Drip Administration Guidelines/Criteria Restrictions: ADULT

PURPOSE

The purpose of this document is to provide nurses, prescribers and pharmacists a guide to the NYP Formulary and Therapeutics Committee approved continuous infusion medications with respect to our standard concentrations, mechanism of action, appropriate line of administration (i.e., peripheral vs central line), dosing range guidance, titration guidelines, restrictions, general monitoring considerations and reference to designated policies, if applicable. This document is applicable to all inpatient units (outside of OR). This document has been reviewed and approved by the Subcommittee of Critical Care Therapeutics of the Formulary and Therapeutics Committee.

DEFINITIONS (also see definition of abbreviations and symbols at the footer of every page):

Standard Concentration: Standard concentrations and diluent indicated are strictly adhered to for consistency and avoidance of medication errors. Concentrations outside of the standard may be considered on a patient-by-patient basis. A "♣" next to the diluent 0.9% saline (NS) indicates that it is stable in 5% dextrose in water (D5W) as well. In patients with neurologic injury, NS is considered the standard diluent for continuous infusions (CI) where stability has been demonstrated. CI and piggyback medications that are available as a premixed with D5W or iso-osmotic solution will only be modified to NS when approved by the ICU attending/fellow due to concern the patient has cerebral edema and the total D5W intake could be detrimental to the patient.

VESICANTS (Ω): Can cause tissue necrosis when extravasated therefore, IV administration should not be administered through scalp, small hand or foot vein

Line: Continuous infusions that require a central line are noted by "C" whereas a "P" indicates a peripheral line is appropriate.

Dosing:

If no bolus dose is provided, it is highly discouraged for safety reasons. The doses provided are considered usual practice. However, there may be scenarios where doses outside of these ranges may be appropriate.

IVP dosing: "IVP" is noted for medication that require indicated monitoring per IVP policy at time of and 10 minutes after first dose or dose increase, first dose upon transfer from a post-op recovery area to any inpatient bed, and first dose upon transfer from an ICU setting to any inpatient bed, unless otherwise stated per the IVP Policy. If a presence of MD/NP/PA is required per IVP Policy, it is noted in "Adverse Effects or Special Comments" column. Please refer to IVP Policy.

Bolus from the Bag; Are medications that can be bolused, if needed, from the infusion bag through the smart pumps.

Maximum Dose:

Soft: This term has been adopted from the Sigma Smart Pump indicating that the doses above that noted are higher than the usual maintenance range. The pump will alarm as a safety feature. However, the clinician may override this alarm.

Hard: This term has been adopted from the Sigma Smart Pump indicating that the doses above that noted are potentially considered harmful. The pump will alarm, and the clinician may not program the pump to go above this dose.

Titration Guidelines:

Recommended dose amount and time increments will be provided, if applicable. These may be extrapolated from clinical trials, if available, or expert opinion.

Restrictions:

NYP approved restriction criteria are summarized here. If a policy or guideline exists on a medication, it may be noted here.

Adverse Effects or Special Comments: This column lists either most common or most serious side effects, as well as special monitoring parameters as determined by the Subcommittee of Critical Care Therapeutics. This is not comprehensive. Refer to other references for more complete listing of potential side effects. If a policy or guideline exists on a medication, it may be noted here.

‡ Includes ICUs, OR/PACU, ED, Cath Lab, Anesthesiology

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Abbreviations: OR/PACU, BP= blood pressure, C= central line, HR = heart rate, IVPB= intravenous piggyback, mcg = micrograms, NA = Not applicable, NYP/CU: Columbia University Medical Center, NYP/WC: Weill Cornell Medical Center, P= peripheral line, RR= respiratory rate

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Medical Board Approval: December 2018

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	ALTEPLASE (Activase) Stroke/PE 100 mg/100 mL Sterile water 50 mg/50 mL Sterile water Catheter-Directed Thrombolysis 6 mg/250 mL 0.9NaCl (0.024 mg/mL) 12 mg/250 mL 0.9NaCl (0.048 mg/mL) 25 mg/250 mL 0.9NaCl (0.1 mg/mL) 10 mg/1000 mL 0.9NaCl (0.01 mg/mL) **DO NOT SHAKE BOTTLE**	Plasminogen activator promoting the formation of plasmin resulting in clot dissolution	P	Pulmonary embolism during cardiac arrest: 50 mg or 100 mg IVP over 1 min Stroke: 0.09 mg/kg IVP over 1 min	N	Pulmonary embolism: 100 mg (consider 50 mg in elderly or those at high risk for bleeding) over 2 h Stroke: 0.81 mg/kg over 60 min Catheter-directed thrombolysis: 0.25 – 2 mg/h	Pulmonary embolism: Hard: 50 mg/h Stroke: Hard: 81 mg/h Catheter-directed thrombolysis: Soft: 2 mg/h	None	Not to be used for the treatment of acute MI (use tenecteplase) ED, pulmonary & critical care attendings and fellows (treatment of PE), neurology attendings and fellows (treatment of stroke), vascular surgery and IR attendings and fellows for thrombolysis procedures done in IR and/or by the vascular surgery service. Must be prescribed by an attending physician or fellow for empyema, chest tube occlusion, etc. Catheter Directed Alteplase (t-PA) and Intravenous Heparin Policy for Venous and Arterial Occlusion - Restricted to patients in intensive care units (ICU), operating rooms (OR), interventional radiology (IR), or post anesthesia care unit (PACU)	Bleeding MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
	AMINOCAPROIC ACID (Amicar) 5 grams/250 mL 0.9NaCl ♣ (0.02 g/mL) 4 grams/250 mL 0.9NaCl ♣ **(0.16 g/mL)**	Competitively inhibits activation of plasminogen to plasmin	P	5 grams over 1 h SAH: 4 grams over 1 h	N	1 gram/h x 8 h or until bleeding is controlled (max 30 grams/24 h) SAH: 1 g/h up to 4 h preceding angiography	Soft: 5 g/h	None		Thrombosis Hypotension Anaphylaxis

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Non-Intensives Intensive Areas‡	**AMIODARONE (Cordarone)** 150 mg/100 mL D5W (1.5 mg/mL) [PreMix] 360 mg/200 mL D5W (1.8 mg/mL) [PreMix] **Use 0.2 micron in-line filter during administration**	Class III antiarrhythmic, with beta blocking activity	P	<u>Stable arrhythmia:</u> 150 mg/100 mL D5W over 10 min (may repeat) <u>Pulseless VT/VF</u> 300 mg IVP over 30 seconds, may repeat 150 mg in 3-5 min (use vials during arrest)	Y	1 mg/min over 6 h, then 0.5 mg/min over 18 h, then consider conversion to oral Maximum cumulative dose is 2.2 grams/24 h	Soft: 1 mg/min	None	<u>Non-Intensive areas:</u> Use is restricted to following areas: • NYP/CU: All stepdown units with designated stepdown beds, 5GS & 5HN • NYP/WC: 4N, 4C, monitored beds on 5W, 8N, 11SA and 14S <u>Specialty approval outside of Intensive Areas:</u> Cardiology, Cardiothoracic or Critical Care Attending or Fellow approval required for initiation, not continuation from ICU or outside hospital. ICUs, Cath Lab, ED, OR/PACU, EPS and anesthesiology (for procedural assisted areas).	MD/NP/PA presence on unit required during 10 min bolus and 20 min post bolus to check vital signs and exam <u>Nursing instructions:</u> - For initial load: obtain vital signs every 15 min for 1 hour, then hourly for 4 hours then every 4 hours - If patient is transferred on infusion, obtain vital signs immediately then every 4 hours
	Angiotensin II **2.5 mg/250 mL NS (0.01 mg/mL)**	Vasoactive agent	C	<u>None</u>	N	10-20 nanograms/kg/min	Hard: 40 nanograms/kg/min	5 nanograms/kg/min every 5 minutes to a Max dose of 40 nanograms/kg/min **Dose RN to notify provider:** 30 nanograms/kg/min	• Restricted to ICUs • ICU attending approval (ICU attending approval communicated to pharmacy) AND • Pharmacy manager approval (where available) or designated pharmacist Angiotensin II Guidelines For Use In Adult Patients	Increased risk of: Thromboembolic events (arterial and venous) -.All patients should be on pharmacologic DVT prophylaxis unless an absolute contraindication is present

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	ARGATROBAN 5 mg/5 mL 0.9NaCl *(Via syringe pump)* 50 mg/50 mL 0.77NaCl [Premix] 250 mg/250 mL 0.77NaCl [Premix]	Direct thrombin inhibitor	P	None	N	2 microgram/kg/min (0.25 – 0.5 microgram/kg/min for liver failure or critically ill patients)	Hard: 10 microgram/kg/min	Per goal aPTT	Requires Hematology approval	Refer to "Argatroban (IV) Dosing And Monitoring Policy For Adult Inpatients" Bleeding
Cath Lab	**BIVALRUDIN (Angiomax)** Cathlab: 250 mg/50 mL 0.9NaCl ♣ (5 mg/mL)	Direct thrombin inhibitor	P	Cath Lab: 0.75 mg/kg IVP over 30 seconds May administer additional 0.3 mg/kg	Y	1.75 mg/kg/h for duration of procedure and up to 4 h*	Soft:1.75 mg/kg/h	None	Cath lab for PCI and Neuro IR for neurointerventional procedures and Anesthesiology *postprocedure if needed May continue 0.2 mg/kg/h for an additional 20 h if anticoagulation is needed after the initial 4 h postprocedure infusion	Bleeding Hypotension
Upstream	500 mg/100 mL 0.9NaCl ♣ (5 mg/mL)			Upstream: 0.1 mg/kg IVP over 30 seconds		Upstream: 0.25 mg/kg/h	Soft: 0.25 mg/kg/h	None	Upstream treatment of moderate to high risk non-ST segment elevation and unstable angina (NSTEMI/USA) NYP/WC: ED, 4W, 4C, 4N, 4S NYP/CU: ED, CCU, 5GS, 5HN	
Cardiac Surgery	250 mg/50 mL 0.9NaCl ♣ (5 mg/mL)			Refer to policy	N	Refer to policy	Soft: 2.5 mg/kg/h	None	Initiation of bivalirudin requires Hematology, ICU, or Cardiac Anesthesia Attending approval at all times. Bivalirudin Management Guideline For Adult Patients With Heparin Induced Thrombocytopenia (HIT) Requiring Cardiac Surgery	
	BUMETANIDE (Bumex) 10 mg/100 mL 0.9NaCl ♣ (0.1 mg/mL) 25 mg/100 mL (0.25 mg/mL, undiluted) *[For doses > 1.5 mg/h]*	Loop diuretic	P	0.5 - 2 mg IVP 2-3 min Doses > 2 mg per IVPB	Y	0.1 mg/h	Soft: 1 mg/h Hard: 2 mg/h	Per prescriber order		Hyperuricemia, Hypotension, Electrolyte Imbalances, Ototoxicity

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	CALCIUM GLUCONATE[Ω] 5 g/250 mL 0.9NaCl ♣ (20 mg/mL) 10 g/500 mL 0.9NaCl ♣ (20 mg/mL)	Electrolyte	P	Refer to the Calcium Replacement Policy, Adult			Soft: 2 g/h	None	Hypotension	
Cath-Lab	**CANGRELOR (Kengreal)** 50 mg/250 mL 0.9NaCl (200 mcg/mL)	Direct $P2Y_{12}$ platelet receptor inhibitor	P	30 microgram/kg *(Bolus prior to PCI)*	Y	4 microgram/kg/min *(At least 2 h or for the duration of PCI, whichever is longer)*	Hard: 4 microgram/kg/min	None	Restricted to Cardiac Cath Lab for emergent PCI, for patients unable to take oral P2Y12 inhibitors or for urgent stent placement in neuro IR.	Monitor for signs and symptoms of bleeding
Bridging/NPO				None	N	0.75 microgram/kg/min	Hard: 0.75 microgram/kg/min	None	Cardiology attending and Clinical Pharmacy Manager approval required for initiation Cangrelor Use Outside of the Cardiac Catheterization Lab in Adults	
	CISATRACURIUM (Nimbex) 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL) 200 mg/100 mL (2 mg/mL, undiluted)	Non-depolarizing neuromuscular blocking agent	P	0.1-0.2 mg/kg IVP over 30 seconds	Y	1-3 microgram/kg/min	Soft: 10 microgram/kg/min	Per TOF goal Titrate: 0.5 mcg/kg/min q 30 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	Patient must be heavily sedated (RASS -5) throughout use and mechanically ventilated Monitor Train of Four (TOF) MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy

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	CONIVAPTAN (Vaprisol) 20 mg/100 mL D5W (0.2 mg/mL) premixed bag	Vasopressin 1A and 2 receptor antagonist	P	20 mg/100 mL infused over 30 min	N	20 mg/100 mL at 4.2 mL/h over 24 h	Soft: Loading dose- 200 mL/h Soft: Infusion- 4.2 mL/h	None	Attending approval Refer to the Conivaptan and Tolvaptan Usage Policy	Rapid rise in sodium (> 8 mEq/L over 8 hrs or 12 mEq/L over 24 hours) Monitor sodium every 8 hours x 24 hours, then daily thereafter
	DEXMEDETOMIDINE (Precedex) 200 microgram/50 mL 0.9NaCl ♣ (4 microgram/mL) 400 microgram/100mL 0.9NaCl ♣(4 microgram/mL) *[For doses ≥ 0.7 microgram/kg/h]*	Selective alpha$_2$-adrenoceptor agonist with sedative and analgesic properties	P	0.5-1 microgram/kg over 20 min (optional)	Y	0.2 microgram/kg/h	Soft: 1.5 microgram/kg/h	If not at desired RASS increase infusion rate by 0.2 mcg/kg/h q 30 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas) Pain/Sedation Management In Mechanically Ventilated Adult ICUs	Bradycardia Hypotension Hypertension with bolus dose
Non-Intensives	**DILTIAZEM (Cardizem)** 125 mg/125 mL 0.9NaCl ♣ (1 mg/mL) Premix bag	Calcium channel blocker	P	0.25 mg/kg IVP over 2 min (Max: 20 mg) May repeat in 15 min with 0.35 mg/kg IVP* (Max: 25 mg)	Y	5-15 mg/h	Hard: 15 mg/h	Per prescriber order (5 mg/h q 5 min)	Non-Intensive areas: • NYP/CU: All stepdown units with designated stepdown beds, 5GS & 5HN • NYP/WC: 4N, 4C, monitored beds on 5W, 8N, 11SA and 14S Specialty Approval required for initiation outside of Intensive areas: Cardiology, Cardiothoracic or Critical Care Attendings or Fellows. Continuous Cardiac Monitoring • Monitor BP, HR at initiation or dosage change: every 15 min x 1 h, every 30 min x 2 h, then every 4 h	Hypotension Bradycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Intensive Areas‡								Titrate: 5 mg/h q 5 min	ICUs, Cath Lab, ED, OR/PACU, EPS and anesthesiology (for procedural assisted areas)	

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Non-Intensives	**DOBUTAMINE (Dobutrex)** 250 mg/250 mL (1 mg/mL) 500 mg/250 mL (2 mg/mL) *[Not for initial infusion. For patients on stable doses & ready for hospital discharge on this infusion (less volume)]* All in D5W♣ premix bag	B_1-adrenergic agonist, Ino-dilator (inotrope with peripheral vasodilation)	**C (preferred) P (large vein) 250 mg/250 mL**	None	N	2.5-5 microgram/kg/min	Hard: 10 microgram/kg/min	Per prescriber order	NYP/WC: G4N, G4C & G8N (Max 10 mcg/kg/min) NYP/CU: 5HN, 5GN, 5GS, 7HN, 6GS NYP/AH: 2RE	Monitor BP, HR at initiation or dosage change: every 15 min x 1 h, every 30 min x 2 h, then every 4 h
Intensive Areas‡	250 mg/250 mL (1 mg/mL) 500 mg/250 mL (2 mg/mL) All in D5W♣ premix bag					2.5-5 microgram/kg/min	Soft: 20 microgram/kg/min		ICUs, Cath Lab, ED, OR/PACU, and anesthesiology (for procedural assisted areas)	Hypotension Tachyarrhythmias
Non-Intensives	**DOPAMINE (Intropin)Ω** 200 mg/250 mL (0.8 mg/mL) All in D5W♣ premix bag	Vasopressor, dose-related $alpha_1$, $beta_1$, dopaminergic agonist activity	**C (preferred) P (200 mg/250 mL)**	None	N	0.5 - 5 microgram/kg/min	Soft: 5 microgram/kg/min	Per prescriber order	General Care Floors & Stepdown Beds	Monitor BP, HR at initiation or dosage change: every 15 min x 1 h, every 30 min x 2 h, then every 4 h
Intensive Areas‡	200 mg/250 mL (0.8 mg/mL) 400 mg/250 mL (1.6 mg/mL) All in D5W♣ premix bag					1-5 microgram/kg/min	Soft: 20 microgram/kg/min	Titrate: 1-3 mcg/kg/min q 5 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	Tachy-arrhythmias Cardiac peripheral or mesenteric ischemia

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	EPINEPHRINE (Adrenalin) Ω 2 mg/250 mL 0.9NaCl ♣ (8 microgram/mL) 4 mg/250 mL 0.9NaCl ♣ (16 microgram/mL) 8 mg/250 mL 0.9NaCl ♣ (32 microgram/mL)	Vasopressor, alpha$_1$, beta$_1$, beta$_2$ adrenergic agonist	C (preferred) P (2mg/250mL & 4 mg/250 mL	None	N	1 microgram/min	Soft: 32 microgram/min	Titrate: 0.5 - 1 mcg/min q 5 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	Arrhythmias Cardiac peripheral or mesenteric ischemia
	EPOPROSTENOL (Flolan, Generic Flolan, Veletri) 0.05 mg/100 mL (500 ng/mL-Flolan only) 0.1 mg/100 mL (1000 ng/mL - Flolan only) 0.3 mg/100 mL (3000 ng/mL - Flolan only) 0.5 mg/100 mL(5000 ng/mL) 1 mg/100 mL (10,000 ng/mL) 1.5 mg/100 mL (15,000 ng/mL) 2 mg/100 mL (20,000 ng/mL-Veletri only) 3 mg/100 mL (30,000 ng/mL) 4.5 mg/100 mL (45,000 ng/mL)	Prostacyclin vasodilator	C (preferred) P (requires back-up IV)	None	N	1-4 ng/kg/min	None (adjusted based on patient response and tolerability)	Per prescriber order	Pulmonary Hypertension Attending approval (*Not recommended to initiate outside the ICUs or cardiac stepdowns*) Refer to: Epoprostenol, Intravenous (Flolan and Veletri) Usage Policy in Adult, Pediatric and Neonatal Patients	Headache, nausea/vomiting, diarrhea, flushing, hypotension, lightheadedness/ fainting, jaw pain
	ESMOLOL (Brevibloc) Ω 2 g /100 mL (0.02 g/mL) 2.5 g/250 mL (0.01 g/mL) All in 0.59% NaCl premixed bag	Antihyper-tensive short-acting competitive beta$_1$-adrenergic blocker	C (preferred)	Up to 500 microgram/kg IVP over 30 seconds	Y	50 microgram/kg/min	Soft: 300 microgram/kg/min	Titrate: 50 mcg/kg/min q 5 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	Hypotension Bradycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
	ESOMEPRAZOLE (Nexium) 80 mg/100 mL 0.9NaCl (0.8 mg/mL)	Proton pump inhibitor	P	GI Bleed: 40 mg IVP over 3 min x 2 (80 mg total)	N	8 mg/h for 72 h	Hard: 8 mg/h	None	None	None

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	FENOLDOPAM (Corlopam) 10 mg/250 mL 0.9NaCl ♣ (0.04 mg/mL)	Antihyper-tensive Selective dopamine agonist (D1-receptors)	P	None	N	0.05 microgram/kg/min	Soft: 1 microgram/kg/min	Titrate: 0.05 - 0.2 mcg/kg/min q15 min	ICUs, OR/PACU, ED, Cathlab and anesthesiology (for procedural assisted areas) NYP/CU: 5GN, 5GS	Hypotension
	FENTANYL (Sublimaze) 2 mg/100 mL 0.9NaCl ♣ (20 microgram/mL) 5 mg/250 mL 0.9NaCl ♣ (20 microgram/mL) *[For doses > 400 microgram/hr]*	Mu- receptor agonist	P	25-100 microgram IVP over 1-2 min *NOTE: Narcotic tolerant patients may require higher doses*	Y	25 microgram/h	Soft: 400 microgram/h	Titrate: Bolus & increase infusion by 25 microgram/h if not at goal. Re-assess in 30 min	• Infusion: OR/PACU, ICU, ED • PCA infusions (adults/peds): all areas via pain or palliative care consult • PCEA infusions (adults): all areas via pain or palliative care consult • Infusion (w/bolus doses) for comfort care: all areas (attending or pain/palliative care approval required in non-ICU areas) Refer to Supervision Policy for details Refer to: Pain/Sedation Management In Mechanically Ventilated Adult ICUs	Respiratory depression Hypotension Bradycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Non-Intensives	**FUROSEMIDE (Lasix)** 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL)	Loop diuretic	P	≤ 100 mg IVP over 2-5 min (no faster than 20 mg/min) Doses > 100 mg in IVPB	Y	1 – 5 mg/h	Soft: 20 mg/h Hard: 40 mg/h	Per prescriber order	None	Hypotension Renal Toxicity, Electrolyte Imbalances, Ototoxicity
Intensive Areas‡	100 mg/100 mL 0.9NaCl ♣ (1 mg/mL) 500 mg/100 mL 0.9NaCl ♣ (5 mg/mL)									
Intensive Areas‡	**GLUCAGON** 10 mg/100 mL 0.9NaCl (0.1 mg/mL) *(Used for beta-blocker- or calcium channel blocker-induced myocardial depression)*	Stimulates adenylate cyclase to produce increased cyclic AMP	P	1-3 mg IVP Administer bolus over 2-5 minutes	Y	1-3 mg/h	Soft: 10 mg/h	Per prescriber order	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	Hypotension or hypertension, tachycardia, nausea, vomiting at high doses or rapid administration (IVP)

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Area	Medication Standard Concentrations	Mechanism of Action	Line	Bolus Dose	Bolus from the Bag	Typical Starting Dose	Maximum Dose	Titration Guidelines (If Applicable to Unit)	Restrictions	Adverse Effects or Special Comments
	HEPARIN 25,000 Units/250 mL D5W or 0.45% NS (100 units/mL) premixed bag	With anti-thrombin III, inactivates factor IIa, Xa, IXa, XIa & XIIa	P	Refer to Unfractionated Heparin Prescribing Guidelines: Adult and Heparin Infusion Order Forms in NYP online formulary	Y	Please refer to Unfractionated Heparin Prescribing Guidelines: Adult and Heparin Infusion Order Forms in NYP online formulary	Soft: 3000 Units/h Hard: 4000 Units/h	Please refer to Unfractionated Heparin Prescribing Guidelines: Adult and Heparin Infusion Order Forms in Lexicomp		
	HYDROMORPHONE (Dilaudid) 20 mg/100 mL 0.9NaCl ♣ (0.2 mg/mL) 100 mg/100mL 0.9NaCl ♣ (1 mg/mL)	Mu- receptor agonist	P	0.25 – 0.5 (up to 2 mg) IVP over 2-3 min Narcotic tolerant pts may require higher dose	Y	0.5 mg/h	Soft: 1 mg/h	Titrate: Bolus & increase infusion by 0.25 mg/h. Re-assess in 30 min	• Infusion: OR/PACU, ICU, ED • PCA infusions (adults/peds): all areas via pain or palliative care consult • PCEA infusions (adults): all areas via pain or palliative care consult • Infusion (w/bolus doses) for **comfort care**: all areas (attending or pain/palliative care approval required in non-ICU areas) Refer to: Pain/Sedation Management In Mechanically Ventilated Adult ICUs	Respiratory depression Bradycardia Hypotension
Non-Intensives	**INSULIN, REGULAR (Humulin R)** 100 Units/100 mL 0.9NaCl (1 unit/mL)		P	Up to 10 units IVP over 30 seconds	N	Refer to appropriate guideline	Soft: 8 units/h Hard: 25 units/h	Please refer to insulin infusion guidelines for general care areas, intensive care units and peripartum in Lexi-Comp NYP Formulary		
Intensive Areas‡	100 Units/100 mL 0.9NaCl (1 unit/mL)						Soft: 15 units/h Hard: 99 units/h			
	1000 units/100 mL 0.9NaCl (10 unit/mL)			1 unit/kg IV push		0.5 –1 units/kg/h	Hard: 10 units/kg/h	Restricted to Intensive Care Units under the recommendation of the Poison Control Center for patients with beta blocker or calcium channel blocker toxicity. Refer to: High-Dose Insulin Euglycemic Therapy (HIET) Guideline For Adult And Pediatric Patients With Beta Blocker Or Calcium Channel Blocker Toxicity		

‡ Includes ICUs, OR/PACU, ED, Cath Lab, Anesthesiology

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	ISOPROTERENOL 0.4 mg/100 mL 0.9NS (0.004 mg/mL) 1 mg/250 mL 0.9NaCl (0.004 mg/mL)	Beta1- & Beta2-Adrenergic Agonist Agent	P	None	N	0.5 – 5 microgram/min	Soft: 20 microgram/min	Per prescriber order	ICU, ED, OR/PACU, Cath labs, and EPS lab	Monitor BP, HR : every 15 min x 1 hour, every 30 min x 2 hours, and then every 4 hours
	KETAMINE (Ketalar) 500 mg/500 mL 0.9NaCl (1 mg/mL)	Non-competitive NMDA receptor antagonist	P	0.25 - 1 mg/kg IVP over 4 min	Y	0.5 microgram/kg/min	Soft: 20 microgram/kg/min	Per prescriber order	• For ventilated patients – ICUs, OR/PACU, approved procedure areas and anesthesiology (for procedural assisted areas) Refer to Supervision Policy for details • Sub-Anesthetic Doses for Analgesia: Restricted to Anesthesiology, Adult & Pediatric Pain/Palliative Services refer to: Ketamine Use and Management (at Sub-Anesthetic Doses) for Analgesia, Adults	Psychosis, hypertension, tachycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Status Epilepticus	500 mg/250 mL 0.9NaCl (2 mg/mL) 2500 mg/50 mL (50 mg/mL, undiluted)			1.5 mg/kg q 3-5 min until seizure stop, up to max of 4.5 mg/kg		1 mg/kg/h	Soft: 10 mg/kg/h		ICUs, ED, OR/PACU, approved procedure areas and anesthesiology (for procedural assisted areas)	

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Non-Intensives	**LABETALOL (Trandate, Normodyne)** 400 mg/200 mL 0.9NaCl (2 mg/mL)	Antihyper-tensive Alpha-, beta$_1$ and beta$_2$-adrenergic receptor blocker	P	10-20 mg IVP over 1-2 min May repeat or double the dose up to 80 mg/dose (Acute total loading dose max: 300 mg)	Y	0.5 mg/min	Hard: 2 mg/min	Per prescriber order (Titrate: 1 - 2 mg/min q 5 min)	NYP/WC: 8N (monitored beds)	Hypotension Bradycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Intensive Areas‡	400 mg/200 mL 0.9NaCl (2 mg/mL) 1000 mg/200 mL (5 mg/mL, undiluted)						Soft: 6 mg/min Hard: 8 mg/min	Titrate: 1 - 2 mg/min q 5 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	
	LEVOTHYROXINE 200 mcg/500 mL 0.9NaCl (0.4 mcg/mL)	Synthetic form of thyroxine (T4), an endogenous hormone secreted by the thyroid gland.	P	20 mcg IVP Administer bolus over 2 minutes	Y	10 mcg/h	Soft: 20 mcg/h	Per prescriber order	None	Hypertension For Organ Donor Protocol
Intensive Areas‡	**LIDOCAINE (Xylocaine)** 1000 mg/250 mL D5W♣ premix (4 mg/mL) 2000 mg/250 mL D5W♣ premix (8 mg/mL)	Class Ib antiarrhythmic	P	1-1.5 mg/kg IVP over 2-3 min Should not exceed 50 mg/min (Max: 3 mg/kg)	Y	1 mg/min	Hard: 4 mg/min	Per prescriber order Titrate: 1 mg/min q 5 min	ED, ICUs, OR/PACU, L&D	Continuous cardiac monitoring MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy

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	LORAZEPAM (Ativan) 20 mg/20 mL D5W (1 mg/mL) 40 mg/40 mL D5W (1 mg/mL)	Sedative, anticonvulsant activity, benzo-diazepine	P	**Anxiolytic**: 0.5 – 1 mg IVP over 2 min **Anxiolytic – Alcohol Withdrawal**: 0.5 - 2 mg IVP over 2 min **Moderate Sedation or Seizures:** 1-5 mg IVP over 2 min	Y	0.5 mg/h	Soft: 10 mg/h	Titrate: Bolus & increase rate by 1 mg/h. Re-assess every 30 minutes	Refer to Supervision Policy for details Refer to: Pain/Sedation Management In Mechanically Ventilated Adult ICUs	Propylene glycol toxicity – for doses ≥ 6 mg/h monitor the following every day: Osmol gap (<10 desired) pH (avoid anion gap metabolic acidosis) BUN, SCr MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
	MAGNESIUM 20 grams/500 mL 0.9NaCl ♣ (0.02 gram/mL) 40 grams/1000 mL SWFI (0.04 gram/mL) – L&D ONLY	Electrolyte	P	ACLS only: 2 g IVP over 1-3 min	N	500 mg/h	Soft: 3000 mg/h	Refer to Magnesium Replacement Policy, Adult 40 g/1000 mL (0.04 g/mL) restricted to L&D MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy		
	METHYLENE BLUEΩ 500 mg/250 mL D5W♣ (2 mg/mL) 1000 mg/250 mL D5W♣ (4 mg/mL) *[Pts > 150 kg]*	Nitric oxide inhibitor	C (preferred)	1-2 mg/kg IVPB (50 mL D5W) over 30 mins (For methemoglobinemia - over 5 min)	N	0.5 mg/kg/h x 6 h	Hard: 0.5 mg/kg/h	None	ICUs, OR/PACU, and ED for septic or refractory vasodilatory shock For Septic Shock Only. Refer to: Methylene Blue Dosing And Monitoring Guideline For Adult Patients With Refractory Shock	Contraindications - Hypersensitivity reaction to methylene blue - G6PD deficiency

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Sedation	**MIDAZOLAM (Versed)** 25 mg/25 mL 0.9NaCl * (1mg/mL) 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL) 500 mg/100 mL (undiluted) (5 mg/mL) *[Use in ECMO and status epilepticus patients only]*	Sedative, benzo-diazepine	P	**Anxiolytic**: 1 – 2.5 mg IVP over 2 min **Moderate sedation:** 0.5 – 3 mg IVP over 30 seconds	Y	1 mg/h	Soft: 10 mg/h	Titrate: Bolus & increase rate by 2 mg/h. Re-assess every 30 minutes	ICUs, OR/PACU, ED, approved procedure areas and anesthesiology (for procedural assisted areas) Refer to: Pain/Sedation Management In Mechanically Ventilated Adult ICUs Refer to: Supervision Policy for details	Respiratory depression Hypotension Sedating effects prolonged with long term use BUN, Scr (Metabolite accumulates in renal failure)
Status Epilepticus				0.2 mg/kg (max 0.5 mg/kg) IVP over 2-5 min; repeat every 5 minutes until seizures stop		0.1 mg/kg/h	Hard: 2.9 mg/kg/h	Per prescriber order	ICUs, OR/PACU, and ED Refer to: Status Epilepticus (SE) Treatment Algorithm in Adults	MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Non-Intensives	**MILRINONE (Primacor)** 20 mg/100 mL (200 microgram/mL) 40 mg/200 mL (200 microgram/mL) All in D5W♣ premix bag	Phosphodiesterase inhibitor Ino-dilator (inotrope with peripheral vasodilation)	P	12.5 - 50 microgram/kg IVP over 10 min	Y	0.125 microgram/kg/min	Hard: 0.3 microgram/kg/min	Per prescriber order	NYP/WC: G4N, G4C Chronic use in patients awaiting heart transplant: NYP/CU: 5HN, 5GN, 5GS, 6GS, 7HN NYP/AH: ICU, 2RE NYP/WC & NYP/C – Rehab units (on home infusions)	Monitor BP, HR at initiation or dosage change: q 15 min x 1 h, q 30 min x 2 h, then q 6h
Intensive Areas‡							Soft: 0.5 microgram/kg/min Hard: 0.75 microgram/kg/min		ICU, Cath Lab, ED, OR/PACU	Hypotension Arrhythmias
	MORPHINE (Duramorph) 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL) 250 mg/250 mL 0.9NaCl ♣ (1 mg/mL)	Mu- receptor agonist	P	1-10 mg IVP over 2 min	Y	1 mg/h	Soft: 10 mg/h	Titrate: 1 - 2 mg/h q 30 min	• Infusion: OR/PACU, ICU, ED • PCA infusions (adults/peds): all areas via pain or palliative care consult • PCEA infusions (adults): all areas via pain or palliative care consult • Infusion (w/bolus doses) for comfort care: all areas (attending or pain/palliative care approval required in non-ICU areas)	Respiratory depression Hypotension

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	NALOXONE (Narcan) 4 mg/250 mL 0.9NaCl ♣ (0.016 mg/mL)	Pure opioid antagonist	P	0.04-2 mg IVP over 30 seconds every 2-3 min as needed	Y	0.25-6.25 mg/h	Soft: 10 mg/h	Per prescriber order	ICUs, OR/PACU, ED and stepdown units	Opioid withdrawal symtoms
Non-Intensives	**NICARDIPINE (Cardene)** 20 mg/200 mL 0.9NaCl ♣ Premix (0.1 mg/mL)	Antihypertensive, dihydropyridine calcium channel blocker, vasodilator	P Avoid small veins	None	N	2.5 mg/h	Hard: 7.5 mg/h	Per prescriber order (Titrate: 2.5 mg/h q 10 min)	NYP/WC: 8N [monitored beds]	Hypotension
Intensive Areas‡	20 mg/200 mL 0.9NaCl ♣ Premix (0.1 mg/mL) 40 mg/200 mL 0.9NaCl ♣ Premix (0.2 mg/mL) 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL)		P Avoid small veins C for 1mg/ml		N		Hard: 15 mg/h	Titrate: 2.5 mg/h q 10 min	ICUs, OR/PACU, ED and anesthesiology (for procedural assisted areas)	
Non-Intensive	**NITROGLYCERIN (Tridil)** 50 mg/250 mL (0.2 mg/mL) 100 mg/250 mL (0.4 mg/mL) All in D5W♣ premix bottle	Antihyper-tensive vasodilator	P	None	N	5-50 microgram/min	Hard: 100 microgram/min	Per prescriber order (Titrate: 5 mcg/min q 3 min)	NYP/WC: 4N, 4C, 8N (Max dose: 100 microgram/min) NYP/CU: 5HN, 5GN, 5GS, 7HN, 6GS Doses above 100 microgram/min require ICU admission	Hypotension Tachyphylaxis
Intensive Areas‡						5-200 microgram/min	Hard: 200 microgram/min	Titrate: 5 mcg/min q 3 min	ICUs, OR/PACU, ED, Cath Lab and anesthesiology (for procedural assisted areas)	

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	NITROPRUSSIDE (Nitropress) 50 mg/250 mL D5W♣ (0.2 mg/mL) 100 mg/250 mL D5W♣ (0.4 mg/mL) Protect from light	Venous and Arterial vasodilator	P	None	N	0.3 – 0.5 microgram/kg/min	Soft: 2 microgram/kg/min Hard: 10 microgram/kg/min *(For a maximum of 10 minutes)*	Titrate: 0.25 - 0.5 mcg/kg/min q 3 min	ICUs, OR/PACU, ED and anesthesiology (for procedural assisted areas)	Monitor for cyanide and thiocyanate toxicity (acid/base status is usually the first sign) especially in patients with renal/hepatic dysfunction and high, prolonged infusions
Non-Intensive	**NOREPINEPHRINE Ω (Levophed)** 4 mg/250 mL 0.9NaCl ♣ (16 microgram/mL)	Vasopressor , strong alpha$_{1\&2}$ and beta$_1$ adrenergic activity	C	None	N	2 microgram/min	Hard: 8 microgram/min	Per prescriber order (Titrate: 2 - 4 mcg/min q 5 min)	NYP/WC: Monitored beds on 8N and 14S	Arrhythmias Cardiac, peripheral or mesenteric ischemia
Intensive Areas‡	4 mg/250 mL 0.9NaCl ♣ (16 microgram/mL) 16 mg/250 mL 0.9NaCl ♣ (64 microgram/mL)					2 microgram/min	Soft: 40 microgram/min	Titrate: 2 - 4 mcg/min q 5 min	ICUs, OR/PACU, ED and anesthesiology (for procedural assisted areas)	
	OCTREOTIDE (Sandostatin) 1000 microgram/ 250 mL 0.9NaCl ♣ (4 mcg/mL)	Somatostatin analog, decreases blood flow to portal system	P	25- 50 microgram IVP over 3-5 min	Y	25 microgram/h	Soft : 50 microgram/h	None	None	Bradycardia Hyperglycemia
	PANTOPRAZOLE (Protonix) 80 mg/100 mL 0.9NaCl ♣ (0.8 mg/mL)	Proton pump inhibitor	P	GI Bleed: 40 mg IVP over 2 min x 2 (80 mg total)	N	8 mg/h for 72 h	Hard: 8 mg/h	None	None	None

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	PENTOBARBITAL (Nembutal) 1000 mg/250 mL 0.9NaCl ♣ (4 mg/mL) 2000 mg/250 mL 0.9NaCl ♣ (8 mg/mL)	Short-acting barbiturate with sedative, hypnotic, and anticonvulsant properties	P	1-3 mg/kg IVP over 3-5 min (no faster than 50 mg/min), **Status Epilepticus**: 5 – 15 mg/kg IV; repeat 5 – 10 mg/kg boluses until seizures stop (max 50 mg/min)	Y	0.5 mg/kg/h	Soft: 5 mg/kg/h	None	ICUs, OR/PACU, ED, approved procedure areas and anesthesiology (for procedural assisted areas)	Respiratory depression hypotension cardiac depression, metabolic acidosis (diluted in propylene glycol), paralytic ileus MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Non-Intensive	**PHENYLEPHRINE$^{\Omega}$ (Neo-synephrine)** 20 mg/250 mL 0.9NaCl ♣ (0.08 mg/mL)	Vasopressor, strong alpha$_1$-adrenergic activity	C (preferred) P (20 mg/250 mL)		N	10 microgram/min	Hard: 100 microgram/min	Per prescriber order (Titrate: 10 - 20 mcg/min q 3 min)	NYP/WC: Monitored beds on 8N and 14S	
NYP/CU: 6HN							Hard : 150 microgram/min	Titrate: 10 - 20 mcg/min q 3 min	NYP/C: 6HN (adult oncology patients for high dose Aldesleukin only approved by Surgical/Medical attending and fellows) Refer to Phenylephrine Infusion for Aldesleukin Related Hypotension at CUMC	Reflex bradycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
Intensive Areas‡	20 mg/250 mL 0.9NaCl ♣ (0.08 mg/mL) 100 mg/250 mL 0.9NaCl ♣ (0.4 mg/mL)			50 - 300 microgram IVP over 2 - 4 min every 3min as needed			Soft: 400 microgram/min	Titrate: 10 - 20 mcg/min q 3 min	ICUs, OR/PACU, ED and anesthesiology (for procedural assisted areas)	

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	PROCAINAMIDE (Pronestyl) 1 g in 250 mL 0.9NaCl (4 mg/mL) 2 g in 250 mL 0.9NaCl (8 mg/mL)	Class Ia Antiarrhythmic	P	100 mg IVP over 2 min every 5 min, max: 17 mg/kg or 1000 mg or widening QRS >50% of baseline	N	1 mg/min	Soft : 6 mg/min	None	ICUs, ED, OR/PACU	Hypotension, ventricular asystole or fibrillation MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
	PROPOFOL (Diprivan) 500 mg/50 mL (10 mg/mL) 1000 mg/100 mL (10 mg/mL) All in premix bottle lipid emulsion	Sedative	P Dedicated line needed	10 – 20 mg IVP over 30 sec x 1 (*For severe agitation where patient may cause harm to themselves or others in intubated, ventilated patients)* Only give if order for bolus and infusion is active and notify provider	Y	5 microgram/kg/min	Soft: 60 microgram/kg/min	Titrate: 5 -10 mcg/kg/min q 2 min within a range of 0-80 micrograms /kg/min If RASS goal not achieved after two up-titrations, notify medical provider.	ICUs, ED, OR/PACU and approved procedure areas anesthesiology (for procedural assisted areas) Refer to: Pain/Sedation Management In Mechanically Ventilated Adult ICUs Sedating Agents, Analgesics, And Anesthetic Agents - Supervision Requirements For Their Use RNs competent in the procedure through education and experience, may administer Propofol to intubated, ventilated patients in a critical care setting based on an appropriate medical order. (NYSED 2013)	Unused drug and tubing must be discarded at 12 h Bradycardia Hypotension Propofol-infusion syndrome: metabolic acidosis, hyperkalemia, rhabdomyolysis
	REMIFENTANIL (Ultiva) 1 mg/100 mL 0.9NaCl ♣ (0.01 mg/mL) 2 mg/100 mL 0.9NaCl ♣ (0.02 mg/mL)	Mu- receptor agonist	P	None	Y	0.025 microgram/kg/min	Soft : 0.2 microgram/kg/min	Titrate: 0.025 mcg/kg/min q 5 min	ICUs, ED, OR/PACU, approved procedure areas and anesthesiology (for procedural assisted areas)	Respiratory depression Hypotension

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	ROCURONIUM (Zemuron) 500 mg/200 mL 0.9NaCl ♣ (2.5 mg/mL)	Non-depolarizing neuromuscular blocking agent	P	50 - 100 mg IVP over 60-140 seconds	Y	4 microgram/kg/min	Soft: 16 microgram/kg/min	Per TOF goal Titrate: 0.5 mcg/kg/min q 30 min	ICUs, ED, OR/PACU and anesthesiology (for procedural assisted areas)	Patient must be heavily sedated (RASS -5) throughout use and mechanically ventilated Monitor Train of Four (TOF) MD/NP/PA presence on unit required for 10 min post IVP. See IVP policy
	SODIUM ACETATEΩ 150 mEq/1000 mL D5W	Alkalinizing agent	P	Not recommended	N	25- 50 mEq/h Metabolic acidosis: dependent on bicarbonate deficit	NA	None	None	- Hypernatremia- Worsening heart failure - Cerebral edema - Peripheral edema - Hyperosmolality - Hypocalcemia - Hypokalemia -Hypophospha-temia -Paradoxical worsening of acidosis - Metabolic alkalosis

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Reviewed: October 2018
Revised: October 2018
Medical Board Approval: December 2018

Drip Administration Guidelines/Criteria Restrictions: ADULT

Area	Medication Standard Concentrations	Mechanism of Action	Line	Bolus Dose	Bolus from the Bag	Typical Starting Dose	Maximum Dose	Titration Guidelines (If Applicable to Unit)	Restrictions	Adverse Effects or Special Comments
	SODIUM BICARBONATE[Ω] 50 mEq in 1000 mL D5W, D5 1/2NS, 1/2NS 75 mEq in 1000 mL D5W, D51/2NS, 1/2NS 150 mEq/1150 mL D5W 250 mEq/250 mL (1 mEq/mL, undiluted)	Alkalinizing agent	P (Preferred) C (250 mEq/250 mL)	50 mEq IVP over 1-3 min	N	25- 50 mEq/h Radio-contrast nephropathy prevention: (150 mEq/1150 mL D5W): 3.5 mL/kg/h for 1 h prior to procedure and 1.2 mL/kg/h for 6 h after the procedure Metabolic acidosis: dependent on bicarbonate deficit	NA	None	None	- Hypernatremia-worsening heart failure - Cerebral edema - Peripheral edema - Hyperosmolality - Hypocalcemia - Hypokalemia -Hypophospha-temia -Paradoxical worsening of acidosis - Metabolic alkalosis MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
	SODIUM CHLORIDE 2% 1000 mL **SODIUM CHLORIDE/ACETATE 2%** 1000 mL	Electrolyte	P	250 mL bolus over 30 min	N	50 – 150 mL/h	None	None	Restrictions • Use in ICU does not require attending or fellow approval • Use outside of ICU: o Requires nephrology, neurology, emergency department attending or ICU attending or fellow approval Refer to: Sodium Chloride and Sodium Chloride/Acetate 2% and 3% Policy	None
	SODIUM CHLORIDE 3% 500 mL **SODIUM CHLORIDE/ACETATE 3%** 1000 mL	Electrolyte	C	250 mL bolus over 30 min	N	50 – 150 mL/h	None	None		In emergent scenarios (ie. hyponatremia induced seizures), may be started peripherally via infusion or boluses. Administration via central line is required within 3 hours of initiation

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Cath Lab	**TIROFIBAN (Aggrastat)** 5 mg/100 mL (50 mcg/mL) premixed bag 12.5 mg/250 mL (50 mcg/mL) premixed bag	Glycoprotein IIb/IIIa Inhibitor	P	25 microgram/kg IVP over 3 min	N	0.15 microgram/kg/min for up to 18 h CrCl < 60 mL/min: adjust rate to 0.075 microgram/kg/min for up to 18 h	Soft: 0.15 microgram/kg/min	None		Bleeding Thrombocytopenia
Neuro IR			P		N	0.1 microgram/kg/min x 6-18 h CrCl ≤ 60 mL/min: adjust rate to 0.05 microgram/kg/min x 6-18 h	Soft: 0.1 microgram/kg/min	None		
	TRANEXAMIC ACID (Cyklokapron) 1000 mg/100 mL 0.9NaCl (10 mg/mL)	Competitively inhibits activation of plasminogen to plasmin	P	10-50 mg/kg over 30-60 min (max rate of 100 mg/min) prior to incision	N	1-5 mg/kg/h until skin closure	Soft: 5 mg/kg/h	None	Infusion for OR use only during major spinal reconstructive surgery	Dose ↓ in renal impairment -Seizures at ↑ doses -Thrombo-embolic events
	TREPROSTINIL (Remodulin) 0.25 mg/50 mL (5,000 ng/mL) 0.5 mg/100 mL (5,000 ng/mL) 0.5 mg/50 mL (10,000 ng/mL) 1 mg/100 mL (10,000 ng/mL) 2.5 mg/50 mL (50,000 ng/mL) 5 mg/100 mL (50,000 ng/mL) 7.5 mg/100 mL (75,000 ng/mL) 10 mg/100 mL (100,000 ng/mL) 20 mg/100 mL (200,000 ng/mL) 50 mg/100 mL (500,000 ng/mL)	Prostacyclin vasodilator	C (preferred) P (requires back-up IV)	None	N	0.625 – 1.25 ng/kg/min (IV or SubQ)	None (adjusted based on patient response and tolerability)	Per prescriber order	Pulmonary Hypertension Attending approval. *(Not recommended to initiate outside the ICUs or cardiac stepdowns)* Refer to: Treprostinil (Remodulin®) Usage Policy For Adults And Pediatrics	Headache, nausea/vomiting, diarrhea, flushing, hypotension, lightheadedness/ fainting, jaw pain

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Intensive Areas‡	**VASOPRESSIN (Pitressin)** Ω 25 Units/25 mL 0.9NaCl ♣ (1 unit/mL) 50 Units/50 mL 0.9NaCl ♣ (1 unit/mL) *[For doses > 4 units/h]*	Vasopressor Antidiuretic hormone analog	C		N	1 - 2.4 units/h	Hard: 6 units/h* * doses >2.4 units/h should only be used in profound shock refractory to maximum doses of other vasopressors	Titrate to the nearest whole number every 30 min within the range of 1-6 units/h to max 6 units/h" Downward titration: at discretion of physician	ICUs, OR/PACU, ED and anesthesiology (for procedural assisted areas) Maximum dose in ED: 2.4 units/h *(Patients in the ED must be on a cardiac monitor with frequent BP measurements taken)*	Cardiac peripheral or mesenteric ischemia Doses > 6 units/h ➔ associated w/↑ risk of ADEs Patients must be on continuous telemetry monitoring in ICUs, OR, PACU
	VECURONIUM (Norcuron) 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL)	Non-depolarizing neuromuscular blocking agent	P	0.08-0.1 mg/kg IVP over 30 sec	Y	0.8 -1.7 microgram/kg/min	Soft: 1.7 microgram/kg/min	Per TOF goal Titrate: 0.3 mcg/kg/min q 30 min	ICUs, OR/PACU, ED and anesthesiology (for procedural assisted areas)	Patient must be heavily sedated (RASS -5) and mechanically ventilated throughout use Monitor Train of Four (TOF) MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy
	VERAPAMIL (Isoptin) 100 mg/100 mL 0.9NaCl ♣ (1 mg/mL)	Calcium channel blocker	P	2.5-5 mg IVP over 2 min; may give repeated doses of 5-10 mg every 15-30 min to total dose of 20 mg	Y	2.5 mg/h	Soft: 15 mg/h	Titrate : 5 mg/h q30 min	ICUs, OR/PACU, ED, approved procedure areas and anesthesiology (for procedural assisted areas)	Hypotension Bradycardia MD/NP/PA presence on unit required for 10 min post IVP. See IVP Policy

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	ZIDOVUDINE (Retrovir) 1000 mg/250 mL 0.9NaCl (4 mg/mL)	Antiretroviral	P	2 mg/kg over 1 hour	N	1 mg/kg/h until delivery	1 mg/kg/h	None	Prevention of maternal-fetal HIV transmission	Headache Malaise Nausea

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