based on patient dose	Based on patient dose

### Indication and Dose:

Status Epilepticus/ Seizure Prophylaxis in Head Trauma

Load: 1000-2000 mg IV over 15-30 minutes

**Lidocaine** \*\*\**Lidocaine Infusions will be prepared by Pharmacy*\*\*\*\*

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
Lidocaine 2 gm	Pre-mix bag	2gm / 250 ml	8 mg / ml

**Indication and Dose:**

Stable VT

Load: 1–1.5 mg /kg IV push, use prefilled syringe (max is 3 mg/kg)

Maintenance infusion: 2 - 4 mg / min (1-2 mg/min if liver disease)

RN may NOT titrate

RSI with head trauma

Load: 1–1.5 mg /kg x 1 dose, use prefilled syringe

**Contraindications:**

Hypersensitivity to amide anesthetics

## Mannitol - Osmitol®

*\* Use FILTER For Infusion \**

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Mannitol 100 gm	Pre-mix bag	100 gm/ 500 ml	0.2 gm/ml

### Indication and Dose:

Osmotic diuretic used to decrease intracranial pressure

Initial dose: 0.5 -1 gm/ kg via IV infusion at 999ml/hr (bolus dose)

Maintenance doses: 0.25-0.5 gm/kg every 6 – 8 hours PRN

### Precautions:

Renal impairment

### Considerations:

**Must use micron filter tubing attachment \*\*\***

Check for Crystallization

### Programming the Pump:

1. Calculate the patient's total dose (0.5-1 gm x patient weight in kg = Total dose in gm)
2. Calculate volume to be infused (Total dose in grams ÷ 0.2 gram/ml = Total volume in ml)
3. Program the pump as a basic infusion with the total volume in ml at a rate of 999ml/hr

**Naloxone Infusion** \*\*\**Naloxone Infusions will be prepared by Pharmacy*\*\*\*

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Naloxone 12 mg/30 ml	250 mL NS	12 mg/280 ml	0.043 mg/ml

**Indication and Dose:**

Opioid overdose with exposures to long acting opioids (methadone), sustained release product, and systemic body packers after initial naloxone IVP response:

- 1- Determine the initial effective naloxone bolus dose to achieve RR >10
- 2- Use 2/3 of the dose determined in STEP 1 as the hourly infusion dose
- 3- Titrate infusion to a RR>10

**OR**

Initiate infusion at 0.2 mg/hr and titrate infusion to RR >10

**Contraindication:**

Hypersensitivity to naloxone or any component of the formulation

## Nicardipine - Cardene®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Nicardipine 50 mg / 20 ml	250 ml NS (D5W)	50 mg/270 ml	0.185 mg/ml

### Indication and Dose:

#### Hypertensive Emergency

Continuous infusion: 1-15 mg/hr

RN MAY titrate per provider instruction by 1-2.5 mg/hr every 5-15 minutes maintain MAP goal

### Adverse effects:

Reflex tachycardia

## Nitroglycerin - Tridil®

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
Nitroglycerin 100 mg	Pre-mix Bottle	100 mg / 250 ml	400 mcg / ml

### **Indication and Dose:**

AMI, Hypertensive Emergency, CHF, Pulmonary Edema

Continuous infusion: 5 - 400 mcg /min

RN MAY titrate per provider instruction by 5-20 mcg/min every 3-5 minutes to maintain MAP goal

### **Special Considerations:**

Remove Transdermal patch

Tolerance may develop, titrate to effect

### **Contraindications:**

Concurrent use of Viagra, Cialis or other phosphodiesterase inhibitors



## Nitroprusside - Nipride®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Nitroprusside 50 mg/ 2 ml	100 ml D5W only	50 mg / 102 ml	490.2 mcg / ml

### Indication and Dose:

Hypertensive Emergency / Aortic dissection

Infusion 0.1 - 10 mcg/kg/min

RN MAY titrate per provider instruction by 0.1-0.3 mcg/kg/min every 3 minutes to maintain MAP goal

### Special Considerations:

**\*\*Wrap infusions in bag provided due to sensitivity to light\*\***

Can cause cyanide or thiocyanate toxicity

Arterial line should be placed as soon as possible

For aortic dissection, initiate beta blockers PRIOR to nitroprusside

### Precautions:

Renal/hepatic disease

## Norepinephrine - Levophed®

<b>Drug Name and Dose Availability</b>	<b>Standard Solution to mix (alternative solution)</b>	<b>Final Product to enter into IV Pump</b>	<b>Final Drug Concentration</b>
Norepinephrine 8 mg/ 8 ml <i>Peripheral line OK</i>	250 ml NS (D5W)	8 mg/ 258 ml	31.01 mcg/ ml

### **Indication and Dose:**

#### Hypotension

Continuous infusion: 0.01 - 3 mcg/kg/min

RN MAY titrate per provider instruction by 0.01-0.07 mcg/kg/min every 2 minutes to maintain MAP goal

### **Special Considerations:**

Arterial line recommended

## Oxytocin - Pitocin®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Oxytocin 30 units/3 ml <i>Peripheral line OK</i>	500 ml NS	30 units / 503 ml	59.64 milliunits / ml

### Indication and Dose:

#### Post-Partum Uterine Bleeding

Initial Rate: 100 milliunits/min x 2 hours, followed by 40 milliunits/min for 2-4 hours based on risk of hemorrhage

## Phenobarbital - Luminal®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter in IV Pump	Final Drug Concentration
Phenobarbital 130 mg/ 1 ml <i>Peripheral line OK</i>	250 ml NS	Order dependent	Order dependent

### Indication and Dose:

Status Epilepticus

Loading dose: 10 – 15 mg/kg IV once

### Special Considerations:

Do not exceed infusion rate > 60 mg/min

### Precautions:

Decreased respiratory rate/may need airway protection

Monitor BP

## Phenylephrine - Neo-Synephrine®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Phenylephrine 20 mg / 2 ml <i>peripheral admin OK</i>	250 ml NS (D5W)	20 mg / 252 ml	79.37 mcg / ml
Phenylephrine 40 mg / 4 ml <i>Central line only**</i>	250 ml NS (D5W)	40 mg / 254 ml	157.5 mcg / ml

### **Indication and Dose:**

#### Hypotension

Continuous infusion: 0.1 - 4 mcg/kg/min

RN MAY titrate per provider instruction by 0.1-0.7 mcg/kg/min every 2 minutes to maintain MAP goal

#### Hypotension associated with RSI or Procedural Sedation

50-200 mcg IV push every 2-5 minutes as needed (use prefilled syringe in pyxis)

### **Special Considerations:**

Arterial line recommended

### **Precautions:**

Heart failure/Acute MI

## Procainamide - Pronestryl®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
<b>Load:</b> Procainamide 1 gm / 10 ml	100 ml NS (D5W)	1 gm / 100 ml	10 mg/ml
<b>Maint:</b> Procainamide 2 gm / 20 ml	250 ml NS (D5W)	2 gm / 270 ml	7.41 mg/ ml

### Indication and Dose:

Stable wide-complex tachycardia, WPW w/ A-fib

### Loading Dose:

Pts > 50 kg: Infuse 1 gm over 20 min OR stop once arrhythmia is suppressed, hypotension, or QRS widens by 50%,

Pts < 50 kg: Infuse 18 mg/kg over 20 min OR stop once arrhythmia is suppressed, hypotension, or QRS widens by 50%,

### Maintenance Dose:

1 – 4 mg/ min IV continuous

RN may NOT titrate

### Special Considerations:

Cardiac or renal dysfunction: max total dose is 12 mg/kg and maint infusion at 1-2 mg/min

### Programming the Pump:

1. Mix loading dose per above instructions and set pump to basic infusion for load ONLY
2. For load, set ALARIS pump to run 100 ml over 20 min (300 mL/hr)
3. Once rate is controlled, stop loading dose and transition patient to maintenance infusion (full loading dose may not be necessary to achieve rate control)
4. Use Critical Care ALARIS pump drug library for standard concentration Procainamide infusion

**\*\* Page Umbreen or Mindy for programming questions anytime 3-2982\*\***

## Propofol - Diprivan®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
1000 mg/ 100ml <i>Peripheral line OK</i>	Pre-mixed Infusion	1000 mg/100 ml	10,000 mcg/ml

### Indication and Dose:

#### Continuous Sedation in Head Trauma

Initial Rate: 5-20 mcg/kg/min

May titrate to appropriate sedation level (RASS)

Maintenance infusion: 5-80 mcg/kg/min (**MAX: 80 mcg/kg/min**)

**RN may NOT give bolus doses.**

**MD may administer a bolus dose of propofol of 10-50 mg with credential provider present**

### Special Considerations:

Baseline triglyceride, CK, and lactate labs should be drawn

Dose recommendations for Procedural Sedation can be found in HPO

### Precautions:

Hypotension

**Sodium 2% (*Mixed: 50% Acetate and 50% Chloride*)**

**\*\*\*Stocked in RAP and CC Pyxis Refrigerators\*\*\***

Drug Name	Final Product
Sodium 2% (50% Acetate and 50% Chloride)	1000 mL premix bag

**Indication and Dose:**

**Elevated Intracranial Pressure / Traumatic Brain Injury**

**Bolus:** 500 – 1000 mL IV once

Can consider continuous infusion of 1-3 mL/kg/hr IV continuous

**Special Considerations:**

May be administered via peripheral line

If continuous infusion is administered, monitor serum sodium and osmolarity every 4 – 6 hours

For patients with hyponatremia / hypochloremia, consider using non-buffered sodium chloride solutions



## Sodium Bicarbonate Infusion

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump
150 mEq	1000 ml D5W <i>If mixed in Sterile Water- must come from Pharmacy</i>	150 mEq / 1150 ml

### Indication and Dose:

Acidosis, Drug Overdose (tricyclic, salicylate, barbituate)

IV bolus: 1-2 mEq/kg IV push

Maintenance infusion: 50-150 ml/hr then titrate to effect

### Special Considerations/Precautions:

Monitor arterial blood gas

Avoid administration with  $Ca^{++}$  and catecholamine infusions

Monitor electrolytes (potassium and calcium)

## Tenecteplase - TNKase®

**\*\*Medication stocked in CC-1 Pyxis Refrigerator\*\***

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Tenecteplase 50 mg/ 10 ml	Use 10 ml of diluent provided	Not given via pump	5 mg / ml

### Indication and Dose:

#### STEMI

Dose is based on patient weight and administered IV Push over 5 seconds

Pt Weight (kg)	Dose	Reconstituted Volume
<60 kg	30 mg	6 ml
60-69 kg	35 mg	7 ml
70-79 kg	40 mg	8 ml
80-89 kg	45 mg	9 ml
≥90 kg	50 mg	10 ml

### Special Considerations:

Reconstitute with supplied diluent

Not compatible with dextrose

Initiate heparin infusion concurrently for STEMI

Swirl gently, **\*\*\*do not shake\*\*\***

## Vasopressin - Pitressin®

Drug Name and Dose Availability	Standard Solution to mix (alternative solution)	Final Product to enter into IV Pump	Final Drug Concentration
Vasopressin 20 units	100 ml NS (D5W)	20 units / 101 ml	0.198 units / ml

### Indication and Dose:

Hypotension Refractory to Standard Vasopressors (add-on therapy)

Continuous infusion at 0.04 units/min and **do NOT titrate**

Asystole / PEA / Vfib / Pulseless Vtach

40 units IVP x 1 dose

### Special Considerations:

Should not be utilized as a first line vasopressor agent

Arterial line should be placed as soon as possible



The Johns Hopkins Hospital  
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