



Intravenous Medication Guidelines for Adults











Ventura County Medical Center / Santa Paula Hospital

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Medication	ICU, ER OR/OPS PACU SPH-ICU	DOU SPH-DOU	Telemetry / Oncology	2 West 3 West 4 North, OB L&D, SPH-MS	Considerations and Precautions: Information contained here is limited. User should utilize appropriate drug reference books for complete administration instructions and drug information.
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 Okay to Administer

 Do Not Administer

Acetazolamide (Diamox)	IVP	IVP	IVP	IVPB	IV Push over 1 minute. Monitor BP.
Adenosine (Adenocard)	IVP	IVP	IVP (MD at bedside)	IVP (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 bedside. Monitor blood pressure.
Alteplase (Activase®, tPA) HIGH ALERT MEDICATION	IVP 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		
Aminophylline					
Amiodarone (Cordarone)	IV Infusion	IV Infusion	IV Infusion -A- fib rate control only		
Argatroban (Argatroban®) HIGH ALERT MEDICATION	ICU VCMC ICU SPH	DOU VCMC	3 North / Tele		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.

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Bumetanide (Bumex®)					IV Push over 1-2 minutes
Butorphanol (Stadol)					IV Push each 2 mg over 3-5 minutes
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. IV push over 10 minutes or IVPB as directed. Calcium Gluconate solution should be warmed to body temperature. Contraindicated with digitalized patients, hypercalcemia, ventricular fibrillation. IV push by TSN or MD only (in non-emergent settings).
Calcium Chloride 10% HIGH ALERT MEDICATION	IVP	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 (Thorazine)	IVPB	IVPB	IVPB	IVPB	Check blood pressure and pulse before and 15 minutes after administration.
Chlorthiazide (Diuril)					Use at least 18 mL of Sterile Water to dilute for IVP. Rate of administration is 100 mg/min.

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Conjugated Estrogen (Premarin IV®)					Each 5 mg over 1 minute
Cosyntropin (Cortrosyn®)					Follow MD's Instructions IVP 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®)	IVP IVPB	IVPB	IVPB	IVPB	2-4 mcg usually given IVP.
Dexamethasone (Decadron)					Administer over at least 30 seconds
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)	IVP (max: 10 mg/dose)	IVP (max: 10 mg/dose)	IVP (max: 5 mg dose)	IVP (max: 5 mg/dose)	IV Push maximum rate: 5 mg/min
Digoxin in single bolus dose ≤ 0.5 mg (Lanoxin®)	IVP	IVP	IVP	IVPB on 2W/3W/OB	IVP over 5 minutes. IVPB – infuse over 15 minutes for maintenance dose and when NPO. Side effects: dysrhythmias, vomiting, nausea, CNS disturbance. GI and cardiac disturbances.
Dihydroergotamine (D.H.E.®)	IVP	IVP			Total IV dose not to exceed 2 mg./24 hrs 1 mg/min

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Diltiazem (Cardizem®)	IVP IV infusion	IVP IV infusion	IVP 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®)					Maximum rate is 25 mg/min.
Dobutamine HIGH ALERT MEDICATION	IV infusion				Do not mix with sodium bicarbonate. Avoid extravasation. See ICU protocol.
Dolasetron (Anzamet®)					Over 30 sec as IVP or IVPB over 15 min Brady, Hypotension, Syncope.
Dopamine HIGH ALERT MEDICATION	IV infusion				Do not mix with sodium bicarbonate. Avoid extravasation. See ICU protocol.
Edrophonium (Tensilon®)	IVP. MD must be present				Administer 1-10 mg undiluted dose 15 -30 seconds. Total maximum dose should not exceed 40 mg. 2 mg over 15 – 30 sec. Single dose over 30 – 45 sec.
Enalaprilat (Vasotec®)	IVP IVPB	IVP IVPB	IVP 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.
Epinephrine (Adrenalin®) HIGH ALERT MEDICATION	IVP IV infusion				See ICU, P & P guidelines. Caution: Look – alike/ Sound – alike 1 mg/min, follow with 20 mL NS flush

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Eptifibatide (Integrin®)	IV LoadingDose IV infusion IVPB	IV infusion IV loading dose IVPB	IV Infusion IF loading dose IVPB		Bleeding Precautions. IVP over 1 -2 3 min
Esomeprazole (Nexium®)					Reconstitute vial with 5 mL Sodium Chloride. Give IVP over 3 minutes. Vial is stable for 12 hours once admixed. Flush line with Saline before and after administration.
Ethacrynic Acid (Edecrin®)	IVPB	IVPB	IVPB		DO NOT PUSH Rate: 1 mg/ml solution at 10 to 15 mg per minute. Caution: Hypotension, phlebitis, ototoxicity, hypokalemia.
Famotidine (Pepcid®)					IV Push over 2 minutes
Fentanyl (Sublimaze®) BLACK BOX WARNING HIGH ALERT MEDICATION	IVP IV infusion	IVP (MD must be present at bedside) IV infusion		(IVP – L&D only)	IV Push over 3-5 minutes
Flumazenil					
Fosphenytoin (Cerebyx®)	IVPB	IVPB	IVPB	IVPB	

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Furosemide (Lasix®)	IVP IV infusion	IVP IV infusion	IVP IV infusion	IVP/IVPB (IV infusion for Anasarca only)	IVP no more than 10 mg/min.
Glucagon	IVP	IVP	IVP	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 (Haldol®) BLACK BOX WARNING	IVP Baseline QT required	IVP Baseline QT required	IVP 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.
Heparin HIGH ALERT MEDICATION					See Administration Policy. Infusion pump required. Guardrail Drug. Requires documentation of two (2) RN’s for double-checking.
Hydralazine					Slow IV Push over 3-5 minutes
Hydrocortisone (Solu-Cortef®)					
Hydromorphone (Dilaudid®) HIGH ALERT MEDICATION					IV Push 1 mg over 1 minute. Check vital signs after 15 minutes. 2W,3W & 4N OB can give dose >1 mg.

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Insulin, Regular Human HIGH ALERT MEDICATION	IVP IV infusion	IV infusion	IV Infusion	IV Infusion (OB)	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. IV Push for Hyperkalemia.
Ketorolac (Toradol®) BLACK BOX WARNING	IVP	IVP	IVP	IVP	IV Push over 30 seconds. Maximum IV dose is 30 mg. IM route is preferred.
Ketamine (Ketalar®)	IV infusion				See ICU, P & P guidelines.
Labetalol (Trandate®, Normodyne®)	IVP IV infusion	IVP	IVP	(IVP – L&D only)	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 requires 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	IVP IV infusion	IVP	IVP		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 2000 mg/500 mL (4 mg/ml).
Levothyroxine (Synthroid®)					Give 100 mcg/mL over 1 minute.

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Lorazepam (Ativan®)	IVP IV infusion	IVP <u>Maximum Dose Allowed</u> 32 mg/24 hrs	IVP <u>Telemetry: Max Dose Allowed</u> 16 mg/24 hrs	IVP <u>2 W/3 W Max Dose Allowed</u> 16 mg/24 hrs	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, SW. 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. Reversal Agent: Flumazenil
Magnesium Sulfate HIGH ALERT MEDICATION	IVPB IV infusion	IVPB IV infusion	IVPB IV infusion	IVPB (IV infusion – OB only)	Infuse 1 g - 2 g per hour. Infusion Pump Required. Guardrail Drug. Adverse effects: Respiratory depression, cardiac arrest, hypotension, respiratory failure, heart block.
Mannitol	IV infusion IVP	IV infusion IVP	IV infusion IVP	IVP (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. Guardrail Drug.
Meperidine (Demerol®)					Use for rigors in Post-Op.

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Methylergonovine (Methergine®)	IVP	IVP	IVP	(IVP – OB/L&D only)	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®)	IVP IVPB IV infusion	IVP IVPB	IVP IVPB	IVP IVPB	IVP 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®)					IV push over 1- 2 minutes.
Metoprolol (Lopressor®)	IVP	IVP	IVP	IVPB	Blood pressure monitoring required q 5 minutes for 15 minutes. Maximum dose of 15 mg for Blood Pressure Control 5 mg over 1 minute with 5 mg every 5 minutes for 2 doses. Need to monitor ECG, HR and BP
Midazolam (Versed®) HIGH ALERT MEDICATION	IVP IV infusion	IVP			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 contain monitoring 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) Reversal Agent: Flumazenil

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Morphine Sulfate HIGH ALERT MEDICATION	IVP PCA IV infusion	IVP PCA IV infusion	IVP PCA IV infusion	IVP (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. Reversal Agent: Naloxone
Nalbuphine (Nubain)	IVP	IVP		IVP in OB only	Push as follows: 10 mg over 3 -5 minutes. Caution: Respiratory depression, CNS depression, may increase intracranial pressure. Max single dose 20 mg, max daily dose 160 mg.
Naloxone (Narcan®)					Monitor patient after administration for agitation.
Neostigmine (Bloxiverz®)	IVP	IVP			Usual dose 0.5 – 2 mg over 1 -5 minutes.
Nitroglycerin	IV infusion				Infusion Pump Required. Guardrail Drug. Standard concentration of 50 mg/250 ml D5W (200 mcg/ml). Contact MD if persistent headache occurs. See specific nitroglycerin, P & P guidelines.
Nitroprusside (Nipride®) HIGH ALERT MEDICATION	IV infusion				Infusion Pump Required. Guardrail Drug. Standard concentration 50 mg/250 ml D5W. See P & P Guidelines.

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Norepinephrine (Levophed®) HIGH ALERT MEDICATION	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.
Octreotide (Sandostatin®) HIGH ALERT MEDICATION					
Ondansetron (Zofran®)					IV Push over 1 -2 minutes.
Oxytocin (Pitocin)	IV infusion	IV infusion		IVP (IV infusion – OB & 4N only)	IVP reserve for emergency & OB, 4N, L&D only. For doses used in labor induction a controlled infusion device is necessary. Post-partum doses may not exceed 20 units/hr.
Paricalcitol (Zemplar®) Look-Alike Sound-Alike					
Phenobarbital	IVP IV infusion	IVP	IVP	IVP	IVP: 50 mg/min. Don't administer rapidly for it may cause respiratory depression, apnea, laryngospasm or vasodilation with fall in blood pressure.
Phenylephrine (Neo-Synephrine®) HIGH ALERT MEDICATION	IVP IV infusion				For IVP dilute 10 mg in 9 ml of NS and give 0.1 – 0.5 mg over one minute. Infusion Pump Required. Guardrail Drug. See P & P guidelines. Protect from light.

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Phenytoin (Dilantin®)	IVP IVPB	IVP IVPB	IVP IVPB	IVP 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.
Physostigmine (Antilirium®)	IVP				Push 0.5 mg Slowly, no more than 1 mg per minute. Reverse anticholinergic drug effect. Dose: 0.5 to 2 mg. *Atropine must always be available.
Phytonadione (Vitamin K)	IVPB	IVPB	IVPB	IVPB	IV doses should be prepared in 50 ml of D5W and given over 60 minutes. High incidence of reaction with the IV route.
Potassium Chloride HIGH ALERT MEDICATION	IVPB IV infusion	IVPB IV infusion	IVPB IV infusion	IVPB IV infusion	Maximum of 10 mEq/hr for Peripheral line. Maximum of 20 mEq/hr for Central line – with cardiac monitoring. The maximum potassium concentration for administration is 40 mEq/100 ml via a central line in the ICU ONLY. INFUSION PUMP REQUIRED. Central Line can go up to max rate 40 mEq/hr.
Pralidoxime (Protopam®)	IVPB				Dilute dose in 100 ml of NS and infuse over 30 minutes. May be given IM or SC if IV administration not possible. When indicated for organophosphate pesticide poisoning first administer atropine. Must wear protective clothing. NTE 200 mg/min.

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Procainamide (Pronestyl®) HIGH ALERT MEDICATION	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.
Prochlorperazine (Compazine®)					IV Push over 1 - 2 minutes.
Promethazine (Phenergan®) CAUTION: This drug is a known vesicant. BLACK BOX WARNING	IVPB	IVPB	IVPB	IVPB	6.25 – 12.5 mg as starting IV dose and start using other drugs. Concentration should never exceed 25 mg/mL. Blood pressure monitoring required 5 – 10 min following administration. Rapid IV push may result in orthostatic hypotension and dystonic reactions. 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. IM route preferred. NOT for SQ administration.

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Propofol (Diprivan®) HIGH ALERT MEDICATION	IVP by MD only IV infusion				Infusion rate of 5 - 50 mcg/kg/min (0.3 to 3 mg/kg/hr) or higher may be required. Comes in 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 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.
Propranolol (Inderal®)	IVP	IVP	IVP		Usual IVP 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; 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.
Protamine Sulfate					Used to treat Heparin Overdosage. Give slow IV Push no faster than 5 mg/minute.
Retepase (Retavase®)	IVP				Limited to MI indications in thrombolytic therapy. STEMI: 10 units over 2 min; 2 nd dose 30 minutes later.

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Rocuronium Caution: PARALYZING AGENT	IVP				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.
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	IVP				Dose 0.3 – 1.0 mg/kg over 10 -30 seconds. MD must be present for intubation.
Terbutaline (Brethine®, Bricanyl®)				(IV infusion – L&D only)	Limited use in tocolysis or pre-term labor. 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. Guardrail Drug.
Urokinase (Abbokinase®) HIGH ALERT MEDICATION	IVP IV infusion ICU/ER only				Infusion Pump Required. Guardrail Drug. Prepare 100,000 Units/ml solution.

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Vasopressin (Pitressin®)	IVP IV infusion				Infusion Pump Required. Guardrail Drug. Usual dosage range is 0.2 to 0.9 units/ml. EXTRAVASATION PRECAUTION. See P&P and ICU guidelines on vasopressin.
Vecuronium (Norcuron®) Caution: PARALYZING AGENT HIGH ALERT MEDICATION	IVP IV infusion				Initial dose 0.08 – 0.10 mg/kg slow IVP over 2 -3 minutes. Maintenance dose suggested 0.01 – 0.015 mg/kg slow IVP over 2 -3 minutes. For infusion dose = 0.5 to 2.5 mg/kg/min (1 - 5 mg/hr) PATIENT MUST BE INTUBATED.
Verapamil	IVP	IVP	IVP		IVP 2.5 - 5 mg over 2 minutes. 2 nd dose: 5 – 10 mg may be given if patient tolerates. May repeat 10 mg in 30 minutes, if necessary. Continuous EKG monitoring required to assess therapeutic efficacy or arrhythmic potential.