ADULT
INJECTABLE MEDICATION ADMINISTRATION REFERENCE

Version 4

[December 2014]

Guidelines for Commonly Used Injectable Drugs in Adult Patients
HACKETTSTOWN REGIONAL MEDICAL CENTER

Hackettstown Regional Medical Center

POLICY#: PN.01

Approved by HRMC Pharmacy and Therapeutics Committee

CATEGORY*	**INDIVIDUALS THAT MAY ADMINISTER INJECTION**
1	o All Nurses (LPN administrations regulated by HRMC nursing structure standards) o Providers (physician or extender [ie CNM, PA])
2	o Critical Care, OR, PACU, ED Nurses o Providers (physician or extender [ie CNM, PA])
3	o Providers only, or under DIRECT provider supervision (physician or extender [ie CNM, PA])

HIGH RISK = BLACK SHADED CELLS [Follow PN.010b]

* Category: Personnel approved by Pharmacy & Therapeutics Committee (P&T) to administer the medication listed.
☞During a code, all meds on the code cart may be administered with a provider present (regardless of location)
☞The MEDICATIONS are listed by GENERIC name.
☞Only the most common ADVERSE REACTIONS are listed. For a complete list, see other sources.
☞Please direct questions regarding the contents of these guidelines to a pharmacist at ext. 6915.
☞**Medications in this policy are NOT assumed to be on formulary at HRMC.**
☞**Needle-length guidelines are listed at the end of the policy**

Definitions:

IM: Intramuscular injection (needle length guidelines on the last page)
SubQ: Subcutaneous injection (needle length guidelines on the last page)
Direct I.V.: Administered via IV push or via pump, with or without further dilution. [≤15min]
Intermittent IV Infusion: Infusion usually after dilution, over a set duration **on an IV pump**.
Continuous Infusion: Administration usually after dilution, to run continuous **on an IV pump**.

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
acetaminophen **Ofirmev®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. Over 15 minutes. Continuous Infusion: No.	Nausea, vomiting, headache, insomnia.	MONITOR: pain, temperature.
acetaZOLAMIDE **Diamox®**	1	IM: No. SubQ: No. Direct I.V.: yes. MAX Rate 500 mg/min [100 mg/ml] Intermittent IV Infusion: yes Continuous Infusion: yes	GI disturbances (N/V, diarrhea), drowsiness, headache, confusion, depression, nervousness, paresthesia, dysuria, crystalluria, renal calculi	MONITOR: Electrolyte balance, uric acid, urine output, urinalysis, CBC with differential and platelets
acetylcysteine **Acetadote®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes Continuous Infusion: Yes	Pruritis, rash, urticaria, angiodema, cough, dyspepsia, dysphoria, dyspnea, flushing, hypotension, nausea/vomiting, sweating, syncope.	For Acetaminophen Overdose only. 150mg/kg in 250mL D5W over 60 min THEN 50mg/kg in 500mL D5W over 4 hours THEN 100mg/kg in 1000mL D5W over 16 hours MONITOR: LFTs
acyclovir **Zovirax®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	General malaise, headache, nausea, vomiting, diarrhea, urticaria, inflammation at injection site, (increased LFTs, BUN, and SCr from parenteral form)	Max concentration 7mg/mL after dilution. Maintain adequate hydration to prevent crystallization of the medication in the urine. (suggested 1mL per mg acyclovir)
↑ EXTRAVASATION RISK-		**VESICANT: >7mg/mL VASCULAR IRRITANT: <7mg/mL**		
adenosine **Adenocard®**	2 & RN in Cardiology	IM: No. SubQ: No. Direct I.V.: yes; over 1-2 seconds directly into vein, as proximally as possible; flush immediately with NS. Intermittent IV Infusion: yes; *STRESS TEST ONLY* Continuous Infusion: No	Facial flushing, shortness of breath/dyspnea, chest pressure, headache, dizziness, chest pain, sweating, palpitations, hypotension. Generally rapidly self-limiting. Caffeine, aminophylline, & theophylline may decrease the effects of adenosine; larger doses of adenosine may be required.	Adenosine may be metabolized prior to reaching site of action. Cardiac monitoring required Single doses >12mg not recommended.
albumin **25%** (preferred for dialysis) **5%** (hypovolemia/ hypoalbuminemia)	1 Must filter (15 µm set provided)	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: yes. MAX rates: 25%: 1mL/min (60mL/hr) 5%: 5mL/min (300mL/hr) Continuous Infusion: not recommended. (OK in TPN)	Fever, nausea, salivation, vomiting. Circulatory failure, dyspnea, elevated central venous pressure, pulmonary edema **Document:** **Record Mfr, Lot#, Expir date**	25%: for Dialysis or doses >12.5G only 5% Albumin: all other indications Maximum rates suggested to prevent pulmonary edema MONITOR: BP, Hgb, Hct, protein, albumin, prealbumin levels, I/O.
allopurinol **Zyloprim®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Rash, diarrhea, nausea/vomiting, increased liver enzymes, agranulocytopenia. Reduce dose if renal impairment.	Max concentration 6mg/mL after dilution. Admin within 10 hrs of preparation.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
alpha1-proteinase inhibitor **Zemaira®**	1 *5- µm Filter*	IM: No. SubQ: No. Direct IV: NO. Intermittent IV Infusion: Yes. Infuse over 15 min. Continuous Infusion: NO.	Allergic reactions, chest pain, peripheral edema, vasodilation, chills, dizziness, fever, headache, abdominal pain, elevated transaminases, arthralgia, vision changes, bronchospasm.	Infusion should start within 3hrs of prep. Infuse over 15 minutes (~0.08 mL/kg/minute), may increase if no reaction. *Filter with 5 µm in-line filter.
alprostadil **Prostin VR Pediatric®**	2 & OB	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: Yes. MAX rate 0.4mcg/kg/min (infuse into large vein; may infuse in umbilical artery catheter at ductal opening)	Diarrhea, DIC, hyperirritability, hypothermia, seizures, sepsis, tachycardia, cardiac arrest, cerebral bleeding, cortical proliferation of long bones, apnea, bradycardia, flushing, hypotension, pyrexia	Temporarily maintain ductus arteriosus patency in neonates: therapeutic response is an increase in pH (if acidotic) or oxygenation (PO_2) [500mcg/ 50mL D5W] 0.1mcg/kg/min; Reduce for fall in arterial pressure.
alteplase **Activase® TPA®** PREP: Dilute 100mg vial with 100mL SW; Remove and discard volume in excess of total dose [90mg max]	3 HIGH RISK 2 HIGH RISK	IM: No. SubQ: No. Direct I.V.: Yes. MAX rate 9mg/min. [MAX 9mg] Intermittent IV Infusion: Infusion of remainder of dose over 1hr [ischemic stroke]. [MAX 81mg] Continuous Infusion: No	Bleeding, epistaxis, fever, hypotension, nausea, vomiting, reperfusion arrhythmias. Avoid ABGs, IM injections, or other venopunctures.	MONITOR: HR, BP, RR, ECG (monitored) Ischemic Stroke: 0.9mg/kg [**Max 90mg**] **Bolus**: 10% over 1 minute [**MAX 9mg**] **THEN** 90% over 1hr [**MAX 81mg**] as an IVPB into IV fluids [preferably NS]; continue primary IV for at least 30min after IVPB completed.
Cathflo® - to declot catheters	1	Add 2.2mL SW to dilute to 2mg/2mL for instillation Instill into catheter, wait 30 min. If no return, wait another 90min. If still no return, redose.	See nursing policy 8620.160a.pdf (PICC, Port-A-Cath, CVP line declotting)	Portacath: certified RN only. CVP, PICC: any IV qualified RN. Only after other methods to declot fail.
Angiojet	3	Direct Thrombolysis: 5mg/25mL, or 10mg/50mL NS, utilizing Angiojet	Bleeding.	CathLab only NOT for IV infusion
Thrombectomy	2	Percutaneous thrombolytic infusion: 10mg/250mL NS	Bleeding.	Run ~0.5mg/hr directly into thrombus. NOT for IV infusion
amifostine **Ethyol®**	1	IM: No. SubQ: Yes. (Dilute w/ 2-2.5mL NS, inject in 1 to 2 injections) Direct I.V.: Yes*. Max rate 500mg over 3 minutes Intermittent IV Infusion: yes Continuous Infusion: no.	Hypotension, rash (hypersensitivity reactions), nausea/vomiting, arrhythmias, chest pain, dyspnea, dehydration, dizziness, flushing,	*Most patients receive 500mg SubQ (unlabeled route of administration) MONITOR: BP, HR, RR, hydration
amikacin **Amikin®**	1	IM: Yes. (in large muscle mass) SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Confusion, disorientation, dizziness, fever, headache, lethargy, vertigo, pruritis, rash, urticaria, decrease of calcium, magnesium, potassium, or sodium, diarrhea, nausea, vomiting, anemia, thrombocytopenia, increased liver enzymes, phlebitis, tinnitus, ototoxicity, BUN/ SCr increased, oliguria, proteinuria	Peak/Trough levels should be monitored with fourth dose.
amino acids **Aminosyn®**	1 Also see Parenteral Nutrition **TPN: high risk**	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: No. Continuous Infusion: YES.	Fluid, electrolyte imbalance, erythema, phlebitis, thrombosis, azotemia.	May only be administered alone via central line. Usually mixed with dextrose in TPN. Usual maintenance: 0.8-1 G/kg/day

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
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aminocaproic acid **Amicar®**	1	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: Yes. Max rate 10 gram/hr Continuous Infusion: Yes.	Cramps, diarrhea, dizziness, headache, malaise, nausea/vomiting, skin rash, stuffy nose, tearing, thrombophlebitis, tinnitus	Rapid IV push should be avoided due to hypotension, bradycardia, and arrhythmia Monitor: VS, signs of bleeding
aminophylline	2 1 1 Monitored Bed	IM: No. SubQ: No. Direct I.V.: yes. MAX rate 25mg/min. Intermittent IV Infusion: yes. (Over 30min) Continuous Infusion: yes; Preferred route.	Headache, irritability, insomnia, seizures, ventricular arrhythmias, PVC's, palpitations, tachy, hypertension, severe hypotension, flushing, tachypnea, N/V, hematemesis, epigastric pain, dizziness, palpitation, syncope, flushing, bradycardia, cardiac arrest	MONITOR: HR, BP, RR, ECG (if monitored) for the duration of infusion. Theophylline level (Tx: 10-20mcg/mL). MAX concentration 25mg/mL.
amiodarone **Cordarone®**	2 Must filter (0.22 µm)	IM: No. SubQ: No. Direct IV: Yes. 300 mg with 20 ml NS or D5W. **Only** for treatment of shock resistant VF or pulseless VT only: Intermittent IV Infusion: (LOAD) 150mg in 100ml D5W over 10 minutes. Continuous infusion: Yes. 450mg/250ml D5W	Hypotension, pain at the injection site are the most common adverse reactions. Arrhythmias, ARDS, cardiac arrest, CHF, thyroid dysfunction may occur.	Monitor: HR, BP, RR, ECG (monitored bed) Infuse with a 0.2 micron in-line filter. Central line recommended. Prepare infusion in glass [450mg/250mL]
amphotericin B Deoxycholate Fungizone®	1	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Phlebitis, anorexia, nausea/vomiting, muscle/joint pain, decreased renal function, fever, shaking, chills, LFT elevations,	Dilute to 0.1mg/mL, in D5W only. Max conc [0.25mg/mL] if given centrally. Premedicate to reduce infusion related reactions. [Acetaminophen, Meperidine, Diphenhydramine, Steroid]. Bolus w/ NS before & after to prevent nephrotoxicity. Test doses no longer recommended.
amphotericin B Liposomal Ambisome®	1	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: Yes. Continuous Infusion: Yes. Flush IV line w/ D5W prior to admin, or separate line	Phlebitis, anorexia, nausea/vomiting, muscle/joint pain, decreased renal function, fever, shaking, chills, LFT elevations.	Dilute to 1-2mg/mL in D5W only. May premedicate to reduce infusion related reactions. [Acetaminophen, Diphenhydramine, Meperidine, Steroid]. Only recommended once patient deemed intolerant to Amphotericin B Deoxycholate
ampicillin	1	IM: Yes. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Fever, seizure, erythema multiforme, exfoliative dermatitis, rash, urticaria, diarrhea, anaphylaxis, colitis, glossitis, nausea, vomiting, stomatitis, agranulocytosis, anemia, eosinophilia, leukopenia, thrombocytopenia purpura, AST increased, laryngeal stridor,	

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ampicillin/sulbactam **Unasyn®**	1	IM: YES. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Fever, seizure, erythema multiforme, exfoliative dermatitis, rash, urticaria, diarrhea, anaphylaxis, colitis, glossitis, nausea, vomiting, stomatitis, agranulocytosis, anemia, eosinophilia, leukopenia, thrombocytopenia purpura, AST increased, laryngeal stridor,	
antivenin - Snake **[CroFab]®** **(crotalidae)**	3	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: Yes. Dilute in 250mL NS. Continuous Infusion: No.	Hypersensitivity.	Initial dose: 4-6 vials Dilute in 250mL NS, Infuse at 50mL/hr for first 10min, then increase to 250mL/hr if no reaction.
antivenin - Spider **Black Widow ®** **(lactrodectus mactans)**	3	IM: Yes. SubQ: Only for desensitization. Direct IV: No. Intermittent IV Infusion: Yes. Over 15 to 30 min. Continuous Infusion: No.	Delayed serum sickness, Horse serum hypersensitivity.	IM into the anterolateral thigh. Administer test dose Intradermal or Conjunctival. If reaction occurs, desensitize SubQ with 1:100 dilution, then 1:10 dilution.
argatroban	3 PCI only 1 HIGH RISK	IM: No. SubQ: No. Direct IV: Yes, 350mcg/kg over 3 minutes. (**From dilution of 250mg in 250mL**) Intermittent IV Infusion: NO. Continuous infusion: Yes.	Bleeding, allergic reactions, abdominal pain, back pain, bradycardia chest pain, fever, headache, hypotension.	For patients with documented HIT only (heparin induced thrombocytopenia) [250mg/250mL NS] Monitor with aPTT or ACT.
arginine **R-GENE 10®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Over 30 min Continuous Infusion: No.	Rapid IV infusion may produce flushing, headache, nausea, vomiting, venous irritation, numbness, hyperkalemia	Draw HGH level at -30, 0, 30, 60, 90, 120 &150 minutes.
ARIPiprazole **Abilify IM®**	1 IM only	IM: YES. (in deep muscle mass) SubQ: No. Direct IV: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Headache, agitation, insomnia, anxiety, weight gain, dyspepsia, constipation, vomiting, rash, orthostatic hypotension, tachycardia, chest pain, hypertension, peripheral edema, dizziness, sedation, EPS, restlessness, fatigue, dystonia, irritability, suicidal ideation, salivation, xerostomia, diarrhea, weight loss, tremor, arthralgia, myalgia, blurred vision, cough.	Limit use of IM to $\leq$ 3 days. Convert to PO route as soon as possible.
ascorbic acid **(Vitamin C)** **Cenolate®**	1	IM: Yes. SubQ: Yes. Direct I.V.: Yes, MAX rate 100mg/min [Max 500mg] Intermittent IV Infusion: Yes; over 2-8 hours Continuous infusion: Yes	Temporary dizziness or faintness with rapid injection. Diarrhea, renal calculi.	Better absorbed IM

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atropine	2	IM: Yes. SubQ: Yes. Direct I.V.: yes. MAX rate 1 mg/min. Intermittent IV Infusion: not recommended. Continuous Infusion: not recommended.	PVC's; ventricular tachycardia; heart failure; palpitations; angina; change in mental status & hallucinations; apnea; respiratory failure; bronchial secretion thickening; eye pain/tearing fever; dry mouth, skin, eyes; constipation	Cardiac monitoring required MONITOR: HR, ECG (preferable), temp, urinary output, eye pain
azithromycin **Zithromax®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Diarrhea, nausea, pruritis, rash, abdominal pain, anorexia, cramping, vomiting, vaginitis, injection site pain and inflammation	
aztreonam **Azactam®**	1	IM: Yes (≤ 1 gram) SubQ: No. Direct IV: Yes. MAX rate: Over 5 minutes. Intermittent IV Infusion: YES. Continuous Infusion: Yes.	Rash, diarrhea, nausea, vomiting, thrombophlebitis, pain at injection site	IM by deep injection into large muscle mass.
bacitracin	1	IM: Yes. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Renal failure (tubular/glomerular necrosis), rash.	IM only in infants. Recommended only for use in irrigation solutions.
belimumab **Benlysta®**	1 **Preferred Chemo-certified RN**	IM: No. SubQ: No. Direct IV: NO. Intermittent IV Infusion: Yes. Infuse over ≥1 hr. Continuous Infusion: NO.	Headache, fatigue, fever, rash, nausea, diarrhea, abdominal pain, UTI, infusion reaction, arthralgia, back pain, respiratory tract infection, cough, sinusitis, pharyngitis, chest pain, hypertension, increased LFTs, dyspepsia.	Infusion should start within 8hrs of prep. Consider premedication with antihistamine and antipyretic.
benztropine **Cogentin®**	1	IM: Yes. SubQ: No. Direct IV : not recommended; MAX rate 1mg/min *IM & IV = same onset – **NO NEED TO USE IV** Intermittent IV Infusion: no Continuous Infusion: no	Tachycardia, confusion, disorientation, toxic psychosis, hallucinations. Rash, heat stroke, hyperthermia, xerostomia, N/V, ileus, constipation, urinary retention, dysuria, blurred vision, and mydriasis.	Monitor symptoms of EPS (Extra-pyramidal symptoms) or pakinson's, pulse and anticholinergic effects.
betamethasone **sod phosph/acetate** **Celestone®**	1	IM / Intra-synovial: **YES**. SubQ: No. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Sodium/fluid retention, hypertension, muscle weakness, dizziness, headache, increased intraocular pressure.	***For IM, intrasynovial, or intralesional use only.**
botulinum toxin A **(onabotulinumtoxinA)** **Botox®**	3	Intradermal: Yes IM: Yes. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Pain, headache, dysphagia, focal weakness, dizziness, drowsiness, fever, malaise, injection site soreness, hypertonia, muscle weakness, musculoskeletal stiffness, hypertonia, axillary hyperhidrosis, ptosis, anxiety, pruritis, nausea, back pain, facial pain, nonaxillary sweating	

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bumetanide **Bumex®**	1	IM: Yes. SubQ: No. Direct I.V.: yes; MAX rate 1mg/min. Intermittent IV Infusion: no.	Muscle cramps, dizziness, hypotension, hyperuricemia, electrolyte depletion (hypochloremia, hypokalemia, hyponatremia), encephalopathy; also see furosemide	MONITOR: weight, BP, serum potassium, sodium, chloride, glucose, calcium, uric acid; urine glucose, uric acid; BUN; infusion site
	2	Continuous Infusion: yes. [Not diluted]		
bupivacaine **Marcaine®, Sensorcaine®**	3	IM / Intra-synovial: Yes. SubQ: Yes. For local anesthesia. Direct I.V.: NO Intermittent IV Infusion: NO.	Hypotension, bradycardia, palpitation, heart block, ventricular arrhythmia, cardiac arrest, restlessness, anxiety, dizziness, seizure, nausea, vomiting, musculoskeletal weakness, blurred vision, pupillary constriction, tinnitus	Development of any central nervous system symptoms may be an early indication of more significant toxicity.
	3 Anes Only	Intrathecal, Epidural: Yes		
butorphanol **Stadol®**	1	IM: Yes. SubQ: No. Direct IV: yes; MAX rate 0.5mg/min Intermittent IV Infusion: yes Continuous Infusion: not recommended.	Dizziness, nausea, vomiting, somnolence, abdominal pain, anxiety, confusion, cough, constipation, diplopia, flushing, hypotension.	MONITOR: RR, HR, BP, urine output, mental status, oxygen requirements, administration rate.
calcitonin **Miacalcin®**	1	IM: Yes. SubQ: Yes. Direct IV: NO. Intermittent IV Infusion: NO Continuous Infusion: NO.	Allergic reactions, hypocalcemia (tetany), increase in urine sediment, nausea/vomiting.	**For IM or SubQ use only** MONITOR: Calcium levels
calcium chloride	2 Cardiac Arrest Only	IM: No. SubQ: No. Direct I.V.: YES. Cardiac Arrest- MAX rate: 200mg/min Intermittent IV Infusion: NO. Use Ca Gluconate. Continuous Infusion: NO. Use Ca Gluconate.	Arrhythmias, skin necrosis, paresthesia (may indicate too-rapid infusion)	MONITOR: ECG, HR, signs of extravasation, paresthesia, 10mL=**13.6mEq**=1000mg
↑ EXTRAVASATION RISK- VESICANT				
calcium gluconate	2	IM: No. SubQ: No. Direct I.V.: yes. MAX rate 50mg/min Cardiac Arrest: MAX rate 200mg/min	Arrhythmias, skin necrosis, paresthesia (may indicate too-rapid infusion)	MONITOR: ECG, HR, signs of extravasation, paresthesia 10mL=**4.65mEq**=1000mg
	1	Intermitt. IV Infusion: yes. MAX rate 50mg/min. Continuous Infusion: yes. MAX rate 50mg/min.		
↑ EXTRAVASATION RISK- VESICANT				
carboprost tromethamine **Hemabate®**	3 IM only	IM: YES. **Deep IM only**. SubQ: No. Direct IV: NO. Intermittent IV Infusion: NO Continuous Infusion: NO.	Diarrhea, nausea/vomiting, flushing, dizziness, headache, cramps, abnormal taste, bladder spasms, blurred vision, drowsiness, dry mouth, myalgia, vertigo.	Administer deep IM only. (may be injected into Uterus) For abortion or post-partum bleeding only.

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caspofungin **Cancidas®**	1	IM: No. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: YES (In NS only) Over 60min Continuous Infusion: NO.	Fever, flushing, nausea, vomiting, increased LFT's, hypokalemia, hypercalcemia, peripheral edema	70mg, then 50mg q12h. (250mL) May dilute in 100mL NS if volume restricted
ceFAZolin **Ancef®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate: Over 5 minutes. Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Fever, seizure, rash, pruritis, diarrhea, nausea, vomiting, abdominal cramps, anorexia, anaphylaxis, colitis, hepatitis, elevated transaminases, eosinophilia, neutropenia, leukopenia, phlebitis.	
cefepime **Maxipime®**	1	IM: Yes. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Fever, seizure, rash, pruritis, diarrhea, nausea, vomiting, abdominal cramps, anorexia, anaphylaxis, colitis, hepatitis, elevated transaminases, eosinophilia, neutropenia, leukopenia, phlebitis.	
cefotaxime **Claforan®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate: Over 5 minutes. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Fever, seizure, rash, pruritis, diarrhea, nausea, vomiting, abdominal cramps, anorexia, anaphylaxis, colitis, hepatitis, elevated transaminases, eosinophilia, neutropenia, leukopenia, phlebitis.	
cefoTEtan **Cefotan®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate: Over 5 minutes. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Fever, seizure, rash, pruritis, diarrhea, nausea, vomiting, abdominal cramps, anorexia, anaphylaxis, colitis, hepatitis, elevated transaminases, eosinophilia, neutropenia, leukopenia, phlebitis.	
ceftaroline fosamil **Teflaro®**	1	IM: No. SubQ: No. Direct I.V.: Yes. Over 60 minutes. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Fever, seizure, rash, pruritis, diarrhea, nausea, vomiting, abdominal cramps, anorexia, anaphylaxis, colitis, hepatitis, elevated transaminases, eosinophilia, neutropenia, leukopenia, phlebitis.	
cefTAZidime **Fortaz®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate: Over 5 minutes. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Positive Coombs' test without hemolysis, headache, insomnia, rash, pruritis, hypokalemia, diarrhea, nausea, vomiting, constipation, elevated transaminases, phlebitis.	
cefTRIAXone **Rocephin®**	1	IM: YES. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Rash, diarrhea, eosinophilia, thrombocytosis, leukopenia, transaminases increased, tenderness and pain at injection site, BUN increased, biliary sludging (neonates).	Do not reconstitute with or co-administer with calcium-containing solutions (i.e. lactated ringers, TPN) for risk of precipitation.

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cefUROXime **Zinacef®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate: Over 5minutes. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Fever, seizure, rash, pruritis, diarrhea, nausea, vomiting, abdominal cramps, anorexia, anaphylaxis, colitis, hepatitis, elevated transaminases, eosinophilia, neutropenia, leukopenia, phlebitis.	
chloroprocaine **Nesacaine®**	3	IM / Intra-synovial: Yes. SubQ: Yes. For local anesthesia. Direct I.V.: NO Intermittent IV Infusion: NO.	Hypotension, bradycardia, palpitation, heart block, ventricular arrhythmia, cardiac arrest, restlessness, anxiety, dizziness, seizure, nausea, vomiting, musculoskeletal weakness, blurred vision, pupillary constriction, tinnitus	Development of any central nervous system symptoms may be an early indication of more significant toxicity. Not in Amide class – suitable for use in patients with lidocaine allergy.
	3 Anes Only	Intrathecal, Epidural: Yes		
chlorproMAZINE **Thorazine®**	1	IM: Yes. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: yes, MAX rate 1mg/min Dilute each 25mg(1mL) with 50mL NS. Continuous infusion: no.	Abnormal Q and T waves, drowsiness, excitement, extrapyramidal symptoms, fever, photosensitivity, tachycardia.	IM injection preferred, undiluted. Can prolong QT interval.
ciprofloxacin **Cipro®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Dizziness, insomnia, nervousness, somnolence, fever, headache, restlessness, rash, nausea, diarrhea, vomiting, abdominal pain, dyspepsia, ALT and AST increased, injection site reactions, rhinitis	
clindamycin **Cleocin®**	1	IM: Yes. (≤ 600mg) SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Pruritis, rash, abdominal pain, diarrhea, esophagitis, nausea, pseudomembranous colitis, vomiting, vaginitis, agranulocytosis, eosinophilia, neutropenia, thrombocytopenia, jaundice, abnormal LFTs, thrombophlebitis.	
codeine phosphate ***UNAVAILABLE AS OF 6/2010***	1	IM: Yes. SubQ: Yes. Direct I.V.: Yes. MAX rate 15mg/min. Intermittent IV Infusion: No. Continuous infusion: no.	Lightheadedness, dizziness, sedation, constipation, nausea, vomiting, tachycardia, bradycardia, orthostatic hypotension, respiratory depression, nausea, vomiting, constipation.	MONITOR: RR, pain
colchicine	1 No Longer Available	IM: No. SubQ: No. Direct I.V.: yes. MAX rate 0.5mg/min; free-flowing IV. Intermittent IV Infusion: no. Continuous Infusion: no.	Nausea, vomiting, diarrhea, abdominal pain.	Do NOT administer IM or SC. Avoid in renal impairment. Max 4mg total in a 7 day period.
colistimethate **Coly-Mycin ®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. Over 5 minutes. Intermittent IV Infusion: Yes. Continuous infusion: Yes.	Respiratory arrest; decreased urine output or increased BUN or serum creatinine; paresthesia; tingling of the extremities or the tongue; itching or urticaria; drug fever; GI upset; vertigo; slurring of speech.	Not on formulary at HRMC.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
Complement C1 inhibitor **Berinert®**	2	IM: Yes. SubQ: No. Direct I.V.: Yes. Max 4mL/min. (Berinert®) (Cinryze®=1mL/min) Intermittent IV Infusion: No. Continuous infusion: No.	Headache, rash, abdominal pain, abnormal taste, back pain, extremity pain, bronchitis, sinusitis.	Treatment of Hereditary Angiodema (HAE)
conivaptan **Vaprisol®**	2	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. 20mg over 30 min. Continuous infusion: Yes.	Orthostatic hypotension, fever, hypokalemia, edema, headache, constipation, nausea/ vomiting. Rapid serum sodium correction (>12 mEq/L/24 hours) can lead to neurological damage	MONITOR: rate of serum sodium increase, neurologic status. After IVPB, start continuous infusion of 20 mg over 24 hrs (0.83 mg/hr). May increase to 40mg/24hrs (1.66mg/hr) if sodium not increasing sufficiently.
↑ EXTRAVASATION RISK- VASCULAR IRRITANT				
cosyntropin **Cortrosyn®** **[ACTH]**	1	IM: Yes. SubQ: No. Direct IV: Yes. MAX rate 0.125mg/min. Conventional: 250mcg Low-dose test: 1mcg Intermittent IV Infusion: yes (over 4 to 8 hrs) Continuous Infusion: No.	Hypersensitivity reactions. Patients allergic to corticotropin may also be allergic to cosyntropin.	MONITOR: For anaphylaxis and other hypersensitivity reactions. **For adrenocortical testing only**: Monitor Cortisol at baseline, then 30, 60, and 90 minutes post injection. Response <9µg/dL=adrenal insufficiency.
cyanocobalomin **(Vitamin B-12)**	1	IM: Yes. SubQ: Yes. (deep) Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: yes (only in TPN)	Peripheral vascular disease, headache, anxiety, dizziness, nausea, vomting, diarrhea, weakness, myalgia.	Deep SubQ or IM injection preferred.
cycloSPORINE **SandIMMUNE®**	1	IM: No. SubQ: No. Direct IV: NO. Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Nephrotoxicity, thrombocytopenia, hyperkalemia, hepatotoxicity, convulsions, encephalopathy, hypomagnesemia, hypertension, hypersensitivity.	MONITOR: cyclosporine level, LFT, renal fxn. Dose= 1/3 of Oral Dosage. May interact with PVC: prepare in NON-DEHP bag/bottle; run through NON-DEHP IV line. (11947-12 w/ 0.22um Filter OK) Dilute 250mg/250mL D5W, adjust rate.
dantrolene sodium **Dantrium®**	2	IM: No. SubQ: No. Direct I.V.: YES. Dilute each 20mg with 60mL SW Intermittent IV Infusion: yes (over 1hr) Continuous Infusion: No.	Erythema, pulmonary edema, urticaria, thrombophlebitis, drowsiness, dizziness, fatigue, diarrhea, vomiting, muscle weakness.	Pre/peri/post operatively to antagonize malignant hyperthermia 2.5mg/kg/dose, repeat up to 10mg/kg Oral may be used post-crisis.
↑ EXTRAVASATION RISK- VESICANT				
DAPTOmycin **Cubicin®**	1	IM: No. SubQ: No. Direct I.V.: Yes. Over 2 minutes (50mg/mL) Intermittent IV Infusion: YES. (In 50mL NS only) Continuous Infusion: No.	Neuropathy, skeletal muscle pain with CPK elevations (caution if on Statins), hypotension, rash, erythema,	Only stable in NS. Consider discontinuing Statin therapy while on daptomycin. (CK increases)

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
darbepoetin **Aranesp®**	1 SubQ only	IM: No. SubQ: YES. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Edema, hyper/hypotension, fatigue, fever, headache, dizziness, vomiting, nausea, muscle spasm, arthralgia, peripheral edema, seizure, angina, rash, pruritis, back pain, dehydration, abdominal pain, phlebitis, limb pain, myalgia, weakness, cough, dyspnea, flu-like syndrome	
deferoxamine mesylate **Desferal®**	2	IM: Yes. (preferred) [250mg/mL SW] SubQ: Yes. (only via mini-infusion pump) Direct I.V.: No. Intermittent IV Infusion: YES. MAX rate 125mg/hr. (15mg/kg/hr only if immediately post blood transfusion) Continuous Infusion: No.	Hypotension, Shock, tachycardia, dizziness, leg cramps, thrombocytopenia, leucopenia, impaired renal function.	For Iron or Aluminum overload. Protect from Light. Max 6 Grams/day. Dilute in 100mL NS. May only infuse >125mg/hr in cardiovascular collapse (15mg/kg/hr)
denosumab **Prolia®** **Xgeva®**	1	IM: No. SubQ: YES. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Dermatitis, eczema, rash, hypocalcemia, increased risk of infection, osteonecrosis of the jaw	Contraindicated for hypocalcemia.
desmopressin **DDAVP®**	1	IM: No. SubQ: Yes. Direct IV: Yes. MAX rate 4mcg/min. (doses ≤4 mcg) Intermittent IV Infusion: Yes. (>4mcg over ≥15min) Continuous Infusion: NO.	Facial flushing, headache, hypertension, cramps, nausea/vomiting. Hyponatremia, water intoxication, anaphylaxis.	MONITOR: PT/INR, factor VIII activity, BP, HR, Sodium. Also may be administered SubQ
dexamethasone **Decadron®,** **Hexadrol®**	1	IM: Yes. SubQ: No. Intra-articular, intralesional, soft tissue: [4mg/mL] only Direct IV: yes; MAX rate 10mg/min. (Doses ≤ 20mg) Intermittent IV Infusion: yes. (Doses >20mg) Continuous Infusion: yes (only in shock)	N/V, pancreatitis, increased appetite, diarrhea, constipation, headache, blurred vision, vertigo, restlessness, seizures, mental disturbances, sodium retention, potassium loss, hypo/hyper-pigmentation, hypertension, hypocalcemia, hyperglycemia, anaphylactoid reactions.	MONITOR: BP, electrolytes (potassium, sodium), serum calcium, glucose tolerance, mental status, signs of withdrawal syndrome, temperature; be alert to subtle changes that may indicate infection
dexmedetomidine **Precedex®**	Moderate Sedation certified Physician **only** 2 NOT PCU	IM: No. SubQ: No. Direct I.V.: YES* 1mcg/kg over 10 min. (From dilution of 200mcg in 50mL IV) Intermittent IV Infusion: No. Continuous Infusion: YES.	Bradycardia, hypotension, respiratory depression, nausea, pleural effusion.	MONITOR: VS, pain, sedation level, **airway management**. *Loading dose not recommended: increased risk of hemodynamic compromise.
dexrazoxane **Zinecard®** **Totect®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Fatigue, fever, alopecia, erythema, hypocalcemia, increased triglycerides, serum amylase increased, anemia, granulocytopenia, hemorrhage, leukopenia, myelosuppression, neutropenia, thrombocytopenia, ALT and AST increased, bilirubin increased, phlebitis, extravasation, neurotoxicity.	For prevention of adverse effects of anthracycline or phlebitis.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
dextran 40 (LMW) (in D5W or NS) **lmw=low molecular weight**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: No. Continuous Infusion: Yes.	Hypersensitivity, hypernatremia (exacerbate CHF).	Volume expander, adjunctive treatment of shock. Max 20mL/kg over 24 hours
dextrose **25%* 2.5gm/10mL** **50%* 25gm/50mL** ***Caution: hypertonic**	1 **TPN= high risk**	IM: No. SubQ: No. Direct IV: yes. MAX rate 5gram/min* *Very large (central) veins and slow administration Intermittent IV Infusion: no. Continuous Infusion: Yes:	Hyperglycemia, glycosuria, fever, phlebitis, extravasation, local pain (with rapid injection), hypokalemia, hypophosphatemia, fluid and/or solute overload	Rapid administration may produce a hyperosmolar syndrome & hyperglycemia, therefore observe patient for mental confusion and LOC *10-25%: Central line only; *≤10% Peripheral or Central
diazepam **Valium®**	1	IM: Yes SubQ: No Direct I.V.: yes. MAX rate 5mg/min* *DO NOT DILUTE Inject directly into vein. (If infused into IV line, inject close to vein site, and fluid must be running >20ml/min.) Intermittent IV Infusion: no Continuous Infusion: no	Respiratory arrest, especially in the elderly or those with diminished respiratory reserve; cardiovascular collapse; hypotension; thrombosis; phlebitis; diminished mental status; paradoxical reactions (hyperexcitability, anxiety)	Do not filter. Flush tubing immediately after administration with NS MONITOR: RR, HR, BP
↑ EXTRAVASATION RISK- VESICANT				
dicyclomine **Bentyl®**	1 **IM only**	**IM:** YES. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	GI (dry mouth, constipation, taste loss), CNS (dizziness, headache, nervousness), blurred vision, rash, urinary retention, tachycardia, dyspnea, decreased sweating	For IM use only. Monitor for heat prostration, blurred vision, drowsiness, and intestinal obstruction
digoxin **Lanoxin®**	1	IM: Yes. Not preferred (injection site pain). SubQ: No. Direct IV: Yes; MAX rate 0.05mg/min. Undiluted or dilute each 0.5ml with 2.5mL NS Intermittent IV Infusion: No Continuous Infusion: No	Bradycardia, arrhythmias; systemic and arteriolar constriction may occur from too-rapid administration	MONITOR: HR, ECG (if warranted by clinical/cardiac status)
digoxin Immune FAB (AntiBody) **DigiFAB®**	2	IM: No. SubQ: No. Direct IV: Only for imminent cardiac arrest. Intermittent IV Infusion: **Yes**. Dilute 40mg vial with 4mL SW, then dilute in NS to ≤ 1mg/mL. Administer over at least 30 min. Continuous Infusion: No.	Acute anaphylaxis with urticaria, respiratory distress, and vascular collapse. Watch for withdrawal of digitalis effects: exacerbation of CHF, low cardiac output, and A-Fib.	MONITOR: VS, ECG, and Potassium levels. Watch for allergic reaction Each vial binds 0.5mg digoxin. Dosing: # of vials= $\frac{\text{total digoxin load (mg)}}{\text{0.5mg bound/vial}}$ OR # of vials= $\frac{(\text{digoxin conc.})(\text{kg})}{100}$
dihydroergotamine mesylate (DHE 45)	1	IM: Yes. Preferred. SubQ: Yes. Preferred Direct I.V.: Yes. MAX rate 1mg/min. [MAX 2 mg per IV dose; MAX 6mg/ week] Intermittent IV Infusion: No. Continuous Infusion: No.	Muscle pains in extremities, numbness and tingling in fingers and toes, transient tachycardia, weakness in legs, dizziness	MONITOR: heart rate and blood pressure IM or SC preferred

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
diltiazem **Cardizem®**	2	IM: No. SubQ: No. Direct I.V.: Yes; MAX rate 12.5mg/min Intermittent IV Infusion: Not recommended Continuous Infusion: yes; Max rate 15mg/hr	Bradycardia, hypotension, flushing, arrythmia, itching or burning at injection site, sweating, nausea, vomiting, edema, constipation, dizziness, paresthesia, dry mouth, dyspnea, headache, hyperuricemia.	MONITOR: Heart rate, Blood pressure, ECG and infusion site. (Monitored bed)
dimercaprol **BAL in Oil®**	2	IM: Yes. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Chest pain, hypertension, tachycardia, anxiety, fever, headache, abdominal pain, burning sensation (lips, mouth, throat), nausea/vomiting, salivation, throat irritation/ constriction, leukopenia, injection site pain, paresthesias (hand), blepharo-spasm, conjunctivitis, lacrimation, acute renal insufficiency, rhinorrhea.	Premed with H_1 antagonist (diphenhydramine) recommended. Administer in separate site from edetate Calcium disodium. Keep urine alkaline to protect renal function.
diphenhydrAMINE **Benadryl®**	1	IM: Yes. SubQ: No. Direct IV: yes; MAX rate 25mg/min. Intermittent IV Infusion: yes Continuous Infusion: not recommended	Thickening of bronchial secretions, apnea, hypertension, sedation, confusion, dizziness, epigastric distress	Single doses should not exceed 100mg MONITOR: BP, RR, HR, urinary output
dipyridamole **Persantine®**	2 R.N. in Cardiology	IM: No SubQ: No. Direct IV: No Intermittent IV Infusion: Yes. In 50mL D5W -over 4 minutes. Max 60mg for Cardiac Stress Test Continuous Infusion: Yes	Chest pain/angina pectoris, HA,dizziness, ECG abnormalities, hypotension, nausea, flushing, dyspnea, BP lability, fatigue	*RN may administer when drug is used in a diagnostic procedure and a cardiologist is present
DOBUTamine **Dobutrex®**	2 PCU: only fixed drips	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: Not recommended Continuous Infusion: Yes.	Dysrhythmias, PVCs, hypertension, tachycardia. Phlebitis if using peripheral IV site: change site at least every 48 hours or infuse to central line	MONITOR: BP, HR, RR, ECG, weight
DOPamine **Intropin®**	2 PCU: only fixed drips	IM: No. SubQ: No. Direct I.V.: NO. Intermittent IV Infusion: Not recommended Continuous Infusion: Yes. *Central Line	Dysrhythmias, PVCs, hypertension, tachycardia. Phlebitis if using peripheral IV site: change site at least every 48 hours or infuse to central line	MONITOR: BP, HR, RR, ECG, weight ***Continuous - MUST infuse through CENTRAL line. Peripheral admin for no longer than 8 hours.***
↑ EXTRAVASATION RISK- VESICANT				
doripenem **Doribax®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Headache, nausea, diarrhea, rash, pruritis, oral candidiasis, anemia, transaminases increased, phlebitis.	

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
doxycycline **Vibramycin®**	1	Intra-Pleural (pleurodesis): YES IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Photosensitivity, rash, skin hyperpigmentation, urticaria, hypoglycemia, anorexia, diarrhea, dysphagia, enterocolitis, glossitis, nausea, colitis, tooth discoloration (children), vomiting, eosinophilia, hemolytic anemia, neutropenia, anaphylaxis, serum sickness, SLE exacerbation	Administer via central line if possible.
droperidol **Inapsine®**	2	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 1.25mg/min. Intermittent IV Infusion: Yes. In D5W or NS Continuous Infusion: Not recommended	QT prolongation, torsade de pointes, chills, dizziness, hallucinations, hypotension, restlessness, shivering, tachycardia, apnea, extrapyramidal symptoms, palpitations, syncope, ventricular tachycardia.	MONITOR: ECG for prolongation of the QT interval (monitored bed suggested)
drotrecogin alfa **Xigris®**	2	IM: NO SubQ: NO Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: Yes.	Bleeding (ecchymoses, GI tract, intr-abdominal, intra-thoracic, retroperitoneal, inctracranial, skin and soft tissue),	Use Xigris order form
edetate calcium disodium **Calcium Disodium Versenate ®**	2	IM: YES (deep) SubQ: NO Direct I.V.: NO. Intermittent IV Infusion: YES. Over 8-12 hours. Continuous Infusion: NO.	Cerebral edema, nephrotoxicity (anuria, increasing proteinuria, or hematuria).	Treatment of lead poisoning. IV preferred, administer daily. IM doses should be split into q8-12h.
enalaprilat **Vasotec®**	1 Monitored Bed	IM: No. SubQ: No. Direct I.V.: Yes. MAX 1.25mg, over 5 min. Intermittent IV Infusion: Yes. Dose > 1.25mg. Dilute in 50 mL NS/D5W, over 30 min. Continuous Infusion: No.	Results in both supine and standing systolic and diastolic pressure (not usually orthostatic). Onset occurs withing 15 minutes, maximum response at 1 to 4 hrs. Dose at 6hr intervals.	VS with BP immediately prior to start of infusion, 30 min after start of infusion, then 60 min after completion
enoxaparin sodium **Lovenox®**	1 3 -	IM: NO. SubQ: YES- Deep. Alternate between L & R anterolateral and posterolateral abdominal wall. Direct IV: YES [Only in AMI] Intermittent IV Infusion: NO. Continuous Infusion: NO.	Bleeding, bruising, nausea, diarrhea, local reactions, thrombocytopenia.	Monitor for bleeding. May monitor Anti-Xa levels, drawn 4 hours after injection. Admin: Patient may be lying down or sitting up. Hold skin fold. DO NOT RUB INJECTION SITE!!!
ePHEDrine	2 **& OB (post-epidural)**	IM: Yes. SubQ: Yes. Direct I.V.: yes. MAX rate 10mg/min. Intermittent IV Infusion: No. Continuous Infusion: No.	Headache, insomnia, nausea, arrhythmia, tachycardia, vertigo, confusion, urinary retention, hypertension.	MONITOR: BP, RR, HR, ECG, K+.
EPINEPHrine **Adrenalin®**	2 3	IM: Yes. Must use [1:1000] (1mg/mL) SubQ: Yes. Must use [1:1000] (1mg/mL) Direct I.V.: yes. MAX rate 1mg/min. Must use 1mg/10mL IV syringe	Tachycardia, headache, hypertension, fibrillation, dizziness, anxiety, palpitations.	1:1000 (1mg/mL) for SC/IM/ET use only MONITOR: BP, RR, HR, ECG

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
	2 NOT PCU	Intermittent IV Infusion: no Continuous Infusion: Yes. *Central Line		***Continuous - MUST infuse through CENTRAL line. Peripheral admin for no longer than 8 hours.***
epoetin alfa (erythropoetin) **Procrit®** **Epogen®**	1	IM: No. SubQ: Yes Direct IV: Yes. Only during Dialysis. Intermittent IV Infusion: not recommended. Continuous infusion: not recommended.	Hypertension (not immediate), rash, urticaria.	MONITOR: BP, and allergic reaction Not to be given if Hgb >12 due to increased risk of thromboembolic events. **Medication guide must be distributed to patient before admin.**
eptifibatide **Integrilin™**	2	IM: No. SubQ: No. Direct IV: Yes, [BOLUS] 180mcg/kg over >1 min. Intermittent IV Infusion: no Continuous Infusion: Yes. 2mcg/kg/min	Bleeding is the most common complication. Most major bleeding is associated with arterial access site for cardiac cath, GI or GU sites.	Avoid trauma (e.g. IM injections, venous punctures, urinary catheters, nasotracheal intubation). Reduce to 1mcg/kg/min in renal impairment (CrCl <30mL/min)
ertapenem **INVanz®**	1	IM: Yes. (deep) SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Edema, hyper/hypo-tension, tachycardia, headache, fever, rash, insomnia, dizziness, fatigue, anxiety, pruritis, erythema, diarrhea, nausea, abdominal pain, vomiting, constipation, dyspepsia, hematocrit/ hemoglobin decreased, eosinophilia, leukopenia, hepatic enzymes increased, phlebitis, extravasation, weakness,	
erythromycin	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. Continuous Infusion: No.	QT prolongation, torsades de pointes, ventricular arrhythmia/ tachycardia, seizure, pruritis, rash, abdominal pain, anorexia, diarrhea, nausea, pancreatitis, vomiting, pseudomembranous colitis, cholestatic jaundice, hepatitis, abnormal LFTs, phlebtits weakness, hearing loss, anaphylaxis, urticaria	
↑ EXTRAVASATION RISK-		**VASCULAR IRRITANT**		
esmolol **Brevibloc®**	2	IM: No. SubQ: No. Direct I.V.: Yes. MAX rate 100mg/min Intermittent IV Infusion: Not recommended Continuous Infusion: Yes.	Hypotension, bradycardia, bronchospasm, confusion, fever, flushing lightheadedness, nausea/vomiting, pallor, paresthesia, somnolence, taste disorder, urine retention.	MONITOR: BP, HR, RR, ECG, weight
↑ EXTRAVASATION RISK-		**VASCULAR IRRITANT**		
estradiol valerate **Delestrogen®**	1 **IM only**	IM: YES. (Only route of administration) SubQ: NO. Direct IV : NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Abnormal vaginal bleeding & secretions, breast tenderness & enlargement, nausea/ vomiting, abdominal cramping, bloating, thromboembolism, headache, migraine, dizziness, edema, hair growth.	For IM use only.
estrogen, conjugated **Premarin®**	1	IM: Yes. SubQ: No. Direct IV : Yes. MAX rate 12.5mg/min. Intermittent IV Infusion: No Continuous Infusion: No.	Abnormal vaginal bleeding & secretions, breast tenderness & enlargement, nausea/ vomiting, abdominal cramping, bloating, thromboembolism, headache, migraine, dizziness, edema, hair growth.	IV preferred (more rapid effect). Dilute 25mg vial with 5mL SW. May cause flushing.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
ethacrynic acid **Sodium Edecrin®**	1	IM: NO. SubQ: NO. Direct I.V.: yes; MAX rate 10mg/min. Intermittent IV Infusion: NO Continuous Infusion: NO.	Dizziness, drowsiness, hypotension, lethargy, confusion, diarrhea, electrolyte imbalance, headache, tinnitus, nausea, vomiting, hypovolemia.	MONITOR: BP, urinary output, electrolytes, BUN/SCr.
etomidate **Amidate®**	**3 with** Moderate Sedation Privileges	IM: No. SubQ: No. Direct IV: Yes. MAX rate 40mg/min Intermittent IV Infusion: No. Continuous Infusion: No.	Transient skeletal muscle movements (myoclonus, eye movement), apnea, arrhythmia, bradycardia, hyper/hypotension, hiccups, hyperventilation, laryngospasm, nausea/ vomiting, tachycardia.	MONITOR: airway, VS, BP, Must establish and maintain airway. Evaluate train of four (TOF) before/during continued paralytic administration.
factor VIIa (rFVIIa) **NovoSeven® [recombinant]**	1 Only pre/ peri/post surgery	IM: No. SubQ: No. Direct IV: YES. Over 5 minutes Intermittent IV Infusion: No. Continuous Infusion: No.	Thrombotic events, hypertension, fever, hemarthrosis, allergic reaction, thrombophlebitis. *Activates extrinsic pathway of coagulation cascade.*	Only pre/ peri/ post surgery Reconstitute to 1mg/mL. For factor VII deficiency or severe trauma
factor VIII Advate; Helixate® FS; Kogenate® FS; Recombinate; ReFacto®	1	IM: No. SubQ: No. Direct IV: YES. Over 5-10 minutes (MAX 10mL/min) Intermittent IV Infusion: No. Continuous Infusion: No.	Chills, dizziness, fever, headache, pain, pruritis, nausea, dysgeusia, arthralgia, weakness, cough, dyspnea, thrombophlebitis. *Activates intrinsic pathway of coagulation cascade.*	For Hemophilia A. Catalyzes activation of Factor X, & IX to IXa. Use provided infusion set and filter needle.
factor IX AlphaNine® SD; BeneFix®; Mononine® Profilnine, PCC	1	IM: No. SubQ: No. Direct IV: YES. Over 5-10 minutes (MAX 10mL/min) Intermittent IV Infusion: No. Continuous Infusion: No.	Chills, dizziness, fever, headache, pain, pruritis, nausea, dysgeusia, arthralgia, weakness, cough, dyspnea, thrombophlebitis. *Activates intrinsic pathway of coagulation cascade.*	For Hemophilia B Activated by Factor XIa; with VII:C activates factor X to Xa. PCC for
Factor [multiple] II, VII, IX, X KCentra® 4 Factor Prothrombin Complex Conc	1	IM: No. SubQ: No. Direct IV: YES. 0.12 ml/kg/min (˜3 units/kg/min) up to max rate of 8.4 ml/min Intermittent IV Infusion: No. Continuous Infusion: No.	Chills, dizziness, fever, headache, pain, pruritis, nausea, vomiting, dysgeusia, arthralgia, weakness, hypotension, cough, dyspnea, thrombophlebitis. *Activates intrinsic pathway of coagulation cascade.*	For urgent reversal of VKA with acute major bleeding Administer concurrently with Vitamin K. Contains heparin and is contraindicated in patients with HIT and DIC.
famotidine **Pepcid®**	1	IM: No. SubQ: No. Direct IV: Yes. MAX rate 10mg/min [20mg/10mL NS] Intermittent IV Infusion: Yes. Continuous Infusion: No.	Headache, dizziness, nausea, vomiting <1% may have hypertension, flushing, fever, arthralgias, myalgias (same incidence as with po administration)	MONITOR: standard vital signs, no additional monitoring required
fentaNYL **Sublimaze®**	1 PCA= High Risk	IM: Yes. SubQ: No. Direct IV : Yes. MAX rate 100mcg/3 min. Intermittent IV Infusion: no Continuous Infusion: yes	Respiratory/circulatory depression, pruritis, orthostatic hypotension, bradycardia, dizziness, mental status changes, sedation, agitation, seizures, N/V, constipation, urinary retention, sweating, flushing.	MONITOR: Vital signs, urine output, mental status, oxygen requirements, and administration rate. WARNING: DOSE IN MICROGRAMS. Intrathecal, Epidural: only administered by anesthesiologist. Monitoring is required for 24hours post injection
	3 Anes Only	Intrathecal, Epidural: Yes		

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
fentaNYL-bupivacaine	2 & OB	Epidural: Yes Must be initiated by an anesthesiologist.	Respiratory/circulatory depression, pruritis, orthostatic hypotension, bradycardia, dizziness, mental status changes, sedation, agitation, seizures, N/V, constipation, urinary retention, sweating, flushing.	MONITOR: Vital signs, urine output, mental status, oxygen requirements, and administration rate.
ferumoxytol **Feraheme®**	1	IM: No. SubQ: No. Direct IV: Yes. MAX rate 510mg/min. Undiluted 17mL Intermittent IV Infusion: No. Continuous Infusion: No.	Hypotension, dizziness, diarrhea, nausea/ vomiting, constipation. May alter Hemoglobin, serum ferritin, serum iron, transferrin saturation (for at least 1 month following second injection and periodically.	Hemodialysis patients: administer ≥ 1 hr after HD started and once BP stabilized. Do not administer if solution is black to reddish-brown. May interfere with MR imaging.
filgrastim **Neupogen®, G-CSF**	1	IM: No. SubQ: YES. (Recommended) Direct I.V.: No. Intermittent IV Infusion: Yes Continuous Infusion: Yes. (Flush w/ D5W before/after infusing)	Allergic reactions (itching, redness, swelling). Dose related bone pain	IV: Final conc. >[15mcg/mL] in D5W Monitor WBC count May also administer as continuous SC infusion.
fluconazole **Diflucan®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Angioedema, QT prolongation, torsades de pointes, headache, seizure, dizziness, rash, nausea, diarrhea, vomiting, dyspepsia, taste perversion, leukopenia, neutropenia, jaundice, cholestasis, increased liver enzymes, dyspnea	
flumazenil **Romazicon®**	1	IM: No. SubQ: No. Direct IV: Yes. 0.2mg over 15sec, q1min up to 1mg If needed, may repeat in 20min. Intermittent IV Infusion: No Continuous Infusion: No	N/V, dizziness, confusion, re-sedation, headache, vasodilation, paresthesia, emotional lability. abnormal vision, fatigue, tachycardia. **All use of Flumazenil is to be documented as an Adverse Drug Reaction (ADR),** *except* for acute overdose on admission to ED.	MONITOR: mental status, RR, confusion, agitation, emotional lability, perceptual distortion, seizure activity. **WARNING: Do not use with Neuromuscular Blocking Agents-**, Via large vein, with running IV fluid.
folic acid	1	IM: Yes. (deep) SubQ: Yes. Direct I.V.: Yes. MAX 5mg/min Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Allergic reaction, bronchospasm, erythema, flushing, malaise, pruritus, rash	
fomepizole **Antizol ®**	2	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. (Over 30 min) Continuous Infusion: no.	Headache, nausea, dizziness, drowsiness, metallic taste, seizure, vomiting, diarrhea, abdominal pain,.	For ethylene glycol/methanol poisoning: 15mg/kg in 100mL NS over 30min then 10mg/kg q12h x 4 doses (q4h if dialysis) Until ethylene glycol/methanol level <20
fosaprepitant dimeglumine **Emend IV®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. (Over 15 min) Continuous Infusion: no.	Fatigue, nausea, weakness, hiccups, dizziness, headache, dehydration, flushing, diarrhea, dyspepsia, abdominal pain,	115mg/5mL in 110ml NS= [1mg/mL] Substrate of CYP3A4 Adjunct to other anti-nausea agents for **Chemotherapy** induced vomiting

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
foscarnet **Foscavir®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. (Over 15 min) Continuous Infusion: no.		
fosphenytoin **Cerebyx®**	1 1 Monitored bed	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 100mg PE/min. Dilute w/ equal volume NS; **Doses ≤ 300mg PE**. Intermittent IV Infusion: Yes. **Doses >300mg PE**. In 100mL NS or D5W. MAX rate 150mg PE/min Continuous Infusion: No.	Cardiovascular collapse and/or central nervous system depression. Hypotension can occur when given rapidly by the IV route. Other adverse events include nystagmus, dizziness, pruritus, paresthesia, headache, somnolence, and ataxia.	Monitor: BP, VS, CBC, liver function tests, and plasma level monitoring ***PE = Phenytoin Equivalent** ECG monitoring recommended during loading dose.
furosemide **Lasix®**	1 2	IM: Yes. SubQ: No. Direct I.V.: yes; MAX rate 40mg/min. Intermittent IV Infusion: yes.MAX rate 4mg/min. Continuous Infusion: yes.	Over diuresis, hypokalemia, hypochloremia, hyponatremia, hypocalcemia, transient increase in BUN, hyperuricemia, uricosuria, tinnitus, hearing impairment, GI upset, hyperglycemia, glycosuria, dizziness, anemia, leukopenia, neutropenia, thrombo-cytopenia, rash, urticaria, thrombophlebitis	Risk of ototoxicity increased with rapid rates of administration. MONITOR: weight, BP, serum potassium, sodium, chloride, glucose, calcium, uric acid; urine glucose; BUN; CBC with differential; platelet count; infusion site; administration rate
ganciclovir **Cytovene®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Fever, rash, diarrhea, nausea, abdominal pain, anorexia, vomiting, leukopenia, anemia, neuropathy, headache, confusion, pruritis, thrombocytopenia, neutropenia, paresthesia, musculoskeletal weakness, retinal detachment.	
gentamicin **Garamycin®**	1	IM: YES. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Neurotoxicity (vertigo, ataxia), gait instability, ototoxicity, nephrotoxicity, decreased creatinine clearance, edema, pruritis, erythema, rash	Neonatal 10mg/mL for IV infusion.
glucagon **GlucaGen®**	1	IM: YES. SubQ: YES. Direct I.V.: Yes. MAX rate 1mg/min. Intermittent IV Infusion: No. Continuous Infusion: Yes. [0.1mg/mL]	Hyperglycemia, hypersensitiviy reactions, hypotension, hypertension, tachycardia, nausea, vomiting, inhibition of GI tract motility, hypokalemia	May also be administered IM or SC. Dilute 1mg vial with 1mL SW. Continuous infusions **only** to reverse beta blockade or Ca Channel blocker.
glycopyrrolate **Robinul®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 0.2mg/min. Intermittent IV Infusion: No. Continuous Infusion: No.	Anaphylaxis, psychosis, anticholinergic (blurred vision, constipation, decreased sweating, urinary retention), muscular weakness, tachycardia.	MONITOR: urinary output
goserelin **Zoladex®**	1 SubQ only	IM: NO. SubQ: YES. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Peripheral edema, headache, depression, pain, insomnia, acne, seborrhea, hot flashes, decreased libido, sexual dysfunction, breast atrophy/enlargement, nausea, abdominal pain, diaphoresis.	Antihormonal agent. Use appropriate hazardous medication handling precautions.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
granisetron **Kytril®**	1 CHEMO PTS ONLY	IM: No. SubQ: No. Direct IV: yes, over 30 seconds. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Headache, hyper/hypotension, dizziness, insomnia, anxiety	Doses should be given at least 15 minutes prior to initiation of chemotherapy
haloperidol lactate **Haldol®**	1	IM: YES. SubQ: No. Direct IV: Yes. MAX rate 5mg/min. Intermittent IV Infusion: yes Flush IV line before and after with NS. Doses should not exceed 5mg q15min.	Hypotension is rare, usually no effects on vital signs or local effects on veins. IV route is less likely to produce extrapyramidal side effects than the oral. If widened QTc intervals, may be at increased risk for torsades de Pointes. Neuroleptic malignant syndrome (fever, tremors and rigidity) is rare, more likely with IM/IV.	MONITOR: VS, level of consciousness, and for extrapyramidal effects. If EPS do occur, give 25-50mg of diphenhydramine iv push. Benzo-diazepines may also help decrease these symptoms. (Half-life of iv haloperidol is 14 hrs). All IV uses are unlabeled.
	2	Continuous Infusion: Yes. MAX rate 20mg/hr. (max 240mg/24 hours)		
heparin Sodium	1 HIGH RISK	IM: No. SubQ: Yes. Direct IV: yes [HIGH RISK] Intermittent IV Infusion: Yes [HIGH RISK] Continuous Infusion: yes; adjust rate w/ aPTT [HIGH RISK]	Thrombocytopenia (reversible if it occurs acutely, hemorrhage and other bleeding complications, chills, fever, urticaria, anaphylaxis, increase in AST and ALT	Independent double check necessary for every **IV** dose. [HIGH RISK] Follow Heparin Order Form. aPTT required before drip initiation and q6h for titrations. MONITOR: aPTT, bleeding, platelets, hypersensitivity reactions, , LFT's
hepatitis B Immune Globulin **HyperHEP B®**	1	**IM: YES (only)** SubQ: NO. Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Headache, fatigue, nausea/vomiting, arthralgia, anaphylaxis. **DOCUMENT:** **Record Mfr, Lot#, Expir date.**	IM: Only in anterolateral aspect of upper thigh and deltoid muscle of upper arm. May admin at same time (different site) or up to 1 month preceding hep B vacc w/out impairing active immune response
hepatitis B Vaccine **Recombivax®** **Engerix®**	1 **IM only.**	**IM: YES (only)** SubQ: NO. Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Injection site reaction, fever, hypotension, chills, flushing, rash, urticaria, cough. **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	3-shot series: 0, 1 month, 6 month VIS MUST be given to patient or caregiver before administration.
hyaluronidase **Hylenex®**	2	IM: NO. SubQ: Yes. Before hypodermoclysis. Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: Yes. Into fluid to be run **SubQ**.	Injection site reactions, urticaria, angiodema.	Administer SubQ just prior to SubQ injectable fluid, for hypodermoclysis. For injection into continuous SubQ fluid, add 15 units to each 100 mL.
hydrALAZINE HCl **Apresoline®**	1 Monitored Bed or OB	IM: Yes. SubQ: No. Direct I.V.: yes; MAX rate 5mg/min. Intermittent IV Infusion: not recommended Continuous Infusion: not recommended	Anxiety, restlessness, sweating, mild tremor, dysrhythmias, palpitation, ventricular tachycardia, tissue necrosis following extravasation	MONITOR: BP, HR, urine output, ECG, central venous pressure, administration rate, infusion site

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
hydrocortisone sodium succinate **Solu-CORTEF®**	1	IM: Yes. SubQ: No. Direct IV: Yes. MAX rate 25mg/min. Intermittent IV Infusion: Yes. (>100mg) Continuous Infusion: Yes. Dilute with D5W to [0.1mg/ml-1mg/ml]	N/V, pancreatitis, increased appetite, diarrhea, constipation, headache, blurred vision, vertigo, restlessness, seizures, mental disturbances, sodium retention, potassium loss, hypertension, hypocalcemia, hyperglycemia,masked infection, hypopigmentation, hyperpigmentation	MONITOR: BP, electrolytes (potassium, sodium), serum calcium, glucose tolerance, mental status, signs and symptoms of withdrawal syndrome, temperature; be alert to subtle changes that may indicate infection
HYDROmorphone **Dilaudid®**	1 PCA= High Risk	IM: Yes. SubQ: Yes. Direct IV: Yes; MAX rate 1mg/min. May dilute with 5mL NS before administration Intermittent IV Infusion: not recommended Continuous Infusion: Yes.	Respiratory depression, circulatory depression, orthostatic hypotension, bradycardia, dizziness, mental clouding, sedation, agitation, seizures, altered consciousness, N/V, constipation, urinary retention, sweating, flushing, pruritus,	MONITOR: RR, HR, BP, urine output, mental status, oxygen requirements, administration rate.
hydrOXYzine **Atarax/Vistaril®**	1 IM only	IM: Yes. Deep. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	CNS depression, anticholinergic effects, tremor.	All other routes than IM contraindicated due to tissue damage.
hyoscyamine **Levsin®**	1	IM: Yes. SubQ: Yes. Direct IV: Yes; MAX rate 0.5mg/min. Intermittent IV Infusion: not recommended Continuous Infusion: No.	Urinary retention, mough dryness, blurred vision, tachycardia, palpitations, mydriasis, cycloplegia, headache, blurred vision, dizziness, insomnia, nausea/vomiting, constipation.	May also be administered IM or SubQ. MONITOR: temperature, urine output, HR.
ibandronate sodium **Boniva®**	1	IM: NO. SubQ: NO. Direct IV: Yes; 3mg over 30 seconds Intermittent IV Infusion: No. Continuous Infusion: No.	Abdominal pain, gastroenteritis, nausea, arthralgia, dizziness, hypertension, insomnia, depression, rash, hypercholesterolemia.	Not indicated for CrCl<30mL/min
ibuprofen **Caldolor®**	1	IM: NO. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: Yes. Over ≥30 min. Continuous Infusion: No.	GI ulceration/bleeding, nausea, flatulence, vomiting, headache, dizziness, liver enzyme elevations, hypertension, renal damage, CHF and edema, anaphylactoid reaction, skin reaction, cardiovascular thrombotic events.	
imipenem/cilastatin **Primaxin®**	1	IM: *Yes*. (deep) Not for severe infections. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Tachycardia, seizure, rash, nausea, diarrhea, vomiting, oliguria/anuria, phlebitis, pain at injection site	*Only Primaxin I.M. formulation can be administered via IM injection.*
immune globulin **GamaSTAN S/D®**	1 IM only	**IM: YES. (only)** SubQ: No. Direct IV: NO. Intermittent IV Infusion: No. Continuous Infusion: No.	Anaphylactic reaction, urticaria, angiodema,	IM only

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
immune globulin IV [IVIG, IGIV] **Gamunex C® 10%**	1 No in-line filter necessary	IM: NO. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: YES. Continuous Infusion: YES.	Anaphylactic reaction, urticaria, angiodema. **Document:** **Record Mfr, Lot#, Expir date**	Start at 60mg/kg/hr (0.6mL/kg/hr). No rxn in 30min, increase to 180mg/kg/hr No rxn in 30min, increase to 360mg/kg/hr. No rxn in 30min, increase to 480mg/kg/hr. MONITOR: vital signs q15min
inFLIXimab **Remicade®**	1 **Preferred Chemo-certified RN** *Filter*	IM: No. SubQ: No. Direct IV: NO. Intermittent IV Infusion: Yes. Infuse over ≥2 hrs. Continuous Infusion: NO.	Headache, fatigue, fever, rash, nausea, diarrhea, abdominal pain, UTI, infusion reaction, arthralgia, back pain, respiratory tract infection, cough, sinusitis, pharyngitis, chest pain, hypertension, increased LFTs, dyspepsia.	Infusion should start within 3hrs of prep. *Filter with 0.22 µm in-line filter. Use procedures for handling/disposal of hazardous waste.
influenza Virus Vaccine, inactivated **Fluzone®, Fluarix®, Afluria®**	1 IM only	**IM: Yes.** SubQ: No. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Local reactions, fever, malaise, myalgia. **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	**Inactivated Vaccine.** VIS MUST be given to patient or caregiver before administration. Preferred inj site: deltoid
influenza A, H1N1 Virus Vaccine, inactivated 2010-11: in seasonal vacc	1 IM only	**IM: Yes.** SubQ: No. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Local reactions, fever, malaise, myalgia. **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	**Inactivated Vaccine.** VIS MUST be given to patient or caregiver before administration. Preferred inj site: deltoid
insulin (regular) **NovoLIN R®** **HumuLIN R®**	1 2 & OB HIGH RISK	IM: Yes. SubQ: Yes. Direct I.V.: Yes **REGULAR INSULIN ONLY** Intermittent IV Infusion: No Continuous Infusion: yes [100units/100mL NS] **REGULAR INSULIN ONLY**	Hypoglycemia; signs and symptoms include: tachycardia, diaphoresis, lightheadedness, unresponsiveness, coma Allergy (local and systemic reactions)	-All insulin may be administered SC. (SubQ not considered high-risk) ONLY regular may be administered IV. -Continuous infusion in PCU only for <8 hours or clinical judgment of RN MONITOR: glucose, mental status, HR
insulin – other: **NovoLOG, NPH, Levemir, Lantus®, HumaLOG Mix 75/25**	1	IM: NO. SubQ: **YES.** Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Hypoglycemia; signs and symptoms include: tachycardia, diaphoresis, lightheadedness, unresponsiveness, coma Allergy (local and systemic reactions)	All these insulin products must be administered SubQ. MONITOR: serum glucose, mental status, HR
iodixanol **Visipaque® 270, 320, 550, 652**	1 & Radiological Technicians	IM: No. SubQ: No. Direct IV: Yes. Intermittent IV Infusion: No. Continuous Infusion: No.	Headache, angina, flushing, nausea/vomiting, urinary retention.	Radiocontrast Agent – Iodinated, non-ionic, LOW-osmolality. May also be administered intra-arterially. Patients should be hydrated prior to and following administration.
ioflupane I 123 **DaTscan™**	2 Nuclear Tech only	IM: No. SubQ: No. Direct IV: Yes. Slow IV over ≥ 15 seconds Intermittent IV Infusion: No. Continuous Infusion: No.	Dizziness, headache, nausea, pruritus, rash, vertigo, xerostomia	C-II Radiopharmaceutical: 3-5 mCi/2.5mL. To evaluate diagnosis of Parkinson's. Thyroid protective agent (SSKI, Lugols) equivalent to 100mg iodide should be given at least 1 hour prior.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
iohexol **Omnipaque® 140, 180, 240, 300, 350**	1 & Radiological Technicians	IM: No. SubQ: No. Direct IV: Yes. Intermittent IV Infusion: No. Continuous Infusion: No.	Headache, angina, flushing, nausea/vomiting, urinary retention.	Radiocontrast Agent – Iodinated, non-ionic, LOW-osmolality. May also be administered intra-arterially. Patients should be hydrated prior to and following administration. 140 & 350 are NOT for Intra-THECal use.
iopamidol **Isovue®** **Isovue® 200,300,370** **Isovue-M®** **Isovue-Multipack®**	1 & Radiological Technicians	Intra-THECal: Isovue-M only. IM: No. SubQ: No. Direct IV: Yes. Intermittent IV Infusion: No. Continuous Infusion: No.	Headache, angina, flushing, nausea/vomiting, urinary retention.	Radiocontrast Agent – Iodinated, non-ionic, LOW-osmolality. May also be administered intra-arterially. Patients should be hydrated prior to and following administration. Only Isovue-M for Intra-THECal use.
ioversol **Optiray® 160, 240, 300, 320, 350**	1 & Radiological Technicians	IM: No. SubQ: No. Direct IV: Yes. Intermittent IV Infusion: No. Continuous Infusion: No.	Headache, angina, flushing, nausea/vomiting, urinary retention.	Radiocontrast Agent – Iodinated, non-ionic, ISO-osmolality. May also be administered intra-arterially. Patients should be hydrated prior to and following administration. NOT for Intra-THECal use.
iron dextran **Infed®**	1	IM: Yes (Z-Track) SubQ: No. Direct IV: Yes. MAX rate 50mg(1mL)/min. Intermittent IV Infusion: Yes. Over 1-8 hrs in NS Continuous Infusion: No.	Anaphylaxis, backache, dizziness, headache, itching, phlebitis, malaise, nausea, rash, abdominal pain, diarrhea, vomiting.	May give 0.5mL (25mg) as test dose. Must admin IM via Z-Track technique.
iron Sucrose **Venofer®**	1	IM: No. SubQ: No. Direct IV: Yes. MAX rate 20mg/min. (**Max 100mg**) Undiluted - during dialysis only. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Cramps, diarrhea, headache, hypotension, nausea, vomiting, dizziness, dyspnea, fever, pruritis.	May give 50mg/50mL NS for test dose. Direct I.V. only for doses during dialysis.
isoproterenol HCl **Isuprel®**	2 & RN in Cardiology. NOT PCU	IM: No. SubQ: No. Direct IV: yes (only in emergencies) MAX 10mcg/min. Dilute 1ml (0.2mg) with 9mL of NS; Intermittent IV Infusion: No Continuous Infusion: Yes. Preferred route;	Excessive hypotension (especially when used with diazoxide), arrhythmias, shock, angina, hypotension, tachycardia, angina, edema, postural hypotension, delirium	MONITOR: BP (maximum decrease occurs in 10-80 min), HR (Monitored bed)
kanamycin **Kantrex®**	1	IM: Yes. SubQ: No. Direct IV: No. Intermittent IV Infusion: Yes. [~4mg/mL NS over 1hr] Continuous infusion: No	CNS toxicity, renal impairment (See other aminoglycosides)	**Recommended ONLY for use in Irrigation solutions at HRMC.** Inj. Dose 7.5mg/kg q12h

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
ketamine	3 **Physician only**	IM: Yes. SubQ: No. Direct IV: Yes. MAX rate 0.5mg/kg/minute; Dilute to MAX conc. of 2 mg/ml w/ NS or D5W Intermittent IV Infusion: no Continuous Infusion: Not preferred	Elevated blood pressure, hypotention, bradycardia, apnea following rapid IV administration of high doses, laryngospasm, diplopia, nystagmus,hyper-salivation, increased skeletal muscle tone.	Equipment to deliver supplemental oxygen will be immediately available.
ketorolac tromethamine **Toradol®**	1	IM: Yes. SubQ: No. Direct IV: Yes. 30 mg (max. dose) over 15sec. If>65y/o, <50kg or SCr>1.5, 15mg max Intermittent IV Infusion: No Continuous infusion: No	GI distress, ulceration, and bleeding, post-operative bleeding, acute renal failure, anaphylactic reactions, liver failure, edema, hypertension, purpura, headache, drowsiness, dizziness, and sweating.	MONITOR: pain control. Contraindicated in labor & delivery and lactating patients, in pts. w/ advanced renal failure, hx of peptic ulcer disease, GI bleed, a high risk of bleeding, or currently taking aspirin or other NSAID.
labetalol Hcl **Normodyne®**	2 PCU for <8 hrs IV only	IM: No. SubQ: No. IV injection: Yes. MAX rate 10 mg/min Intermittent IV Infusion: no. Continuous Infusion: Yes. Max rate 8mg/min	Ventricular arrhythmias, hypoesthesia (numbness);transient increases in BUN/Scr; pruritis, flushing	Measure supine BP immediately before and at 5 and 10 minutes after injection Monitor HR, BP, RR, ECG
lacosamide **Vimpat®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Dizziness, headache, nausea/vomiting, diplopia, blurred vision, nystagmus, fatique, ataxia, vertigo, tremor.	May prolong PR interval. ECG recommended.
leucovorin (folinic acid)	1	IM: Yes. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. MAX rate 160mg/min Continuous Infusion: No.	Allergic reactions (rash, pruritis, erythema, urticaria), thrombocytosis, wheezing.	To prevent toxicity of MTX.
leuprolide acetate **Lupron, Lupron Depot**	1 IM only	IM: Yes. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Pain, acne, rash (including erythema multiforme), seborrhea, vaginitis, vaginal bleeding, vaginal discharge, injection site reaction	Antihormonal agent. Use appropriate hazardous medication handling precautions.
levETIRAcetam **Keppra®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: Yes. Admin over 15 min. Continuous Infusion: No.	Headache, fatigue, weakness, somnolence, dizziness	Max 1500mg/dose.
levOCARNitine **Carnitor®**	1	IM: No. SubQ: No. Direct I.V.: Yes. Intermittent IV Infusion: Yes. (Preferred) Over 15min Continuous Infusion: No.	Seizures, diarrhea, dizziness, hypertension, vomiting, pharyngitis, headache.	Dilute to 1-8mg/mL dilution in NS, admin over 15min. Usual dose ~50mg/kg IV

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
levofloxacin **Levaquin®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Chest pain, edema, headache, insomnia, taste disturbance, dizziness, fatigue, pain, rash, pruritis, nausea, vomiting, diarrhea, dyspepsia, constipation, abdominal pain, vomiting, inj site reaction, ocular pain, photophobia, pharyngitis.	
levothyroxine sodium **Synthroid®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 100mcg/min (100mcg/ml NS) Intermittent IV Infusion: No Continuous Infusion: No	Weight loss, increased appetite, palpitations, tachycardia, increased BP, nervousness, diarrhea, tremor, headache, fever, intolerance to heat, angina, arrhythmias	MONITOR: weight, temperature, HR, BP, ECG, thyroid function tests
lidocaine **Xylocaine®**	2	IM: Yes. (deltoid preferred) SubQ: Yes. For local anesthesia. Direct I.V.: Yes Intermittent IV Infusion: No Continuous Infusion: Yes	Drowsiness, dizziness, confusion, apprehension, blurred vision, double vision, N/V, paresthesia, difficulty swallowing, muscle tremors, seizures, respiratory depression and arrest, hypotension, arrhythmias, heart block and/or bradycardia with high concentrations	Cardiac monitoring required for all IV or IM injections MONITOR: ECG, BP, HR, RR, administration rate
Lidocaine PF 5% in D7.5W	3 Anes only	Intrathecal, Epidural: Yes		
linezolid **Zyvox®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Headache, diarrhea, insomnia, dizziness, fever, rash, nausea, vomiting, constipation, taste alteration, tongue discoloration, pancreatitis, thrombocytopenia, anemia, leukopenia, neutropenia, abnormal LFTs,	Caution for Serotonin Syndrome in patients on MAOI, SSRI's, or buspirone.
lipid (intralipid) emulsion 20% **Liposyn®**	1	IM: No. SubQ: No. Direct I.V.: SEE COMMENTS Intermittent IV Infusion: Yes Continuous Infusion: Yes, in Parenteral Nutrition	Hyperlipidemia, thrombophlebitis, dyspnea, dizziness, headache, nausea, vomiting, increased LFTs, hypercoagulability. From chronic infusions: hepatomegaly, jaundice, increased LFTs.	With TPN, run at 50m/hr in separate line. Lipid emulsion (20%) can be used for overdose of highly lipophilic medications, including bupivacaine & ropivicaine 1mL/kg IV bolus, then 0.25mL/kg/min IV
LORazepam **Ativan®**	1	IM: YES. SubQ: No. Direct I.V: Yes. Dil w/=Vol NS; MAX rate 2 mg/min.	Sedation, vertigo, respiratory, depression.	MONITOR: BP, HR, RR, level of consciousness Antidote: flumazenil IV
	2 NOT PCU *Filter*	Intermittent IV Infusion: No Continuous Infusion: Yes.		
magnesium sulfate	3	Direct I.V.: yes. Dilute each gram in ≥10mL NS/D5W MAX rate 200mg/min.	Absence of knee-jerk reflex, cardiac arrest, CNS depression, circulatroy collapse, complete heart block, flushing, flaccid paralyxis, hypocalcemia with signs of tetany, hypotension, hypothermia, increased PR interval, increased QRS complex, prolonged QT interval, respiratory depression.	Use caution in the Elderly and those with serum creatinine above 1.5 mg/dL. **Exception L&D - per protocol**. May administer 50% solution IM only. IV Push is associated with hypotension. Antidote: IV Calcium gluconate, dialysis
	1	IM: YES. SubQ: No. Intermittent IV Infusion: yes, over ≥ 30 min Continuous infusion: yes. In large volume IV.		
	2 & OB High Risk	Continuous infusion: yes. 20g/500mL SW.		
mannitol	2 *Filter* (0.22 µm)	IM: NO. SubQ: NO. Direct I.V.: Yes. From 20%(bag) or 25% vial MAX rate 50mL/min	Fluid and electrolyte imbalance, dehydration, allergic reactions, acidosis, urinary retention, N/V, dizziness, hypotension, hypertension,	Inspect for crystallization. Always filter. MONITOR: urine output, serum sodium,

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
	1 *Filter* (0.22 µm)	Intermittent IV Infusion: Yes. 20% Solution Usual rate 167mL/hr; ICP, IOP – infuse 100G/60 min Continuous Infusion: Yes. 20% solution.	hrombophlebitis, skin necrosis with extravasation	serum potassium, renal function (BUN/SCr), fluid balance, BP, HR, infusion site, symptoms of dehydration, central venous pressure
↑ EXTRAVASATION RISK-		**VESICANT**		
measles Virus Vaccine (RubeOLA) **Attenuvax®**	1 SubQ only	IM: No. **SubQ**: YES (only) Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Fever, syncope, headache, dizziness, malaise, irritability, diarrhea, thrombocytopenia, lymphadenopathy, leukocytosis, encephalitis, pneumonitis, cough, rhinitis, uritcaria, rash, injection site reactions, retinitis.	**Live virus**; Mix with diluent before admin. Contraindicated: egg or neomycin allergy **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**
measles, mumps, rubella Virus Vaccine **M-M-R II®**	1 SubQ only	IM: No. **SubQ**: YES (only) Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Fever, syncope, headache, dizziness, malaise, irritability, diarrhea, thrombocytopenia, lymphadenopathy, leukocytosis, encephalitis, pneumonitis, cough, rhinitis, uritcaria, rash, injection site reactions, retinitis.	**Live virus**; Mix with diluent before admin. Contraindicated: egg or neomycin allergy **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**
meperidine **Demerol®**	1	IM: YES. SubQ: Yes. (not preferred) Direct IV:: Yes. MAX rate 25mg/min *Dilution with NS to 10mg/mL preferred Intermittent IV Infusion: No	Respiratory depression, circulatory depression (including orthostatic hypotension), N/V, constipation, urinary retention, dizziness, sedation, weakness, agitation, seizures, altered consciousness, sweating, dry mouth, tachycardia	Metabolite (normeperidine) may accumulate in pts with renal failure; CNS excitability, agitation, seizure. IM administration preferred. MONITOR: BP, HR, RR, mental status, urine output, administration rate
meropenem **Merrem®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Headache, rash, pruritis, diarrhea, nausea/ vomiting, constipation, anemia.	
methocarbamol **Robaxin®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 300mg/min. Intermittent IV Infusion: yes. Continuous Infusion: no.	Blurred vision, diplopia, dizziness, drowsiness, fever, flushing, headache, hypotension, nausea/ vomiting, pruritis, vertigo, bradycardia, syncope, thrombophlebitis, dark urine.	Do not refrigerate. MONITOR: BP
methotrexate sodium	1 **Chemo certified RN or physician**	IM: Yes. SubQ: No. Direct I.V.: yes. MAX rate 10mg/min Intermittent I.V.: yes Continuous Infusion: yes; Flush with 5-10ml D5W or NS before and after administration	Leukopenia, thrombocytopenia, anemia, rash, hypogammaglobulinemia, N/V, anorexia, gingivitis, stomatitis, hepatotoxicity, pruritus, pigment changes, alopecia, malaise, blurred vision, headache, dizziness, nephropathy	MONITOR: CBC, platelet count, reticulocyte count, LFTs, INR, bilirubin, BUN, Scr, urinalysis, signs of infection Ectopic pregnancy: 50mg/m^2 IM or IV Doses >500mg/m^2 require leucovorin
methyldopate **Aldomet®**	1	IM: No. SubQ: NO. Direct I.V.: NO. Intermittent IV Infusion: Yes. Continuous Infusion: no.	Peripheral edema, drug fever,mental depression, anxiety, nightmares, drowsiness, headache, dry mouth	VS with BP immediately prior to start of infusion, q30 minutes x 2

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
methylene blue	3	IM: No. SubQ: No. Direct I.V.: Yes. MAX rate 25mg/min Intermittent IV Infusion: yes. Continuous Infusion: no.	Hypertension, dizziness, confusion, fever, headache, nausea/vomiting, abdominal pain, bladder irritation, anemia, urine discoloration, diaphoresis, hemolytic anemia.	For methemoglobinemia. Also used as an indicator dye.
methylergonovine maleate **Methergine®**	2 & OB	IM: YES (preferred) SubQ: No. Direct I.V.: yes. MAX rate 0.2mg/min May dilute with 5mL NS. O**nly in emergency.** Intermittent IV Infusion: no Continuous Infusion: no.	Severe nausea/vomiting with rapid infusion. Hypertension, CVA, chest pain, diaphoresis, dilated pupils, dizziness, dyspnea, headache, tinnitus, weakness.	IM and oral routes preferred. MONITOR: BP, uterine response
methylnaltrexone Bromide **Relistor®**	1 SubQ Only	IM: No. SubQ: YES. Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Abdominal pain, flatulence, nausea, dizziness, diarrhea.	Administer subcutaneously into upper arm, abdomen, or thigh. Rotate injection site. Do not use tender, bruised, red, or hard areas
methylPREDNISolone acetate **DEPO-Medrol®**	1	IM: Yes. SubQ: No. Direct I.V.: NO*. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Sodium/fluid retention, hypertension, muscle weakness, dizziness, headache, increased intraocular pressure.	***For IM, intrasynovial, or intralesional use only.**
methylPREDNISolone sodium succinate **Solu- MEDROL®**	1	IM: Yes. SubQ: No. Direct IV:: Yes. MAX rate 125mg/min. Intermittent IV Infusion: yes. >125mg, Administer over 30 min. Continuous Infusion: yes	N/V, pancreatitis, increased appetite, diarrhea, constipation, headache, blurred vision, vertigo, mental disturbances, sodium retention, hypo-kalemia, hypertension, hypocalcemia, hyper-glycemia, hypo/hyperpigmentation, masked infections, anaphylactoid reactions, withdrawal	MONITOR: BP, electrolytes (potassium, sodium), serum calcium, glucose tolerance, mental status, signs and symptoms of withdrawal syndrome, temperature; be alert to subtle changes that may indicate infection
metoclopramide **Reglan®**	1	IM: Yes. SubQ: No. Direct IV: Yes. [≤10mg] MAX rate 5mg/min. Intermittent IV Infusion: yes [>10mg] Continuous Infusion: No	A transient but intense feeling of anxiety and restlessness, followed by drowsiness, may occur with rapid administration	Monitor for EPS (involuntary movements of limbs, eyes and face); restlessness, drowsiness, fatigue
metoprolol **Lopressor®**	2	IM: No. SubQ: No. Direct IV: Yes. MAX rate 5mg/min. Intermittent IV Infusion: Yes. Continuous Infusion: No	Bradycardia, CHF, atrioventricular block, hypotension, numbness of hands, light-headedness, insomnia, weakness, N/V, hallucinations, confusion, hypoglycemia, rash, fever, laryngospasm, bronchospasm	MONITOR: HR, BP, blood glucose, ECG, signs and symptoms of cardiac failure (elevation of CVP, shortness of breath, orthopnea, respiratory distress), mental status, administration rate

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
metroNIDAZOLE **Flagyl®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Flushing, ataxia, confusion, dizziness, fever, headache, seizure, rash, urticaria, disulfiram-like reaction, nausea, vomiting, anorexia, abdominal cramping, diarrhea, furry tongue, glossitis, stomatitis, metallic taste, xerostomia, pharyngitis, thrombocytopenia, peripheral neuropathy, weakness	Max dose: 15mg/kg/dose IV
micafungin **Mycamine®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Fever, headache, hypokalemia, hypo-magnesemia, diarrhea, nausea/vomiting, mucosal inflammation, constipation, thrombo-cytopenia, neutropenia, anemia, hypo/hyper-tension, tachycardia, edema, rash, insomnia	Flush line with NS prior to administration.
midazolam **Versed®**	2 2 NOT PCU	IM: Yes. SubQ: No. Direct IV: Yes. MAX rate 2mg/min. May dilute in NS or D5W for slow titration Intermittent IV Infusion: No. Continuous Infusion: Yes.	Respiratory depression, retrograde amnesia, excessive sedation, headache, N/V, hiccups, hypotension, bradycardia, laryngo-spasm, bronchospasm, dyspnea, agitation, involuntary movements, euphoria, hallucinations, visual changes. combativeness, hypersensitivity,	MONITOR: RR, HR, BP, mental status, oxygen requirements, airway status, administration rate.
milrinone **Primacor®**	2	IM: No. SubQ: No. Direct IV: Yes. MAX rate: Over 10 min before infusion Intermittent IV Infusion: No. Continuous Infusion: Yes. 0.375-0.075 mcg/kg/min	Supraventricular and ventricular arrhythmias, torsade de pointes, Abnormal LFTs, angina, bronchospasm, chest pain, headache, hypokalemia, hypotension, rash, tremor	Monitor: BP, HR, ECG, RR, urine output, renal function, electrolytes. Adjust rate for renal function
morphine sulfate	1 PCA= High Risk	IM: Yes. SubQ: Yes. Direct IV: Yes. MAX rate 4mg/min (May dilute in NS) Intermittent IV Infusion: No Continuous Infusion: Yes.	Respiratory depression, pruritis, circulatory depression, orthostatic hypotension, brady-cardia, dizziness, mental clouding, sedation, agitation, seizures, altered consciousness, N/V, constipation, sweating, flushing.	MONITOR: RR, HR, BP, urine output, mental status, oxygen requirements, administration rate. Intrathecal / Epidural: only to be administered by anesthesiologist. Monitoring required 24hrs post injection
Duramorph® PF **Astramorph® PF**	3 Anesth Only	Intrathecal, Epidural: Yes		
mycophenolate mofetil **Cellcept®**	1 **Preferred Chemo-certified RN**	IM: No. SubQ: No. Direct IV: No. Intermittent I.V.: Yes. Over at least 2 hours. Continuous Infusion: No.	Hyper/hypotension,peripheral edema, chest pain, tachycardia, pain, headache, fever, insomnia, dizziness, anxiety, rash, abdominal pain, hyper-glycemia, hypomagnesemia, N/V, hypokalemia, hypocalcemia, hyperkalemia, diarrhea, anorexia, constipation, dyspepsia, leucopenia, weakness.	Immunosuppressant. Use procedures for handling/disposal of hazardous waste.
nalbuphine HCl **Nubain®**	1	IM: Yes. SubQ: Yes Direct IV: Yes. MAX rate 5mg/min Intermittent I.V.: No Continuous Infusion: No	Sedation, sweaty skin, dizziness, miosis, headache, hypertension, hypotension, bradycardia, tachycardia, respiratory depression, N/V, pain at injection site	MONITOR: BP, HR, RR

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
naloxone HCl **Narcan®**	1	IM: Yes. SubQ: Yes. Direct IV: Yes. MAX rate 0.4mg/ 15 seconds May dilute with NS for titration. Intermittent I.V.: No Continuous Infusion: yes; **No titration.**	Analgesia reversal, hypotension, hypertension, V-tach, V-fib, pulmonary edema, tremor, hyperventilation, withdrawal symptoms (N/V, sweating,tachycardia)	MONITOR: HR, BP, RR, mental status (ECG for titrated drip) 0.4mg / 250mL – no titration 2mg / 250mL – titration allowed
	2	Continuous Infusion: yes; **Titration allowed**		
neostigmine **Prostigmin®**	3	IM: No. SubQ: No. Direct I.V.: Yes. MAX rate 0.5mg/min Intermittent IV Infusion: No. Continuous Infusion: No.	Cardiac arrhythmias, EKG changes, cardiac arrest, syncope and hypotension.	Use caution with epilepsy, asthma, bradycardia, hyperthyroidism, cardiac arrhythmias, or peptic ulcer. Have atropine ready for toxicity/ overdose.
niCARdipine **Cardene®**	2	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: YES.	Headache, tachycardia, nausea/vomiting, hypotension, peripheral edema.	MONITOR: BP, HR, Rhythm, RR
nitroglycerin **Tridil®**	2	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: YES.	Abdominal pain, hypotension, headache, dizziness, nausea, tachycardia, flushing,	Monitor HR, BP, RR, ECG
nitroprusside **Nitropress®**	2 NOT PCU	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: YES.	Abdominal pain, hypotension, diaphoresis, dizziness, flushing, headache, nausea/ vomiting, cyanide intoxication, methemoglobinemia.	Monitor HR, BP, RR, ECG, cyanide, thiocyanate Methemoglobinemia: use methylene blue Arterial line recommended
NORepinephrine **Levophed®**	2 NOT PCU	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: YES. *Central Line.	Arrhythmia, anxiety, chest pain, dyspnea, headache, ischemia, extravasation, nausea/ vomiting, bradycardia	MONITOR: BP, HR, RR, ECG, weight ***Continuous - MUST infuse through CENTRAL line. Peripheral admin for no longer than 8 hours.***
↑ EXTRAVASATION RISK-		**VESICANT**		
octreotide **SandoSTATIN®**	1	IM: No. SubQ: YES (preferred) Direct I.V.: yes. MAX rate 50mcg/min Intermittent IV Infusion: Yes. (Over 20 min)	Abdominal pain/discomfort, abnormal stools, anorexia, anxiety, biliary sludge, dizziness, cholelithiasis, constipation, N/V, convulsions, depression, diarrhea, fatigue, flatulence, headache, irritability, hyper or hypoglycemia, insomnia, heartburn.	SubQ injection with rotation of injection sites is preferred route of administration.
	2	Continuous Infusion: YES.		
octreotide LAR **SandoSTATIN LAR Depot**	1	IM: Yes. LAR Depot only – intragluteal.		IM (Depot): avoid deltoid administration

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
OLANZapine **ZyPREXA ®**	1	IM: YES (deep) SubQ: No. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Hyperglycemia, cerebrovascular adverse reactions, neuroleptic malignant syndrome (NMS), tardive dyskinesia, orthostatic hypotension, hyperprolactinemia, LFT elevations, dysphagia.	Max dose 30mg/day, IM only. Dilute 10mg vial w/2.1mL SW=[5mg/mL]
ondansetron **Zofran®**	1	IM: Yes. SubQ: No. Direct IV: Yes. MAX rate 4mg/min [Doses ≤ 8mg] Intermittent IV Infusion: yes. [Doses >8mg] Continuous Infusion: No.	Headache, dizziness, musculoskeletal pain, drowsiness/sedation, arrhythmias.	MONITOR: Nausea, mental status.
oprelvekin **Neumega®**	1	IM: No. SubQ: YES. Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Tachycardia, edema, palpitation, syncope, headache, dizziness, fever, insomnia, fatigue, rash, fluid retention, N/V, cough, diarrhea, arthralgia, conjunctivitis, papilledema, dyspnea, rhinitis, pharyngitis, weight gain, pleural effusion	
oxacillin **Prostaphlin ®**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate: over 10 minutes. Intermittent IV Infusion: YES. Continuous Infusion: YES.	Fever, rash, diarrhea, nausea, vomiting, agranulocytosis, eosinophila, leukopenia, neutropenia, thrombocytopenia, AST increased, hepatotoxicity, acute interstitial nephritis, hematuria, serum sickness-like reactions	
oxytocin **Pitocin®**	2 & OB	IM: Yes. SubQ: No Direct IV: No Intermittent IV Infusion: No Continuous Infusion: Yes. **Titration allowed.**	Fluid retention, hypertension, nausea, PVC's, post-partum hemorrhage, uterine hypertonicity, spasm or contraction, N/V. Neonate: bradycardia, neonatal jaundice.	MONITOR: BP, I&O, OB: fetal heart tones, strength and timing of contractions, and resting uterine tone.
	1	Continuous Infusion: Yes. **No Titration.**		
paliperidone **Invega Sustenna®**	1 **IM ONLY**	IM: YES. SubQ: No Direct IV: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Arrythmia, prolonged QTc, agranulocytosis, leukopenia, neutropenia, weight gain, TIA, stroke, esophageal dysmotility/aspiration, extra-pyramidal symptoms (EPS), hyper-glycemia, neuroleptic malignant syndrome (NMS), hyperprolactinemia, orthostatic hypotension, priapism, sedation, suicidal ideation, temp dysregulation, weight gain	Not for dementia-related psychosis.
palonesetron **Aloxi®**	1	IM: No. SubQ: No. Direct IV: Yes. MAX rate 0.25mcg over 30sec Flush w/ NS immediately before/after. Intermittent IV Infusion: No. Continuous Infusion: No.	Pruritis, Headache, constipation, dizziness, musculoskeletal pain, drowsiness/sedation, arrhythmias, anxiety.	MONITOR: Nausea, mental status. MAX frequency: every 7 days.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
pamidronate **Aredia®**	1	IM: No. SubQ: No. Direct IV: no Intermittent IV Infusion: Yes. Over ≥ 2 hours Continuous Infusion: Yes.	Abdominal pain, bone pain, hypocalcemia, fever, generalized pain, hypertension, renal toxicity, osteonecrosis of the jaw, allergic reactions.	Extended infusions reduce risk of renal toxicity MONITOR: Calcium levels
pancuronium bromide **Pavulon®**	2 NOT PCU	IM: No. SubQ: No. Direct IV: Yes. MAX rate 0.2mg/kg over 60 sec Intermittent IV Infusion: no. Continuous Infusion: Yes.	Prolonged apnea, residual muscle weakness, hypersensitivity reactions, tachycardia, hypertension, excessive salivation, phlebitis.	PATIENT MUST BE ON RESPIRATOR MONITOR: RR, BP, HR, ABGs, grip strength, ability to lift head &open eyes **Not on formulary at HRMC**
pantoprazole **Protonix®**	1	IM: No. SubQ: No. Direct IV: Yes. MAX rate 20mg/min. Intermittent IV Infusion: Yes. Continuous Infusion: Yes. 8mg/hr.	Abdominal pain, diarrhea, dyspnea, headache, nausea, pruritis, rash, blurred vision, chest pain, confusion.	IV only. Do NOT give IM or SC Flush with NS after administration.
papaverine	2	IM: Yes. (preferred) SubQ: No. Direct IV: Yes. MAX rate 15mg/min May dilute with equal volume SW. Intermittent IV Infusion: Yes. Continuous Infusion: No.	Blurred or double vision, diaphoresis, flushing, hypertension, hypotension, sedaation, tachycardia.	Rapid IV injection may cause death. IM injection prefer red
parenteral nutrition (PN, TPN)	1 Filtered (0.22 µm) **TPN: high risk**	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Thrombophlebitis, infection, elevated LFTs, thrombosis, hyperglycemia, elevated ammonia.	HRMC standard is a 2-in-1: amino acid and dextrose mix. Lipids will run via a separate infusion (not through filter). TPN infused via Central Line. No piggybacks infused in same line as PN/TPN. Orders required by 13:00 for administration at 22:00. Monitor electrolytes, glucose levels, intake and output. Hang Dextrose 10% if infusion abruptly discontinued, or if new bag not available.
paricalcitol **Zemplar®**	1	IM: No. SubQ: No. Direct IV: Yes. MAX rate10mcg/min. Intermittent IV Infusion: No. Continuous Infusion: No.	Hypercalcemia: bone pain, constipation, headache, elevated LFTs, hypertension, pruritis. Chills, dry mouth, nausea, metallic taste.	Administer during dialysis. Dose based on iPTH (goal: 150-300pg/mL) Monitor for hypercalcemia, elevated Ca x PO_4^- level. (Hold if >70)
penicillin G Benzathine **Bicillin L-A®** **Benzathine-Procaine:** **Bicillin C-R®**	1 IM only	IM: YES (deep) – only. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Fever, rash, nausea, vomiting, tremors, dizziness, anxiety, diaphoresis, blurred vision,	For deep IM use only.

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
penicillin G, Aqueous **-Penicillin G Potassium** **-Penicillin G Sodium**	1	IM: YES (deep) SubQ: No. Direct IV: No.. Intermittent IV Infusion: YES. Continuous Infusion: YES.	Fever, rash, nausea, vomiting, tremors, dizziness, anxiety, diaphoresis, blurred vision,	
PHENobarbital sodium	2 & OB	IM: Yes (NOT recommended) SubQ: No. Direct IV: Yes. MAX rate 60mg/min. Intermittent IV Infusion: Yes (diluted in 10mL SW) Continuous Infusion: No	Sedation, ataxia, headache, depression, hypotension, apnea, respiratory depression, agranulocytosis, thrombocytopenic purpura, megaloblastic anemia, N/V, epigastric pain, hypersensitivity (urticaria, rash, fever), phlebitis	Very irritating; may cause local tissue damage; IM route NOT recommended. MONITOR: RR, BP, HR, periodic CBC, serum phenobarbital concentrations, administration rate, injection site
phentolamine mesylate **Regitine®**	3	IM: Yes. SubQ: No. Direct IV: Yes –ONLY for pheochromocytoma Infiltration: for extravasations. Intermittent IV Infusion: No Continuous Infusion: No	Hypotension, tachycardia, cardiac arrhythmias, angina, MI, cerebrovascular spasm, death, weakness, dizziness, flushing, nasal congestion, abdominal pain, N/V, diarrhea, peptic ulcer exacerbation.	Extravasations: Phentolamine 5mg diluted in 10 ml NS, Infiltrate (not I.V. in this case) into affected area. MONITOR: BP, HR, ECG
phenylephrine **Neo-Synephrine®**	2 NOT PCU 3 2 NOT PCU	IM: Yes. SubQ: Yes. **Direct IV: Yes. ANESTHESIA ONLY** Intermittent IV Infusion: NO. Continuous Infusion: YES. *Central line.	Bradycardia, headache, hypertension, tinglingn of extremities, arrhythmias, vertigo, nausea/ vomiting, extravasation.	MONITOR: BP, HR, ECG For direct IV, must be diluted to 1mg/mL – ***Continuous - MUST infuse through CENTRAL line. Peripheral admin for no longer than 8 hours.***
↑ EXTRAVASATION RISK- VESICANT				
phenytoin* **Dilantin®** *Substituted with Fosphenytoin	1 [>300mg monitored bed]	IM: Yes. [erratic absorption] SubQ: No. Direct I.V.: YES. MAX 50mg/min. Flush before/after. Intermittent IV Infusion: Not recommended Continuous Infusion: No.	Cardiovascular collapse and/or central nervous system depression. Hypotension can occur when given rapidly by the IV route., Nystagmus, dizziness, pruritus, paresthesia, headache, somnolence, rash, and ataxia.	Only use if fosphenytoin unavailable. Recommended 20mg/min infusion rate. **Central Line or large peripheral line administration only.** Monitor: BP, VS, CBC, liver function tests, and plasma level monitoring. ECG monitoring during loading doses.
↑ EXTRAVASATION RISK- VESICANT				
physostigmine **Antilirium®**	3	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 0.5mg/min. Intermittent IV Infusion: No. Continuous Infusion: No.	Anxiety, bradycardia, cholinergic crisis, coma, convulsions, defecation, delirium, disorientation, emesis, hyperactivity, hyper-salivation, urination, hypersensitivity,nausea, respiratory distress, salivation, sweating.	MONITOR: VS Reversible anticholenesterase. Atropine must always be available.
piperacillin/ tazobactam **Zosyn®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: YES. Continuous Infusion: Yes.	Diarrhea, hypertension, insomnia, headache, fever, agitation, pain, rash, pruritis, constipation, nausea, vomiting, dyspepsia, stool changes, abdominal pain, transaminases increased, local reaction, abscess, pharyngitis.	Extending time of infusion (over 4 hours) increases time over MIC of organism.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
pneumococcal Vaccine Polyvalent **Pneumovax 23®**	1	IM: Yes. SubQ: Yes Direct I.V.: No. Intermittent IV Infusion: No. Continuous Infusion: No.	Injection site reaction, fever, malaise, nausea, vomiting. **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	**Inactivated vaccine**. Preferably inj site: deltoid muscle or lateral mid-thigh. ACIP states that it may be given at the exact same time as Influenza vaccine.
polymyxin B	1	IM: Yes. [After dilution to 500,000units/2mL SW] SubQ: No. Direct IV: No. Intermittent IV Infusion: Yes. Over 90 minutes. Continuous Infusion: Yes. (not preferred due to kinetics)	Nephrotoxicity, Neurotoxicity (and exacerbation of neuromuscular blockade), flushing, dizziness, paresthesia, apnea, rash,	IV: 7,500-12,500units/kg, every 12 hours Over 90 minutes, Refrigerated.
potassium acetate	**NEVER**	IM: NO. SubQ: NO. Direct I.V.: NO.	Abdominal pain, bradycardia, cardiac arrest, confusion, diarrhea, dysphagia, ECG changes, nausea, weakness, muscle paralysis.	MONITOR: ECG, electrolytes Peripheral: MAX 100mEq/L Central: MAX 200mEq/L
	1	Intermittent IV Infusion: YES. MAX: 20mEq/hr monitored; 10mEq/hr unmonitored Continuous Infusion: YES.		
potassium chloride	**NEVER**	IM: NO. SubQ: NO. Direct I.V.: NO.	Abdominal pain, bradycardia, cardiac arrest, confusion, diarrhea, dysphagia, ECG changes, nausea, weakness, muscle paralysis.	MONITOR: ECG, electrolytes 10mEq/100mL SW: central/peripheral 20mEq/100mL SW: central line Peripheral: MAX 100mEq/L Central: MAX 200mEq/L
	1	Intermittent IV Infusion: YES. MAX: 20mEq/hr monitored; 10mEq/hr unmonitored Continuous Infusion: YES.		
potassium phosphate	**NEVER**	IM: NO. SubQ: NO. Direct I.V.: NO.	Diarrhea, nausea, stomach pain, flatulence, vomiting, bradycardia, hyperkalemia, weakness, dyspnea.	1mMol = 1.67mEq K^+
	1	Intermittent IV Infusion: YES. MAX: 10mMol/hr monitored; 5mMol/hr unmonitored Continuous Infusion: YES.		
pralidoxime **2-PAM**	3	IM: Yes. SubQ: Yes Direct I.V.: No. Intermittent IV Infusion: Yes. MAX rate 200mg/min. Continuous Infusion: No.	Hypertension, tachycardia, dizziness, drowsiness, headache, rash, nausea, ALT and AST increased, pain at injection site, muscle rigidity, musculoskeletal weakness, accommodation impaired, blurred vision, diplopia, renal function decreased, hyperventilation, laryngospasm	Antidote for organophosphates (anticholinesterase) exposure. Use in conjunction with atropine.
procainamide **Pronestyl®**	2	IM: Yes. SubQ: NO. Direct IV: Yes. MAX rate 50mg/min Intermittent IV Infusion: yes Continuous Infusion: Yes. MAX rate 6mg/min	Hypersensitivity reactions (fever, rash), ventricular tachycardia, conduction defects, heart block, asystole, hypotension	MONITOR: BP, ECG, HR.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
prochlorperazine **Compazine®**	1	IM: Yes. (Preferred) SubQ: No. Direct I.V.: yes; MAX rate 5 mg/min; May dilute each 5mg (1mL) with 4mL NS Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Arrhythmia, palpitations (especially post injection), severe hypotension (rapid administration), sedation lethargy, lowered seizure threshold, EPS, difficulty swallowing, slurred speech. Anticholinergic effects; May cause paradoxical excitation or agitation	Solution may turn slightly yellow Keep patient supine; observe for 30min Hypotension: Don't use epinephrine. Use norepinephrine or phenylephrine MONITOR: BP, HR, ECG preferable
promethazine **Phenergan®**	1	IM: YES (preferred) – DEEP IM SubQ: No. Direct IV: NO (as of 5/2012) Intermittent IV Infusion: Yes. Continuous Infusion: Yes.	Pain (stop injection immediately), sudden death, tachycardia, bradycardia, palpitation (immediately post injection), sedation, severe hypotension (especially with too-rapid administration), confusion, lethargy, lowered seizure threshold, rash, hallucination, EPS (dystonias, pseudo-parkinsonism, akathesia, tardive dyskinesia), tissue necrosis, venous thrombosis, blurred vision, difficulty swallowing, anticholinergic effects (dry mouth, urinary retention) photosensitivity,. Use caution in elderly w/ glaucoma, seizures, or cardiovascular compromise.	1. Extravasation may cause necrosis; 2. Avoid inadvertent IA or SC injection: may cause gangrene 3. Blood darkens on contact with promethazine. Blood color is not a good indicator of arterial blood. 4. Hypotension: Don't use epinephrine. Use norepinephrine or phenylephrine. 5. Keep patient supine for ≥ 30 min. 6. Contact physician if EPS occurs. **MONITOR:** BP, HR, ECG, RR, EPS, administration rate, injection site
↑ EXTRAVASATION RISK- VESICANT				
propofol **Diprivan®**	Moderate Sedation certified Physician **only**	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate 40mg over 10 seconds **Physician must be certified by chair of anesthesia.**	Hypotension, bradycardia, apnea, headache, hypoventilation, nausea. Green urine, abdominal cramping, anaphylaxis, fever, flushing, agitation. hypertriglyceridemia Note: 10% solution is 1.1kCal/mL	MONITOR: VS, pain, sedation level, **airway management**. Triglycerides with use >72 hours Bolus is only for induction of anesthesia or moderate sedation by Moderate Sedation certified physician, also certified by head of anesthesia.
	2 NOT PCU	Intermittent IV infusion: no. Continuous infusion: yes. No bolus allowed.		
propranolol HCl **Inderal®**	2	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate 1mg/min Intermittent IV Infusion: No Continuous Infusion: No	Bradycardia, CHF, atrioventricular block, hypotension, numbness of hands, fever, lightheadedness, insomnia, weakness, hallucinations, confusion, hypoglycemia, N/V, rash, laryngospasm, bronchospasm	MONITOR: HR, BP, blood glucose, ECG, signs and symptoms of cardiac failure (elevation of CVP, shortness of breath, orthopnea, respiratory distress), mental status, administration rate
protamine sulfate	2	IM: NO. SubQ: NO. Direct I.V.: yes. MAX rate 5mg/min Do not give >50mg of drug in 10min period. Intermittent IV Infusion: Yes. Note: Only if Heparin, LMWH given **SubQ**, give 25-50mg bolus, then administer rest of dose over 2-3 hours Continuous Infusion: No	Hypotension, bradycardia, dyspnea, transient flushing of the face, hypersensitivity reactions	MONITOR: aPTT during therapy, BP during and immediately following IV injection, HR and signs of bleeding during first 24 h following neutralization Each 1mg of Protamine neutralizes ~100units of Heparin, ~1mg Enoxaparin
pyridoxine **(Vitamin B-6)**	1	IM: Yes. SubQ: No. Direct I.V.: Yes. MAX rate 50mg/min* [IM route recommended] Intermittent IV Infusion: Yes. Continuous Infusion: Yes, preferred.	Flushing or feeling of warmth on injection. Ataxia, paresthesias, somnolence.	Deficiency may be due to inadequate diet, metabolic error, or concomitant drug use (isoniazid). *May administer at 500mg/min IV in acute isoniazid overdose with seizures.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
Rabies Immune Globulin **Bayrab®**	1 Infiltrate or IM use ONLY	IM: YES. (or infiltration) SubQ: No. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Fever, edema, rash, nephritic syndrome, anaphylactic shock **DOCUMENT:** **Record Mfr, Lot#, Expir date.**	Infiltrate Dose around wound: 20 Int. Units/kg [if feasible] Administer any remaining volume IM Administer with (at different site) Rabies Vaccine [w/in 7 days of 1st dose)
Rabies Vaccine **Rabavert®** **Imovax®**	1 IM use ONLY	IM: YES. SubQ: No. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Flu-like symptoms, fatigue, fever, headache, myalgia, malaise, dizziness, nausea, rash. **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	Pre-exposure: 3 doses: Day 0,7, 21 or 28 Post-exposure: 5 doses; Days 0, 3, 7, 14, 28
ranitidine **Zantac®**	1	IM: Yes. SubQ: No. Direct IV: Yes. Max 10mg/min. Dilute to 2.5mg/mL. Intermittent IV Infusion: Yes Continuous Infusion: Yes.	Abdominal discomfort, constipation, diarrhea, headache, nausea/vomiting.	
Rh_o (D) Immune Globulin (Human) **(WinRho SDF)**	1	IM: YES. SubQ: No. Direct IV: Yes. MAX rate 100mcg(500Int_Units)/min Dilute vial with 2.5mL NS Intermittent IV Infusion: no Continuous Infusion: no	Headache, chills, fever, decreased hematocrit. **Document:** **Record Mfr, Lot#, Expir date**	Monitor for infusion related reactions (e.g. T, RR, BR). Monitor hematocrit.
regadenoson **Lexiscan®**	2 & RN in cardiology. FOR STRESS TEST ONLY.	IM: No. SubQ: No. Direct IV: YES. 0.4mg (5mL) over 10 seconds. Intermittent IV Infusion: No. Continuous Infusion: No.	Myocardial ischemia, heart block (use caution in patients with first-degree AV block or bundle branch block), hypotension, tachycardia, bronchoconstriction, flushing, PVC's, angina, headache, dizziness, nausea.	Admin IV over 10 seconds, then 5mL NS flush. Wait 10-20 seconds, then admin myocardial perfusing imaging agent. *Do not take theophylline or coffee (caffeine) within 12 hours of test.*
rifampin	1	IM: No. SubQ: No. Direct IV: No Intermittent IV Infusion: YES. Continuous Infusion: No.	Fever, chills, malaise, thrombocytopenia, headache, elevations in LFTs,	In NS only. MONITOR: LFTs. May turn body fluids red. Many drug interactions
rocuronium **Zemuron®**	Moderate Sedation certified Physician **only** 2 NOT PCU	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate 1.2mg/kg over 2 min Intermittent IV Infusion: no Continuous Infusion: yes	Transient hypo- or hypertension, myopathy, arrhythmia, bronchospasm, edema, nausea, rash, tachycardia, vomiting, wheezing.	PATIENT MUST BE ON VENTILATOR MONITOR: ECG, RR, BP, HR, arterial blood gases, temperature, train of four (TOF)
ropivacaine	3	IM / Intra-synovial: Yes. SubQ: Yes. For local anesthesia. Direct I.V.: NO Intermittent IV Infusion: NO.	Hypotension, bradycardia, nausea, vomiting, back pain, hypertension, tachycardia, chest pain, fever, headache, dizziness, chills, anxiety, lightheadedness, pruritis, hypokalemia, urinary	

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
Naropin®	3 Anes Only	Intrathecal, Epidural: Yes	retention, anemia, paresthesia, hypoesthesia, rigors, oliguria, dyspnea, shivering.	
rubeLLA Virus Vaccine MeruVax® II	1	IM: No. **SubQ: YES. (only)** Direct IV: No Intermittent IV Infusion: No Continuous Infusion: No.	Fever, syncope, headache, dizziness, malaise, irritability, diarrhea, thrombocytopenia, lymphadenopathy, leukocytosis, encephalitis, pneumonitis, cough, rhinitis, uritcaria, rash, injection site reactions, retinitis	**Live virus**; Mix w/ diluent before admin. Contraindicated: gelatin, neomycin allergy **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**
sargramostim Leuikine®	1	IM: No. SubQ: YES. Direct IV: No Intermittent IV Infusion: No. Continuous Infusion: No.	Hypertension, edema, chest pain, tachycardia, fever, headache, chills, anxiety, insomnia, rash, pruritis, hyperglycemia, diarrhea, nausea, vomiting, abdominal pain, weight loss, weakness, myalgia.	
sincalide Kinevac®	1	IM: No. SubQ: No. Direct IV: No Intermittent IV Infusion: YES. Continuous Infusion: No.	Abdominal discomfort/pain, nausea, vomiting, flushing, rash, hypotension, headache, dizziness.	0.02mcg/kg in 50mL NS over 4min. To stimulate gallbladder contraction.
sodium acetate	1	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate 20mEq/min. Intermittent IV Infusion: Yes Continuous Infusion: yes. MAX rate 1mEq/kg/hr.	Hypernatremia (edema, CHF), alkalosis (hyperirritability and tetany), hypokalemia, phlebitis.	MONITOR: pH, blood gas, electrolytes
sodium bicarbonate	1	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate 20mEq/min. Intermittent IV Infusion: Yes Continuous Infusion: yes. MAX rate 1mEq/kg/hr.	Hypernatremia (edema, CHF), alkalosis (hyperirritability and tetany), hypokalemia, phlebitis.	MONITOR: pH, blood gas, electrolytes
↑ EXTRAVASATION RISK- VESICANT				
sodium chloride	(0.25-0.9%) 1	IM: [as diluent] SubQ: [as diluent] Direct IV: Yes. Intermittent IV Infusion: Yes Continuous Infusion: yes.	Hypernatremia (edema, CHF), fluid retention, acidosis, hypertension, excretion of potassium and bicarbonate.	Isotonic (0.9%) provides 154mEq /L sodium and chloride Hypertonic (3%) provides 513mEq /L sodium and chloride. ONLY to be used in severe hyponatremia. (<130mEq/L) with symptoms. Do not correct sodium too rapidly. Storage entirely separated by pharmacy; dispensed only as per specific order.
	(>0.9%) Hypertonic 2	IM: NO. SubQ: NO. Direct IV: Yes. Dialysis ONLY (23.4%) For cramps Intermittent IV Infusion: Yes (3%). Max rate 100mL/hr Continuous infusion: Yes (3%) MAX rate 100mL/hr.		
sodium chondroitin-sodium hyaluronate Viscoat®	3	Intra-Ocular: YES	Increased intra-ocular pressure.	Ophthalmic surgical aid in the anterior segment during cataract extraction and intraocular lens implantation

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
sodium ferric gluconate complex **Ferrlecit®**	1	IM: NO. SubQ: NO. Direct IV: YES. Max rate 12.5mg/min. Intermittent IV Infusion: YES. Over 1 hr. (preferred) Continuous Infusion: NO.	Chills, dizziness, fatigue, angina, pruritis, rash, nausea/vomiting, leukocytosis, injection site reactions, arthralgia, dysgeusia.	May be administered undiluted for direct IV injection. Preferred via IVPB.
sodium hyaluronate **Vitrase®** **ProVisc®**	3	Intra-Ocular: YES		(contained in DuoVisc)
sodium nitrite	2	IM: NO. SubQ: NO. Direct IV: YES. MAX rate 5mL/min. (Max 10mL) Intermittent IV Infusion: NO. Continuous Infusion: NO.	Tachycardia, syncope, cyanosis, hypotension (infusion rate dependent), flushing, dizziness, headache, nausea, vomiting, methemoglobin formation	For cyanide toxicity (in kit). Dose: 0.2mL/kg (max 10mL) followed by sodium thiosulfate.
sodium phosphate	**NEVER**	IM: NO. SubQ: NO. Direct I.V.: NO.	Edema, hypotension, dizziness, headache, hypocalcemia, hypernatremia, hyperphosphatemia, calcium phosphate precipitation, nausea, vomiting, diarrhea, abdominal bloating, abdominal pain, mucosal bleeding, acute renal failure	1mMol = 1.33mEq Na^+
	1	Intermittent IV Infusion: YES. MAX: 10mMol/hr monitored; 5mMol/hr unmonitored Continuous Infusion: YES.		
sodium thiosulfate	2	IM: NO. SubQ: NO. Direct IV: YES. MAX 5mL/min. (Max 50mL [12.5G]) Intermittent IV Infusion: NO. Continuous Infusion: NO.	Hypotension (infusion rate dependent), contact dermatitis, local irritation, nausea, vomiting, hypersensitivity reactions	For cyanide toxicity. 12.5G/50mL.
succinylcholine **Quelicin®,Anectine®**	Moderate Sedation certified Physician **only**	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate 100mg/min Intermittent IV Infusion: Yes.	Respiratory depression and apnea, arrhythmias, hypotension, bradycardia, excessive salivation, rash, myoglobinuria and myoglobinemia, malignant hypothermia	PATIENT MUST BE ON VENTILATOR MONITOR: ECG, RR, BP, HR, arterial blood gases, temperature, grip strength, train of four (TOF)
	2 NOT PCU	Continuous Infusion: Yes. MAX rate 10mg/min		
SUMAtriptan succinate **Imitrex®**	1 **SubQ only**	IM: NO. **SubQ**: YES (only) Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Chest or throat tightness, abdominal pain, flushing, drowsiness, fatigue, dizziness, hypertensive episodes	For Subcutaneous use only. Monitor for relief of migraine, chest pain, and hypertension

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
tenecteplase **TNKase®**	3 HIGH RISK	IM: NO. SubQ: NO. Direct IV: Yes. MAX rate: over 5 seconds Flush before and after with 5mL NS <60kg: 30mg 80kg to<90kg: 45mg ≥60kg to<70kg: 35mg >90kg: 50mg ≥70kg to<80kg: 40mg Intermittent IV Infusion: No Continuous Infusion: No	Bleeding is the most common complication. Most major bleeding is associated with arterial access site for cardiac catheterization, respiratory, GI or GU sites. Avoid ABGs, IM injections, or other venopunctures. Avoid use of automated blood pressure cuff.	MONITOR: BP, HR, RR, ECG (required) CONTRAINDICATIONS: *active internal bleeding *history of cerebrovascular accident *recent intracranial/spinal surgery/trauma) *intracranial neoplasm, arteriovenous malformation or aneurysm *severe uncontrolled hypertension *known bleeding diathesis
terbutaline **Brethine®**	1 **SubQ only** 2 & OB	IM: No. **SubQ**: YES (only) Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: Yes. 5mg/500mL D5W (unlabeled use for tocolysis in pre-term labor)	Nervousness, restlessness, hyperglycemia, hypokalemia, tachycardia, hypertension, dizziness, insomnia, nausea/vomiting, diaphoresis, chest pain.	Has also been studied as a continuous SubQ infusion. MONITOR: HR, Blood Glucose, BP, RR, Potassium levels
testosterone enanthate **Delatestryl®**	1 **IM ONLY**	**IM**: YES (only) SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Hair growth, electrolyte disturbances, nausea/ vomiting, elevated LFTs, bleeding. Females: amenorrhea, menstrual irregularity; Males: gynecomastia, priapism.	For IM use only.
tetanus & diphtheria Toxoid **Tenivac [Td]®**	1 IM ONLY	**IM**: YES (only) SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Injection site reaction, chills, fever, malaise **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	Patient must receive VIS before administration.
tetanus, diphtheria, & Pertussis Vaccine **Adacel® [TDaP]** **Boostrix®**	1 IM ONLY	**IM**: YES (only) SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Injection site reaction, chills, fever, malaise **DOCUMENT:** **1. Record Mfr, Lot#, Expir date.** **2. VIS given, date of publication**	Recommended for ages 11-64 instead of Diphtheria & Tetanus Patient must receive VIS before administration.
tetanus Immune Globulin **HyperTET®**	1 IM ONLY	**IM: YES (only)** SubQ: NO. Direct I.V.: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Injection pain, tenderness, erythema, mild fever, urticaria, muscle stiffness **DOCUMENT:** **Record Mfr, Lot#, Expir date.**	For IM use only.
thiamine HCl	1	IM: YES SubQ: No. Direct I.V.: Not preferred. MAX rate 20mg/min. Intermittent IV Infusion: Yes. [Rx will dispense In 50mL NS over 15min] Continuous Infusion: Yes. Preferred.	Anaphylaxis, especially with Direct IV administration. Nausea, pruritis, pain, sweating, urticaria, weakness.	IM or PO are preferred routes. Protect from light.

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
tigecycline **Tygacil®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Nausea, vomiting, diarrhea, headache, dizziness, rash, hypoproteinemia, abdominal pain, dyspepsia, anemia, increase of ALT, AST, alkaline phosphatase, amylase, bilirubin or BUN, phlebitis, musculoskeletal weakness.	Minocycline derivative, use caution in patients with tetracycline allergy.
tobramycin **Nebcin®**	1	IM: Yes. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Confusion, disorientation, dizziness, fever, headache, lethargy, vertigo, pruritis, rash, urticaria, decrease of calcium, magnesium, potassium, or sodium, diarrhea, nausea, vomiting, anemia, thrombocytopenia, increased liver enzymes, phlebitis, tinnitus, ototoxicity, BUN/ SCr increased, oliguria, proteinuria	Monitor peaks/troughs with fourth dose.
torsemide **Demadex®**	1	IM: NO. SubQ: NO. Direct I.V.: yes; MAX rate 20mg/min Intermittent IV Infusion: not recommended Continuous Infusion: not recommended	Dizziness, drowsiness, hypotension, lethargy, confusion, diarrhea, electrolyte imbalance, headache, tinnitus, nausea, vomiting, hypovolemia	MONITOR: BP, urinary output, electrolytes, BUN/SCr.
tranexamic acid **Cyklokapron®**	2	IM: No. SubQ: No. Direct IV: Yes. Max rate 100mg/min. Intermittent IV Infusion: **YES**. Over 5 to 30 min. Continuous Infusion: NO.	Hypotension, nausea/vomiting, diarrhea, headache, muscle pain, fatigue.	
triamcinolone Acetonide **Kenalog®**	1	IM: Yes [Kenalog-40 only] SubQ: No. Direct IV: NO*. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Sodium/fluid retention, hypertension, muscle weakness, dizziness, headache, increased intraocular pressure.	***For IM or Intrasynovial injection only.**
trimethobenzamide **Tigan®**	1 **IM only**	IM: **YES (only)** SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	Parkinson-like symptoms, blurred vision, diarrhea, dizziness, drowsiness, headache, muscle cramps.	For IM use only. Monitor for EPS (cognitive/motor dyskinesias)
trimethoprim/ sulfamethoxazole **Bactrim®**	1	IM: No. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: **YES**. Continuous Infusion: NO.	Hyperkalemia (trimethroprim is potassium sparing diuretic), nausea/vomiting, anorexia, rash, hypotension, interstitial nephritis, renal impairment, agranulocytosis, myalgias.	MONITOR: renal function, K+ levels.
triptorelin LA **Trelstar LA®**	1 **IM only**	IM: YES. SubQ: No. Direct IV: No. Intermittent IV Infusion: No.. Continuous Infusion: No.	Headache, hot flashes, hyperglycemia, anemia, elevated LFT's, skeletal pain, hypertension, chest pain, edema, dizziness, fatigue, insomnia, emotional lability, rash, pruritis, gynecomastia, nausea, vomiting, abdominal pain, impotence, dysuria, myalgia, eye pain, dyspnea, pharyngitis.	Antihormonal agent. Use appropriate hazardous medication handling precautions.

MEDICATION (GENERIC NAME)	CATEGORY	ADMINISTRATION GUIDELINES	ADVERSE REACTIONS	NOTES and SPECIAL PRECAUTIONS
valproate sodium **Depakote®**	1	IM: No. SubQ: No. Direct I.V.: No. Intermittent IV Infusion: **YES.** Continuous Infusion: No.	Abdominal pain, anaphylaxis, chest pain, diarrhea, dizziness, euphoria, hallucoinations, headache, insomnia, N/V, tremor, elevated liver enzymes, somnolence, heart block.	MONITOR: thrombocytopenia, liver function, seizure activity.
vancomycin **Vancocin®**	1	IM: No. SubQ: No. Direct IV: No. Intermittent IV Infusion: YES. Continuous Infusion: No.	Hypotension, flushing, erythematous rash on face and upper body (red neck or red man syndrome, infusion rate related), chills, drug fever, rash, eosinophilia, neutropenia.	NO systemic absorption if administered Orally (only used for C. diff)
↑ EXTRAVASATION RISK- VESICANT				
Vasopressin **Pitressin® (ADH)**	3	Direct I.V.: Yes. CPR only	Abdominal cramps, anaphylaxis, angina, arrhythmias, bronchial constriction, cardiac arrest, gangrene, diaphoresis, headache, nausea/ vomiting, shock, sweating, tremor, urticaria, vertigo, vomiting.	Monitor HR, BP, RR, ECG IM or SubQ is an antiduiuretic (for diabetes insipidus) Continuous infusion doses differ based on indication (GI hemorrhage / Shock) ***Continuous - MUST infuse through CENTRAL line. Peripheral admin for no longer than 8 hours.*** **(ADH)**
	1	IM: YES. SubQ: YES.		
	2 NOT PCU	Intermittent IV Infusion: NO. Continuous Infusion: YES. *Central line		
↑ EXTRAVASATION RISK- VESICANT				
vecuronium **Norcuron®**	Moderate Sedation certified Physician **only**	IM: No. SubQ: No. Direct IV: Yes. MAX rate 0.1mg/kg over 1 min. Intermittent IV Infusion: No	Prolonged apnea, residual muscle weakness, hypersensitivity reactions, tachycardia, hypertension, excessive salivation, burning sensation along vein.	PATIENT MUST BE ON VENTILATOR MONITOR: RR, BP, HR, arterial blood gases, train of four (TOF)
	2 NOT PCU	Continuous Infusion: Yes. MAX rate 1.7mcg/kg/min		
verapamil **Calan®, Isoptin®**	1 Monitored Bed	IM: No. SubQ: NO. Direct IV: Yes. MAX rate 2.5mg/min. Intermittent IV Infusion: No Continuous Infusion: No	Bradycardia, atrioventricular block, ventricular fibrillation, asystole, hypotension, nausea, abdominal discomfort, dizziness, headache, seizures, diaphoresis, nystagmus	Cardiac monitoring required MONITOR: HR, BP, ECG, hemodynamic monitoring
vitamin A palmitate **Aquasol A®**	1	IM: YES. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: No Continuous Infusion: Yes (only in MVI)	Fever, headache, irritability, lethargy, malaise, vertigo, drying or cracking of skin, hypercalcemia, weight loss, visual changes, hypervitaminosis A.	I.M. is only indicated when oral admin is not feasible or absorption insufficient (malabsorption syndrome). Parenteral MVI contains vitamin A (retinol).
vitamin K (phytonadione) **Aquamephyton®**	3	Direct IV: Not recommended; MAX rate 1mg/min Only use IV route if no other route possible*. *Only for life-threatening bleeding	Anaphylaxis, cramp-like pain, convulsive movements, cardiac irregularities, chest pains, cyanosis, dulled consciousness, flushing, hypotension, cardiac arrest, shock, bronchospasm, hyperhidrosis, dyspnea, respiratory arrest, and death.	Monitor blood pressure. Rapid admin may result in severe hypotension. The IVPB route should only be used IF all other routes are not possible. IM or ORAL route preferred for infants post delivery.
	1	IM: Yes. SubQ: Yes. (preferred) Intermittent IV Infusion: Yes. Not recommended. Dilute in at least 100mL NS. MAX rate 10mg/hr Continuous Infusion: Yes (in MVI, TPN)		

PN.01 INJECTABLE MEDICATION ADMINISTRATION REFERENCE HRMC				
MEDICATION (GENERIC NAME)	**CATEGORY**	**ADMINISTRATION GUIDELINES**	**ADVERSE REACTIONS**	**NOTES and SPECIAL PRECAUTIONS**
voriconazole **Vfend®**	1	IM: No. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: YES. Continuous Infusion: NO.	Visual disturbances (hallucinations, abnormal color), rash, elevated LFT's, rash.	Many drug interactions (CYP3A4 inhibitor)
zidovudine **AZT, Retrovir®**	1	IM: NO. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: Yes. Over 30-60min. Continuous Infusion: Yes.	Abdominal pain, anaphylaxis, anemia, anorexia, arthralgia, chills, constipation, diaphoresis, diarrhea, dizziness, fever, granulocytopenia, fatigue, flatulence, headache, insomnia, neuropathy, vomiting, lactic acidosis	Dilute in D5W (Max conc 4mg/mL) MONITOR: CD4 count
zinc sulfate	1	IM: NO. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: Yes. Continuous Infusion: Yes. (in TPN)	Restlessness, dizziness, nausea/ vomiting, gastric ulcers, diarrhea	Dilute each 5mg in at least 250mL of IV solution.
ziprasidone **Geodon®**	1 **IM only**	**IM**: YES. (ONLY) SubQ: NO. Direct IV: NO. Intermittent IV Infusion: NO. Continuous Infusion: NO.	QT/QTc prolongation (torsade de pointes), rash, Neuroleptic Malignant Syndrome (NMS: muscle rigidity, altered mental status), Extra-pyramidal symptoms (EPS), tardive dyskinesia, orthostatic hypotension, seizure, dysphagia, hyperthermia.	For IM use only. Max 40mg/day x3days Dilute w/ 1.2mL SW= [20mg/mL] MONITOR: QTc interval, cognitive & motor impairment, blood pressure.
zoledronic Acid **Zometa®** **Reclast®**	1	IM: NO. SubQ: NO. Direct IV: NO. Intermittent IV Infusion: Yes. Over $\geq$ 15min Continuous Infusion: NO.	Fever (flu-like syndrome), abdominal pain, agitation, anemia, anorexia, anxiety, chest pain, constipation, cough, dehydration, rash, diarrhea, dysphagia, edema, headache, hypocalcemia, pruritis, jaw osteonecrosis.	Zometa: Reduce dose in renal impairment. Reclast: do not dose if CrCl<35mL/min

Needle Length Guidelines:

Route	Age	Location		>60kg	Needle
IM	Newborn	Thigh	5/8”		22-25G
IM	1-12 mo	Thigh	1”		22-25G
IM	12-24 mo	(preferred <18months)	1.25”		22-25G
IM	1-18 years	Deltoid	5/8”	1-1.5”	22-25G
		(preferred >18months)			
SubQ	1-12 mo	Thigh	5/8”		23-25G
SubQ	>12 mo	Thigh or Triceps	5/8”		23-25G

REFERENCES

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Drug Facts and Comparisons 2004-14
Lexi-Comp’s Drug Information Handbook & Online 2004-14
Micromedex 2004-13
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