







Intravenous Medication Guidelines for Adults

Ventura County Medical Center / Santa Paula Hospital

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Medication	Patient Classification: Acuity: 1 or 2 (1:1 or 1:2) Usual Location: ICU , ED OR, PACU, Labor & Delivery	Patient Classification: Acuity: 3 (1:3) Usual Location: DOU	Patient Classification: Acuity: 4 (1:4) Usual Location: Telemetry, Post-Partum	Patient Classification: Acuity: 5 (1:5) Usual Location: Medical- Surgical	Considerations and Precautions: Information contained here is limited. User should utilize appropriate drug reference books for complete administration instructions and drug information.  Do Not Administer
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Acetazolamide (Diamox)	IV Push	IV Push	IV Push	IVPB	IV Push over 1 minute. Monitor BP.
Adenosine (Adenocard)	IV Push	IV Push	IV Push (MD at bedside)	IV Push (MD at bedside)	Drug must be given RAPIDLY OVER 1-2 SECONDS. Initial Bolus: 6 mg IV Push over 1-2 seconds. Followed by RAPID SALINE FLUSH 20 ml. Use crash cart monitor at bedside. Monitor blood pressure.
Alteplase (Activase®, tPA) HIGH ALERT MEDICATION	IV Push IVPB IV Infusion (IR only)				For Acute Ischemic Stroke: Loading dose to be given IV Push over one minute. Remainder of total dose to be given over 60 minutes.
Aminocaproic Acid (Amicar)	IVPB IV Infusion	IVPB IV Infusion	IVPB IV Infusion		Do NOT administer undiluted. Dilute with NS or D5%W to a concentration of 100 mg/ml. Avoid rapid IV injection due to hypotension, bradycardia, and arrhythmias.
Aminophylline	IV Push	IV Push	IV Push	IV Push	IV bolus infuse over 20-30 minutes not to exceed 25 mg/min; max concentration 25 mg/ml.
Amiodarone (Cordarone)	IV Infusion	IV Infusion	IV Infusion: A-fib rate control only		Administer with a 0.22 micron filter. Rapid IV bolus doses during cardiac arrest only, more slowly over 60 min with perfusing rhythm.

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Argatroban (Argatroban®) HIGH ALERT MEDICATION	IV Infusion	IV Infusion	IV Infusion		Obtain baseline PT, PTT, CBC, CMP. Do not start for INR>2.5 or PTT>100. Discontinue all Heparin products. Infusion requires dedicated IV line and programmable pump. Refer to protocol for further information. Requires documentation of two (2) RN's for double checking.
Bumetanide BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	IV Push over 1-2 minutes. BBW for fluid and electrolyte depletion.
Butorphanol BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	IV Push each 2 mg over 3-5 minutes. BBW for respiratory depression, addiction, abuse, CYP450 interactions and risk of over sedation when mixed with benzodiazepines.
Calcium Gluconate 10% HIGH ALERT MEDICATION	IVP IVPB	IVPB	IVPB	IVPB	Do not mix with Sodium Bicarbonate or Phosphate infusions. EXTRAVASATION PRECAUTION – May be Harmful. Slow IV push over 10 minutes or IVPB as directed. Calcium Gluconate solution should be warmed to body temperature. Contraindicated with digitalized patients, hypercalcemia and ventricular fibrillation. IV push by TSN or MD only (in non-emergent settings).

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Calcium Chloride 10% HIGH ALERT MEDICATION	IV Push	IVPB	IVPB	IVPB	EXTRAVASATION PRECAUTION – May be Harmful. IV push over 10 minutes or IVPB as directed. 0.5 – 1 mL over 1 minute. IV push by TSN or MD only (in non-emergent settings).
Chlorpromazine BLACK BOX WARNING	IVPB	IVPB	IVPB	IVPB	Check blood pressure and pulse before and 15 minutes after administration. BBW , not approved for use in dementia-related psychosis.
Chlorthiazide (Diuril)	IV Push	IV Push	IV Push	IV Push	Use at least 18 mL of Sterile Water to dilute for IV Push. Rate of administration is 100 mg/min.
Conjugated Estrogen (Premarin IV®) BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	Each 5 mg over 1 minute. BBW for increased risk of endometrial cancer and cardiovascular events.
Cosyntropin (Cortrosyn®)	IV Push	IV Push	IV Push	IV Push	Follow MD's Instructions IV Push over 2 minutes
Deferoxamine (Desferal)	IV Infusion	IV Infusion			For acute iron intoxication IM preferred if patient not in shock Rate: NTE 15 mg/kg/hr for first 1000 mg then subsequent, NTE 125/mg/hr
Desmopressin Acetate (DDAVP®)	IV Push IVPB	IVPB	IVPB	IVPB	2-4 mcg usually given IVP.
Dexamethasone (Decadron)	IV Push	IV Push	IV Push	IV Push	Administer over at least 30 seconds

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Dexmedetomidine (Precedex®)	IV Infusion				See ICU, P & P guidelines Not recommended to give IVP or bolus; may result in bradycardia and sinus arrest.
Diazepam (Valium) BLACK BOX WARNING	IV Push (max: 10 mg/dose)	IV Push (max: 10 mg/dose)	IV Push (max: 5 mg dose)	IV Push (max: 5 mg/dose)	IV Push maximum rate: 5 mg/min. BBW , risk of profound over sedation with concurrent use of opioids.
Digoxin in single bolus dose ≤ 0.5 mg (Lanoxin®)	IV Push IVPB	IV Push IVPB	IV Push IVPB	IVPB	IVP over 5 minutes. IVPB – infuse over 15 minutes for maintenance dose and when NPO. Side effects: dysrhythmias, vomiting, nausea, CNS disturbances, GI and cardiac disturbances.
Dihydroergotamine (D.H.E.®) BLACK BOX WARNING	IV Push	IV Push			Total IV dose not to exceed 2 mg./24 hrs 1 mg/min. BBW for peripheral ischemia.
Diltiazem (Cardizem®)	IV Push IV infusion	IV Push IV infusion	IV Push IV infusion		LD = 0.25 mg/kg over 2 min. May repeat with 2 nd dose of 0.35 mg/kg in 15 min. Infusion rate = 10 – 15 mg/hr. IV infusion should not be used for longer than 24 hours. Maximum dose of 15 mg/hr.
Diphenhydramine (Benadryl®)	IV Push	IV Push	IV Push	IV Push	Maximum rate is 25 mg/min.
Dobutamine HIGH ALERT MEDICATION	IV infusion				Do not mix with sodium bicarbonate. Avoid extravasation. See ICU protocol.

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Dolasetron (Anzamet®)	IV Push	IV Push	IV Push	IV Push	IV Push over 30 sec or IVPB over 15 min Brady, Hypotension, Syncope.
Dopamine HIGH ALERT MEDICATION BLACK BOX WARNING	IV infusion				Do not mix with sodium bicarbonate. Avoid extravasation. See ICU protocol. BBW for possible extravasation.
Enalaprilat (Vasotec®) BLACK BOX WARNING	IV Push IVPB	IV Push IVPB	IV Push IVPB	IVPB	Slow intravenous push over 5 min. Initial dose 0.625 – 1.25 mg. Maximum IV dose 5 mg q 6 hrs; have been tolerated for up to 36 hrs. Avoid IV use in patients with unstable HR and AMI. Monitor blood pressure. BBW for fetal toxicity risk.
Epinephrine (Adrenalin®) HIGH ALERT MEDICATION Look-Alike Sound-Alike	IV Push IV infusion				1 mg/min, follow with 20 mL NS flush. See ICU, P&P guidelines.
Eptifibatide (Integrilin®)	IV loading dose IV Infusion IVPB	IV loading dose IV Infusion IVPB	IV loading dose IV Infusion IVPB		IV Push over 1 -2 min. Monitor for bleeding.
Esomeprazole (Nexium®)	IV Push	IV Push	IV Push	IV Push	Reconstitute vial with 5 mL Sodium Chloride for injection. Give IV Push over 3 minutes. Vial is stable for 12 hours once admixed. Flush line with Saline before and after administration.

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Ethacrynic Acid (Edecrin®) BLACK BOX WARNING	IVPB	IVPB	IVPB		DO NOT PUSH Rate: 1 mg/ml solution at 10 to 15 mg per minute. Caution: Hypotension, phlebitis, ototoxicity, hypokalemia. BBW for fluid and electrolyte depletion.
Famotidine (Pepcid®)	IV Push	IV Push	IV Push	IV Push	IV Push over 2 minutes. IV Push also approved for GI Lab.
Fentanyl BLACK BOX WARNING HIGH ALERT MEDICATION	IV Push IV infusion	IV Push (MD must be present at bedside) IV infusion			IV Push over 3-5 minutes. BBW for respiratory depression, addiction, abuse, CYP450 interactions and risk of over sedation when mixed with benzodiazepines. May be administered in the GI Lab under the direct supervision of a physician.
Flumazenil BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	Reversal agent for benzodiazepines or sedation. 0.2mg over 15 seconds, may repeat every minute up to 1mg. BBW for possible seizure risks.
Fosphenytoin (Cerebyx®) BLACK BOX WARNING	IVPB	IVPB	IVPB	IVPB	Do not exceed 150mg PE/minute. Slower administration rates reduces the incidence of hypotension, arrhythmias as well as the severity of paresthesias and pruritus. BBW for cardiovascular risk with rapid infusion.

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Furosemide (Lasix®) BLACK BOX WARNING	IV Push IV infusion	IV Push IV infusion	IV Push IV infusion	IV Push IVPB (IV infusion for anasarca only)	IVP no more than 10 mg/min. BBW for fluid and electrolyte depletion.
Glucagon	IV Push	IV Push	IV Push	IM	Usual dose 0.5 – 1 mg usually produces a response in 5 – 20 minutes. May repeat if response delayed for insulin shock in 20 minutes. Fast IV Push 1 mg = 1 Unit over 1 minute. Monitor heart rate.
Haloperidol BLACK BOX WARNING	IV Push Baseline QT required	IV Push Baseline QT required	IV Push Baseline QT required	IM	Usual dose 0.5 – 5 mg depending on the severity of the agitation and the patient’s condition. Monitor QT prolongation and torsades de pointes. BBW , not approved for dementia-related psychosis.
Heparin HIGH ALERT MEDICATION	IV Push	IV Push	IV Push	IV Push	See Administration Policy. Infusion pump required. Guardrail Drug. Requires documentation of two (2) RN’s for double-checking.
Hydralazine	IV Push	IV Push	IV Push	IV Push	Slow IV Push over 3-5 minutes
Hydrocortisone (Solu-Cortef®)	IV Push	IV Push	IV Push	IV Push	Administer at a maximum concentration of 50 mg/mL over 30 seconds – 5 min, for doses over 500mg infuse over at least 10 min.

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Hydromorphone (Dilaudid®) HIGH ALERT MEDICATION BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	ALL nursing units may administer doses >1 mg. Administer IV Push at a rate of 1 mg/min. Check vital signs after 15 minutes. Exercise caution for the following: doses greater than 1mg, use in the elderly, opiate-naïve patients, concurrent use with benzodiazepines, other opioids and/or sedatives. BBW for respiratory depression, addiction, abuse, CYP450 interactions and risk of over sedation when mixed with benzodiazepines. Reversal agent: Naloxone
Insulin, Regular Human HIGH ALERT MEDICATION	IV Push IV infusion	IV infusion			Only REGULAR insulin may be administered by the IV route. For continuous infusions, conc. 100 unit / 100 ml (1 unit/ml). Infusion Pump Required. Guardrail Drug Requires documentation of two (2) RN's for double-checking. May be administered IV Push for Hyperkalemia.
Ketorolac (Toradol®) BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	IV Push over 30 seconds. Maximum IV dose is 30 mg. IM route is preferred. Use is short term NTE 5 days. BBW for risks of GI Bleeding, cardiovascular events, renal impairment, bleeding, L&D risks, Intrathecal/Epidural risks and hypersensitivity reactions.

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Ketamine (Ketalar®) BLACK BOX WARNING	IV infusion				See ICU, P & P guidelines. BBW for psychological manifestations such as vivid imagery, hallucinations, or emergence delirium.
Labetalol (Trandate®, Normodyne®)	IV Push IV infusion	IV Push	IV Push		Initial IVP dose 0.25 mg/kg (20 mg) over 2 min. May repeat at 10 minutes intervals with 40-80 mg. Dose 1-4 mg/min. BP monitoring is required q 5 min for 15 minutes. Monitor blood pressure before injection, 5 and 10 minutes after injection and routinely thereafter. See ICU IV guidelines.
Lidocaine HIGH ALERT MEDICATION	IV Push IV infusion	IV Push	IV Push		Infusion Pump Required. Guardrail Drug TELEMETRY REQUIRED. Loading dose: 50 – 100 mg given at 25 – 50 mg/min. Do not exceed 200 – 300 mg in one hour period. Standard concentration is 2000 mg/500 mL (4 mg/ml).
Levothyroxine (Synthroid®) BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	Give 100 mcg/mL over 1 minute. BBW , not for use for weight loss or obesity.

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Lorazepam (Ativan®) BLACK BOX WARNING	IV Push IV infusion	IV Push <u>Maximum Dose Allowed</u> <u>32 mg/24 hrs</u>	IV Push <u>Telemetry: Max Dose Allowed</u> <u>16 mg/24 hrs</u>	IV Push <u>Med/Surg floors Max Dose Allowed</u> <u>16 mg/24 hrs</u>	Physician orders must contain monitoring parameters for BP and respiratory rate or pulse oximetry. Use caution in elderly patients with compromised pulmonary function. Push over 1 minute. Monitor respiratory depression and apnea for 15 minutes. Maximum rate 2 mg/min. Usual dose: 2-4 IVP every 2 hours prn. Dilute with equal volume of NS, D5W, or Sterile Water prior to administration. For status epilepticus 4 mg dose given over 2 to 5 min; may repeat in 10 15 minutes: usual maximum dose 8 mg in 12 hours. Dilute with equal amounts of normal saline. BBW for increased risk of over sedation when used with opiates. Reversal Agent: Flumazenil
Magnesium Sulfate HIGH ALERT MEDICATION	IVPB IV infusion	IVPB IV infusion	IVPB IV infusion	IVPB	Infuse 1 g - 2 g per hour. Infusion Pump required with use of guardrails. Adverse effects include: Respiratory depression, cardiac arrest, hypotension, respiratory failure, heart block.

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Mannitol	IV Push IV infusion	IV Push IV infusion	IV Push IV infusion	IV Push (Dialysis Nurse must administer)	Each 50 ml of Mannitol 25% should be IVP over 5 minutes. Continuous infusion of 20% mannitol may also be used. A 5 micron filter must be used in-line. If crystals are present, return to Pharmacy. Infusion Pump required with guardrails.
Meperidine (Demerol®) BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	Use for rigors in Post-Op and Oncology. BBW for respiratory depression, addiction, abuse, CYP450 interactions and risk of over sedation when mixed with benzodiazepines. Risks also associated with concomitant use with MAOIs.
Methylergonovine (Methergine®)	IV Push	IV Push	IV Push		IV Push 2 -3 minutes with BP monitoring. Usual dose 1 ml (0.2 mg) may repeat every 2-4 hours as needed.
Methylprednisolone (Solu-Medrol®)	IV Push IVPB IV infusion	IV Push IVPB	IV Push IVPB	IV Push IVPB	IV Push up to 1.8 mg/kg or 125 mg over 3 minutes. IC up to or > 2 mg/kg or 250 mg infuse over 30 min or longer. IVP 10-250 mg may repeat every 4 -6 hours as needed. Up to 30 mg/kg for spinal cord injury. Loading dose of 30 mg/kg is NS 100 ml. Maintenance of 5.4 mg/kg/hr for 23 hours.
Metoclopramide (Reglan®) BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	IV Push over 1- 2 minutes. BBW for tardive dyskinesia.

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Metoprolol (Lopressor®) BLACK BOX WARNING	IV Push	IV Push	IV Push	IVPB	Blood pressure monitoring required q 5 minutes for 15 minutes. Maximum dose of 15 mg for Blood Pressure control. IV Push 5 mg over 1 minute with 5 mg every 5 minutes for 2 doses. Need to monitor ECG, HR and BP. BBW for avoiding abrupt cessation.
Midazolam (Versed®) HIGH ALERT MEDICATION BLACK BOX WARNING	IV Push IV infusion	IV Push	IV Push	IV Push	Usual dose: 1 - 2.5 mg over 2-3 minutes as single dose only. Allow 3 – 5 minutes between each small injection to evaluate effect. MD order must include monitoring parameters for drip. Parameters for BP, respiratory rate, pulse oximetry. Dose > 5 mg require moderate sedation P&P compliance. In GI Lab ok with direct MD supervision. Can cause apnea and cardiac arrest. Contraindicated with Norvir (Ritonavir). Use lower doses in patients over the age of 60. BBW for increased risk of over sedation when used with opiates. Reversal Agent: Flumazenil

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Morphine Sulfate HIGH ALERT MEDICATION BLACK BOX WARNING	IV Push PCA IV infusion	IV Push PCA IV infusion	IV Push PCA IV infusion	IV Push (5 mg max) PCA IV infusion (comfort measures only)	Usual dose 5 mg slow IVP over 2-3 minutes. IV Push max is q 2 hours. Vital signs after 15 min, check level of consciousness 1 st 30 minutes. Continuous infusion must contain monitoring parameters for blood pressure and respiratory rate or pulse oximetry. BBW for respiratory depression, addiction, abuse, CYP450 interactions and risk of over sedation when mixed with benzodiazepines. Reversal Agent: Naloxone
Nalbuphine BLACK BOX WARNING	IV Push	IV Push			IV Push as follows: 10 mg over 3 -5 minutes. Max single dose 20 mg, max daily dose 160 mg. Caution: Respiratory depression, CNS depression, may increase intracranial pressure. BBW for respiratory depression, addiction, abuse, CYP450 interactions and risk of over sedation when mixed with benzodiazepines.
Naloxone (Narcan®)	IV Push	IV Push	IV Push	IV Push	IV Push undiluted over 30 seconds, may be repeated. Monitor patient after administration for agitation.
Neostigmine (Bloxiverz®)	IV Push	IV Push			Usual dose 0.5 – 2 mg over 1 -5 minutes.

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Nitroglycerin	IV infusion				Infusion Pump required using guardrails. Standard concentration of 50 mg/250 ml D5W (200 mcg/ml). Contact MD if persistent headache occurs. See specific nitroglycerin P & P and guidelines.
Nitroprusside (Nipride®) HIGH ALERT MEDICATION BLACK BOX WARNING	IV infusion				Infusion Pump Required. Guardrail Drug. Standard concentration 50 mg/250 ml D5W. See P&P Guidelines. BBW for excessive hypotension and possible cyanide toxicity risks.
Norepinephrine (Levophed®) HIGH ALERT MEDICATION BLACK BOX WARNING	IV infusion				Infusion Pump Required. Guardrail Drug. Standard concentration of 4 mg/250 ml. Do not run with INSULIN. See P & P guidelines. Check BP every 2 minutes until stabilized at desired level; check every 5 minutes thereafter therapy. BBW for extravasation risk.
Octreotide (Sandostatin®) HIGH ALERT MEDICATION	IV Push	IV Push	IV Push	IV Push	IV Push over 3 minutes.
Ondansetron (Zofran®)	IV Push	IV Push	IV Push	IV Push	IV Push over 1 -2 minutes.

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Oxytocin (Pitocin) BLACK BOX WARNING	IV infusion	IV infusion		<i>For fetal demise, oxytocin IV infusions are allowed on medical-surgical nursing units.</i>	For doses used in labor induction a controlled infusion device is necessary. Post-partum doses may not exceed 20 units/hr. BBW , not for elective labor induction.
Paricalcitol (Zemlar®) Look-Alike Sound-Alike	IV Push	IV Push	IV Push	IV Push	Administer as a bolus dose anytime during dialysis.
Phenobarbital	IV Push IV infusion	IV Push	IV Push	IV Push	IV push 50 mg/min. Don't administer rapidly as it may cause respiratory depression, apnea, laryngospasm or vasodilation with fall in blood pressure.
Phenylephrine (Neo-Synephrine®) HIGH ALERT MEDICATION BLACK BOX WARNING	IV Push IV infusion				For IV push dilute 10 mg in 9 ml of NS and give 0.1 – 0.5 mg over one minute. Infusion Pump required with guardrails. See P & P guidelines. Protect from light. BBW , prescribers should be familiar with the complete prescribing information before use.
Phenytoin (Dilantin®) BLACK BOX WARNING	IV Push IVPB	IV Push IVPB	IV Push IVPB	IV Push IVPB	Patient MUST be on cardiac monitor during and after IV phenytoin administration. Use an in-line 0.22 micron filter for IVPB solution due to high potential for precipitation of the solution. BBW for cardiovascular risk with rapid infusion.

Intravenous Medication Guidelines for Adults

Ventura County Medical Center / Santa Paula Hospital

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Medication	Patient Classification: Acuity: 1 or 2 (1:1 or 1:2) Usual Location: ICU , ED OR, PACU, Labor & Delivery	Patient Classification: Acuity: 3 (1:3) Usual Location: DOU	Patient Classification: Acuity: 4 (1:4) Usual Location: Telemetry, Post-Partum	Patient Classification: Acuity: 5 (1:5) Usual Location: Medical- Surgical	Considerations and Precautions: Information contained here is limited. User should utilize appropriate drug reference books for complete administration instructions and drug information.  Do Not Administer
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Physostigmine	IV Push				IV Push 0.5 mg slowly, no more than 1 mg per minute to reverse anticholinergic drug effect. Dose: 0.5 to 2 mg. *Atropine must always be available.
Phytonadione (Vitamin K1) BLACK BOX WARNING	IVPB	IVPB	IVPB	IVPB	IV doses should be prepared in 50 mL of D5W and given over 60 minutes. BBW, High incidence of reactions including death with the IV route.
Potassium Chloride HIGH ALERT MEDICATION	IVPB	IVPB	IVPB	IVPB	Maximum of 10 mEq/hr for non-monitored beds. Maximum of 20 mEq/hr for monitored beds with cardiac monitoring; ICU & ER may give up to 40 mEq/hr. The maximum potassium concentration for administration is 40 mEq/100 ml via a central line. INFUSION PUMP REQUIRED.
Pralidoxime (Protopam®, 2-PAM)	IVPB				Dilute dose in 100 ml of NS and infuse over 30 minutes, NTE 200 mg/min. May be given IM or SC if IV administration not possible. When indicated for organophosphate pesticide poisoning, first administer atropine. Must wear protective clothing.

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Procainamide (Pronestyl®) HIGH ALERT MEDICATION BLACK BOX WARNING	IVPB IV infusion				Loading Dose of 50 – 100 mg IVP q 5 min until arrhythmia is controlled or blood pressure drops. Should be given at a rate not to exceed 25- 50 mg/min. Maintenance dose 1 – 4 mg/min. The maximum loading dose is 1000 mg. Infusion Pump Required. Guardrail Drug. PO or IM are the routes preferred. IV should only be used for emergencies. Monitor ECG and BP continuously. Max conc. 20 mg/mL. BBW for proarrhythmic effects, blood dyscrasias and possible positive ANA titers.
Prochlorperazine BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	IV Push over 1 - 2 minutes. BBW not for use in dementia related psychosis.

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Promethazine (Phenergan®) CAUTION: This drug is a known vesicant. BLACK BOX WARNING	IVPB	IVPB	IVPB	IVPB	<p>IM route preferred. Avoid IV USE due to serious tissue damage. 6.25 – 12.5 mg as starting doses. Concentration should never exceed 25 mg/mL, but further diluting the 25 mg/mL concentration with 10-20 mL normal saline is recommended. Blood pressure monitoring is required 5 – 10 min following administration. Stop immediately if patient complains of pain. Avoid extravasation – administer via running IV line at port furthest from patient’s vein or through a large bore vein (not hand or wrist). May precipitate with Heparin. IV Push and SQ routes are prohibited. BBW for respiratory depression and severe tissue injury, gangrene.</p>
Propofol (Diprivan®) HIGH ALERT MEDICATION	IV Push by MD only IV infusion				<p>Infusion rate of 5 - 50 mcg/kg/min (0.3 to 3 mg/kg/hr) or higher may be required. Administer undiluted from premixed vials with a concentration of 10 mg/ml. Titrate in increments of 5 – 10 mcg/kg/min over 5 to 10 minutes until desired level of sedation is achieved. May administer with lidocaine to decrease the pain. DO NOT HANG FOR LONGER THAN 12 HOURS. IV ADMINISTRATION SETS SHOULD BE CHANGED EVERY 12 HOURS. - CONTAINS NO PRESERVATIVES.</p>

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Propranolol BLACK BOX WARNING	IV Push	IV Push	IV Push		Usual IV Push dose 0.5 – 3.0 mg dilute with NS. Maximum rate of administration should not exceed 1 mg/min. May repeat dose in 2 minutes to a max of 5 mg; but must wait at least 4 hours thereafter for any subsequent doses. Blood pressure and heart rate must be monitored every 5 minutes for 15 minutes following each dose. BBW to avoid abrupt cessation.
Protamine Sulfate BLACK BOX WARNING	IV Push	IV Push	IV Push	IV Push	Used to treat Heparin over dosages. Give slow IV Push no faster than 5 mg/minute. BBW for serious adverse effects such as, severe hypotension, cardiovascular collapse, noncardiogenic pulmonary edema, catastrophic pulmonary edema, and pulmonary HTN.
Rocuronium Caution: PARALYZING AGENT	IV Push				MD must be present for intubation.
Sodium Chloride 2% HIGH ALERT MEDICATION	IVPB	IVPB	IVPB		Refer to VCMC/SPH Clinical Practice Guidelines for Appropriate Use of Hypertonic Saline for Symptomatic Hyponatremia.

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Sodium Chloride 3% HIGH ALERT MEDICATION	IVPB				Refer to VCMC/SPH Clinical Practice Guidelines for Appropriate Use of Hypertonic Saline for Symptomatic Hyponatremia.
Succinylcholine (Anectine) Caution: PARALYZING AGENT BLACK BOX WARNING	IV Push				Dose 0.3 – 1.0 mg/kg over 10 -30 seconds. MD must be present for intubation. BBW for cardiac arrest in pediatric patients.
Terbutaline BLACK BOX WARNING	IV Infusion				Limited use in tocolysis or pre-term labor, limit use to less than 48-72 hrs. Begin infusion at 2.5-5 mcg/min, may increase by 5 mcg/min increments up to a maximum dose of 25 mcg/min. Infusion Pump required with guardrails. BBW for ORAL terbutaline is not to be used in tocolysis.
Vasopressin	IV Push IV infusion				For IV infusions an Infusion Pump is required with guardrails. Usual infusion dosage range is 0.01 units/min titrated every 5 minutes to a max of 0.04 units/min. EXTRAVASATION PRECAUTION. See P&P and ICU guidelines on vasopressin.

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Vecuronium Caution: PARALYZING AGENT HIGH ALERT MEDICATION BLACK BOX WARNING	IV Push IV infusion				Initial dose 0.08 – 0.1 mg/kg slow IV Push over 2 -3 minutes. Maintenance dose suggested 0.01 – 0.015 mg/kg slow IV Push over 2 -3 minutes. For continuous infusion doses, 0.05 to 0.072 mg/kg/hr. PATIENT MUST BE INTUBATED. BBW for Appropriate use by trained individuals familiar with the hazards.
Verapamil	IV Push	IV Push	IV Push		IV Push 2.5 - 5 mg over 2 minutes; a second dose of 5 – 10 mg may be given 15-30 minutes after the initial dose if the patient tolerates and if the patient does not respond to the initial dose, to a max total dose of 20-30 mg. Monitor HR and BP plus continuous EKG monitoring required to assess therapeutic efficacy or arrhythmic potential.