



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR INTRAVENOUS MEDICATION ADMINISTRATION    **POLICY NO.** 325M

<b>CATEGORY:</b> Provision of Care	<b>EFFECTIVE DATE:</b> 6/16
<b>POLICY CONTACT:</b> Julianne Joo, PharmD	<b>UPDATE/REVISION DATE:</b> 2/23
<b>REVIEWED BY COMMITTEE(S):</b> Pharmacy and Therapeutics, Medical Executive	

**PURPOSE:**

To provide guidelines in administering intravenous (IV) medications.

**DEFINITION:**

Provider presence: The provider is **physically present** with the patient during medication administration.

**POLICY:**

At Harbor-UCLA Medical Center, all healthcare providers and nurses are required to follow the IV Medication Administration Guidelines and/or unit specific guidelines in the interest of patient safety.

**PROCEDURE:**

1. The RN (Registered Nurse) or anesthesia provider is accountable for assessing the appropriateness of all medication orders and infusing the medication using the appropriate technique over the correct duration of time, and in accordance with the Medication Administration Policy.
2. For all emergency situations (including rapid sequence intubation), RNs may administer appropriate IV medications:
  - under provider presence
  - in accordance to established standard of advance life support by trained nurses or
  - established protocol or standing orders if available
3. Trained RNs or other providers may insert an intraosseous line to administer IV medications when other methods of medication delivery are not feasible during an emergency situation.
4. Certain IV sedatives and analgesics may be used in areas approved for procedural sedation when ordered via Procedural Sedation Power Plan and used for procedural sedation (see HUMC Hospital **Policy 355: Procedural Sedation for the Non-Anesthesia Provider**).
5. Certain IV medications may be used in areas approved for comfort care when ordered via Comfort Care Power Plan and used for comfort care.
6. The IV Medication Guide list is not inclusive of every IV medication (refer to Appendices A & B). Unless specified in a separate policy, IV medications NOT identified in the appendices may be given by an RN,

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**REVIEWED:** 6/16, 11/16, 6/17, 11/17, 6/18, 10/18, 9/19, 10/20, 3/22, 10/22, 2/23

**APPROVED BY:** \_\_\_\_\_

**Anish Mahajan, MD**  
Chief Executive Officer  
Chief Medical Officer

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**Griselda Gutierrez, MD**  
Associate Chief Medical Officer

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**Jason Black, MBA, DNP, RN**  
Chief Nursing Officer



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technologists or other providers on any unit. Pharmacist may be contacted to review the drug safety profile to determine how and under what circumstances it can be given safely.

7. Restricted medications shall not be administered outside of the approved patient care areas (e.g., diltiazem IVP in non-monitored areas) unless the patient's clinical condition is deteriorating AND the Rapid Response Team (RRT) has been activated (see Appendices A & B).
8. Post-Anesthesia Care Unit (PACU) will follow guidelines as it pertains to the current level of care of the patient as identified in Appendix A, in addition to the usual post-operative recover care given in the PACU.
9. Anesthesia providers may administer medications (including restricted medications) in all areas within their usual scope of practice and with the appropriate monitoring of patients.
10. If non-formulary IV medications are ordered, the provider, Pharmacy, and Nursing staff must collaboratively review the safety profile and determine the appropriate mode/route of administration. The monitoring parameters and the need for direct provider supervision must also be discussed.
11. If investigational IV medications are ordered, physicians must be present at the bedside to supervise throughout the administration and remain at the bedside to monitor as recommended. This does not apply to antineoplastic agents. For antineoplastic agent administration, refer to antineoplastic agent protocols.
12. All IV continuous infusion bags must be replaced every 24 hours, except:
  - Propofol syringes prepared for pediatric/neonatal patients—replaced every 6 hours
  - Propofol bottles after being spiked—replaced every 12 hours
  - The following medications may be infused up to 48 hours:
    - All commercial/premixed IV fluids and drips that are not expired within the next 48 hours—check expiration date on the bag
    - IV medications compounded by Harbor-UCLA Medical Center Inpatient Pharmacy:
      - Sedatives (midazolam and ketamine)
      - Analgesics (fentanyl, morphine, and hydromorphone)
      - Pressors (norepinephrine and epinephrine)
  - Label all IV solution with date and time. Pre-labeling is prohibited. Labeling is part of the medication preparation process and is done at the same time the medication/solution is prepared.
13. In select cases in which the Anesthesiologist or CRNA will be in continuous contact with the patient during transport, controlled substance and propofol infusions may be discontinued prior to transport.
14. IV bolus order is expected to be hung as soon as it is acknowledged.
15. IV bolus may be hung wide-open, using pressure bag, with gravity-assisted, or via smart pump—rate for IV bolus via pump must be set at 999mL/hr. Rapid infusers may be used when specified.
16. All IV boluses are expected to be completely infused within 1 hour of initiation, per liter (or bag) ordered, unless otherwise specified.
17. Unless specified, when central lines are not in use, Keep Vein Open (KVO) rate will be as follow:
  - A. Patients in Neonatal ICU—1mL/hr
  - B. Patients in pediatrics units—5mL/hr
  - C. Patients in adult units—10mL/hr

Reviewed and Approved by:  
Medical Executive Committee – 2/2023

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Beverley A. Petrie, M.D.  
President, Professional Staff Association



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**APPENDIX A: Intravenous Medication Guidelines (Adults)**

Medication/ Classification	Critical Care Areas (designated areas serving adult critical care patients) and Emergency Department			Procedural Areas: Cath lab (CL), Interventional Radiology (IR),			Monitored units or monitored beds (non- critical care): Telemetry, PCU/Step down/RTU (such as 3SDU, 3TCU, 4T, 4W PCU, 5E PCU, 5WRTU, 6W monitored beds)			Non-monitored units or beds (ward/clinic): L&D, Med surg (such as 3E, 4E, 5E, 6W non- monitored beds, 7W)			Comments
	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Abciximab (Reopro)	X		X	X		X							
Acetazolamide (Diamox)	X	X		X	X		X	X		X	X		
Adenosine (Adenocard)	X <sup>1</sup>			X <sup>1</sup>				X <sup>1</sup>					IVP over 1-2 seconds via peripheral line, flush with normal saline immediately after dose; Repeat per provider order <sup>1</sup> Provider supervision required
Alteplase (Activase)	X <sup>1</sup>	X		X <sup>1</sup>	X	Radiology							<sup>1</sup> Provider presence required
Alteplase (Intracather)							Refer to nursing procedure manual for de clotting						
Aminocaproic acid (Amicar)		X	X										
Aminophylline (80% theophylline)		X	X		X	X			X	X	X		Loading dose to run over 30 min
Amiodarone (Cordarone)		X	X		X	X			X	X			
Angiotensin II (Giapreza)			X										
Argatroban			X									X <sup>1</sup>	<sup>1</sup> q4h aPTT monitoring only
Bivalirudin (Angiomax)													



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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Bumetanide (Bumex)	X	X	X	X	X	X	X	X	X	X	X		
Calcium chloride & gluconate	X	X	X		X	X	X	X	X	L&D only	INF	X	DO NOT exceed 100mg/min
Chemotherapy	Refer to nursing procedure manual; Only given by chemo-certified RNs												
Chlorpromazine (Thorazine)	X	X		X			X						IVPB rate not to exceed 1mg/min
Cistracurium (Nimbex)	X		X	X			X						IVP initial bolus requires provider presence -Patient must be intubated
Crotalidae polyvalent immune Fab (Crofab)		X						X					
Deferoxamine (Desferal)		X	X				X	X			X	INF	
Desmopressin acetate (DDAVP)	X	X		X	X			X					Slow IVP due to potential for hypotension
Dexmedetomidine (Precedex)	X		X			X			X				
Digoxin (Lanoxin)	X	X <sup>1</sup>		X	X <sup>1</sup>			X	X <sup>1</sup>			X	X <sup>1</sup>
Digoxin immune Fab (Digibind)	X	X											MAX IVP dose = 0.5mg <sup>1</sup> IVPB over 20 minutes for doses over 0.5mg
Diltiazem (Cardizem)	X	X	X	X		X				PCU & Step		PCU & Step	IVP over 2 minutes Rate change per provider order only



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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Dobutamine (Dobutrex)			X			X							Up titration NOT allowed in PCU and Step Down <sup>1</sup> Provider presence required for initial bolus & Max drip rate = 15mg/hr
Dopamine (Intropin)			X			X							Rate change per provider order only Up titration NOT allowed in PCU and Step Down <sup>1</sup> Max drip rate = 5 mcg/kg/min Central line preferred Rate change per provider order only Up titration NOT allowed in PCU and Step Down <sup>1</sup> Max drip rate = 5 mcg/kg/min <sup>1</sup> Must be administered by provider
Edrophonium chloride (Tensilon)	X <sup>1</sup>												
Enalaprilat (Vasotec IV)	X			X									Slow IVP over 5 minutes Max IVP dose = 2.5mg
Enoxaparin (Lovenox)	X			X									
Epinephrine (Adrenalin)			X			X							Central line preferred
Eptifibatide (Integrilin)	X		X	X						X			
Esmolol (Brevibloc)	X		X	X		X			X <sup>1</sup>			L&D only	<sup>1</sup> Provider presence required for initial bolus



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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Fentanyl (Sublimaze)	X		X	X		X							<sup>2</sup> no up titration; rate change per provider order only
Fosphenytoin (Cerebyx)	X	X		X	X		X						IVP Max rate = 150mg PE/min
Furosemide (Lasix)	X	X	X	X	X	X	X	X	X	X	X		IVPB is recommended for doses over 100mg
Glucagon	X		X	X			X						IVP rate = 1mg/min
Haloperidol (Haldol)	X			X			X						<sup>1</sup> Haloperidol IVP x1 allowed with evaluation of ECG as soon as patient is stable
Heparin	X		X	X		X	X	X	X	X	X		See Hospital Policy 371: Heparin Continuous Infusion <sup>1</sup> Patient must be on monitor
Hydralazine (Apresoline)	X			X			X						
Hydromorphone (dilauid)	X		X	X		X	X						
Ibutilide (Covert)		X			X								Max IVP rate = 0.1mg/min (1mg/10min)
Insulin REGULAR (Humulin R or Novolin R)	X		X	X		X	X <sup>1</sup>						<sup>1</sup> IVP for hyperkalemia only
Isoproterenol (Isuprel)			X			X							
Ketamine (for sedation)	X <sup>1</sup>		X			X							Restricted to Anesthesiology, L&D, Neonatal, Emergency Medicine,



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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Sub dissociative Ketamine (NOT for sedation)	ED only	X <sup>1</sup>		X <sup>1</sup>				X <sup>1</sup>					Palliative Care, Critical Care, Addiction Medicine, and Pain Medicine. Patient must be intubated & mechanically ventilated; <sup>1</sup> Must be administered by provider Restricted to Anesthesiology, L&D, Neonatal, Emergency Medicine, Palliative Care, Critical Care, Addiction Medicine, and Pain Medicine. <sup>1</sup> See Adult Low Dose Ketamine for Analgesia Protocol
Labetalol (Trandate)	X		X	X			X <sup>1</sup>		PCU & Step Down only <sup>2</sup>	L&D			<sup>1</sup> Provider presence required for initial bolus <sup>2</sup> no up titration; rate change per provider order only <sup>3</sup> Patient must be on monitor
Lidocaine (Xylocaine)	X		X	X			X						
Lorazepam (Ativan)	X		X	X			X			X <sup>1</sup> L&D <sup>2</sup>			<sup>1</sup> x1 for seizure lasting longer than 2-3 minutes <sup>2</sup> May administer IVP no more frequent than q6h
Magnesium Sulfate		X	X		X			X			X	L&D only	
Methyldopa (Aldomet)		X			X			X				L&D only	





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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Methylprednisolone Sodium Succinate (Solu-Medrol)	X	X	X	X	X	X	X	X	X	X	INF/ UCC		IVP over 3-15 minutes; IVPB is recommended for doses over 250mg
Metoclopramide (Reglan)	X	X		X	X		X	X		X	INF/ UCC		IVP over 1-2 minutes; IVP max dose = 10mg
Metoprolol (Lopressor IV)	X			X			X <sup>1</sup>			L&D			<sup>1</sup> Provider presence required for initial bolus <sup>2</sup> Patient must be on monitor
Midazolam (Versed)	X		X	X		X							
Miirirone	X		X	X		X			PCU & Step Down only <sup>1</sup>				Central or PICC line required with a dedicated port for mirirone; Rate change per provider only; No rate increase allowed in PCU and Step Down; Cardiology consult required <sup>1</sup> Max drip rate = 0.75mcg/kg/min
Morphine sulfate NaCl 3%	X		X	X		X	X	X	X	X			
NaCl 23.4%	X		X		X			X					
Naloxone (Narcan)	X		X	X		X	X	X	X	X			Restrict to neurotrauma; Pharmacy MUST SEND EXACT DOSE
Nicardipine (Cardene)			X			X						L&D only	Patient must be weaned off prior to transfer out of PACU





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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Nitroglycerin			X			X							1MAX dose = 200mcg/min
Nitroprusside (Nipride)			X			X							
Norepinephrine (Levophed)			X			X							Central line preferred
Pancuronium bromide (Pavulon)	X		X	X		X							
PENTobarbital (Nembutal)	X	X	X	X	X	X							
PHENobarbital (Luminal)	X	X		X	X		X		X				Max rate = 60mg/min
Phentolamine (Regitine)	X			X						L&D only			
Phenylephrine (Neo-synephrine)			X			X				L&D only			Central line preferred
Phenytoin (Dilantin)		X			X			X					
Potassium Acetate		X			X			X				X	
Potassium Chloride (K-rider)		X			X			X				X	X INF/ UCC



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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Potassium Phosphate		X			X			X			X		
Procainamide (Pronestyl)		X	X		X	X		X	X				MAX rate = 1g over 1hr
Propofol (Diprivan)			X			X							Patient must be intubated & mechanically ventilated; NOT for patients younger than 16 years of age (except for ICP control) <sup>1</sup> Provider presence required
Propranolol (Inderal)	X		X	X		X	X <sup>1</sup>						
Prostacyclin (Flolan)			X			X			X			X	See prostacyclin protocol
Protamine sulfate	X	X		X	X		X	X			X		Max rate: 100mg/min
Rocuronium (Zemuron)	X	X	X	X	X	X							IVP initial bolus requires provider presence - Patient must be intubated
Sodium Acetate		X			X			X			X		
Sodium Phosphate		X			X			X			X		
Sodium Thiosulfate	X	X		X	X		X	X			X	X	For hemodialysis patients, the hemodialysis RN will administer during the last 30 minutes of dialysis
Streptokinase	X		X										
Succinylcholine chloride (Anectine)	X			X									
Tenecteplase (TNKase)	X			X									



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	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	
Terbutaline													
Tranexamic acid	X	X	X										
Vasopressin (Pitressin)			X			X							
Vecuronium (Norcuron)	X		X	X		X							IVP initial bolus requires provider presence -Patient must be intubated
Verapamil (Calan)	X			X			X <sup>1</sup>						<sup>1</sup> Provider presence required

IVP = intravenous push  
IVPB = intermittent IV  
Drip = continuous infusion

L&D = Labor and Delivery  
ICU = Intensive Care Unit  
PACU = Peri Anesthesia Care Unit

PCU = Progressive Care Unit  
TCU = Transitional Care Unit  
4T = 4 West Telemetry



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**APPENDIX B: Intravenous Medication Guidelines (Neonates and Patients located in Pediatric Units)**

Medication/ Classification	NICU		PEDS ED and PICU		Monitored units (non-critical care): 6E PCU		Monitored units (non-critical care): Nursery Level 2 (7ENL2)		Non-monitored (ward/clinic): 6E Ward		Comments
	IVP	Drip	IVP	Drip	IVP	Drip	IVP	Drip	IVP	Drip	
	IVP	Drip	IVP	Drip	IVP	Drip	IVP	Drip	IVP	Drip	
Abciximab (Reopro)				X							
Acetazolamide (Diamox)	X		X	X	X		X	X	X		
Adenosine (Adenocard)	X <sup>1</sup>		X <sup>1</sup>		X <sup>1</sup>		X <sup>1</sup>				IVP over 1-2 seconds via peripheral line, flush with normal saline immediately after dose; Repeat per MD order <sup>1</sup> MD supervision required <sup>1</sup> MD supervision required
Alteplase (Activase)	X <sup>1</sup>		X	X	X		X				
Alteplase (Intracatheter)											
Aminocaproic acid				X	X	X	X		X	X	
Aminophylline (80% Theophylline)	X	X	X	X	X	X	X		X		Loading dose to run over 30 min
Amiodarone (Cordarone)	X	X	X	X	X	X	X				Use in-line filter
Argatroban				X	X	X	X				
Bretylium (Bretylol)	X	X	X	X	X	X	X				
Bumetanide (Bumex)	X	X	X	X	X	X	X		X	X	
Buprenorphine (Buprenex)	X		X								
Butorphanol tartrate (Stadol)	X		X								
Calcium chloride	X	X	X	X	X	X	X		X	X	
Calcium gluconate	X	X	X	X	X	X	X		X	INF	
Chemotherapy	Refer to nursing procedure manual; Only given by chemo-certified RNs										
Chlorpromazine (Thorazine)			X	X	X	X	X			X	IVPB rate not to exceed 0.5mg/min
Cistracurium (Nimbex)	X		X	X	X	X	X				
Crotalidae polyvalent immune Fab (Crofab)				X							
Deferoxamine (Desferal)			X	X	X	X	X		X	X	slow IVP
Desmopressin acetate (DDAVP)	X	X	X	X	X	X	X		X	X	
Dexmedetomidine (Precedex)			X	X	X	X	X				



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**POLICY NO.** 325M

**APPENDIX B: Intravenous Medication Guidelines (Neonates and Patients located in Pediatric Units)**

Medication/ Classification	NICU			Peds ED and PICU			Monitored units (non-critical care): 6E PCU			Monitored units (non-critical care): Nursery Level 2 (7ENL2)			Non-monitored (ward/clinic): 6E Ward			Comments	
	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip	IVP	IVPB	Drip		
Diazepam (Valium)	X			X			X						X				
Digoxin (Lanoxin)	X			X			X										
Digoxin immune Fab (Digibind)	X	X		X	X												IVPB over 30 minutes
Diltiazem (Cardizem)				X	X		X										
Dobutamine (Dobutrex)			X		X		X										
Dopamine (Intropin)			X		X		X										Central line preferred
Edrophonium chloride (Tensilon)			X	X													Must be administered by MD
Enalaprilat (Vasotec IV)	X			X			X										Slow IVP over 5 minutes
Enoxaparin (Lovenox)				X													
Epinephrine (Adrenalin)			X	X	X		X						X				Central line preferred
Eptifibatid (Integrilin)				X	X		X										
Esmolol (Brevibloc)							X										
Etidronate disodium (Didronel)																	
Etomidate (Amidate)				X													
Fentanyl (Sublimaze)	X		X	X	X		X						X				
Fosphenytoin (Cerebyx)	X	X		X	X		X						X	X			Max rate: 1-3 mg PE/kg/min or 150mg PE/min
Furosemide (Lasix)	X	X		X	X		X						X	X			IVPB is recommended for doses over 20mg
Glucagon	X			X	X		X										
Haloperidol LACT (Haldol)				X	X		X										
Heparin	X		X	X	X		X						X		X		See Heparin Infusion Protocol
Hydralazine (Apresoline)	X	X		X	X		X										
Hydromorphone (dilaudid)	X			X	X		X						X				
Ibuprofen (Neoprofen)		X			X		X										Neonatology Consult required



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Immunoglobulin		X		X	X	X	X	X	X	X			X	INF		Must administer over 30 minutes
Indocin	X	X		X			X		X				X	X		
Infliximab (Remicade)				X			X							X	INF/ Peds Spec	<sup>1</sup> for hyperkalemia only & give with dextrose
Insulin REGULAR (Humulin R or Novolin R)	X		X	X		X <sup>1</sup>	X <sup>1</sup>		X <sup>1</sup>				X <sup>1</sup>			
Isoproterenol (Isuprel)			X			X										Restricted to Anesthesiology, L&D, Neonatal, Emergency Medicine, Palliative Care, Critical Care, Addiction Medicine, and Pain Medicine. <sup>1</sup> Must be administered in the procedure room by anesthesia or critical care provider <sup>2</sup> See Pediatric Low Dose Ketamine for Analgesia Protocol
Ketamine	X	X	X	X <sup>2</sup>	X	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>1</sup>					
Labetalol (Trandate)				X			X									
Levothyroxine	X			X		X	X		X				X			
Lidocaine (Xylocaine)	X		X	X		X	X									
Lorazepam (Ativan)	X		X	X		X	X		X				X			
Magnesium Sulfate		X		X			X			X				X	INF/ UCC	
Meperidine (Demerol)	X			X			X									
Methyldopa (Aldomet)				X												
Methylprednisolone Sodium Succinate (Solu-Medrol)	X	X	X	X	X	X	X	X	X	X	X	X	X	INF	X	



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Metoprolol (Lopressor IV)				X	X		X	X								
Midazolam (Versed)	X	X	X	X	X	X	X	X	X	X						
Milrinone	X		X	X		X										
Morphine sulfate	X		X	X		X							X			
NaCl 3%				X		X										
Naloxone (Narcan)	X		X	X		X							X			
Neostigmine (Prostigmin)	X			X												Slow IVP over 5 minutes
Nitroglycerin						X										
Nitroprusside (Nipride)						X										
Norepinephrine (Levophed)						X										Central line preferred
Octreotide (Sandostatin)	X		X	X		X						X				
Pancuronium bromide (Pavulon)	X		X	X		X										
PENTobarbital (Nembutal)				X												
PHENobarbital (Luminal)	X	X		X	X		X	X	X	X			X			
Phentolamine (Regitine)	X			X		X										
Phenylephrine (Neo-synephrine)			X			X										
Phenytoin (Dilantin)		X			X								X			
Physostigmine salicylate (Antilirium)				X												
Procainamide (Pronestyl)		X	X	X	X		X	X								
Propofol (Diprivan)				X		X		X								Patient must be intubated (except for procedural sedation); NOT for patients younger than 16 years of age (except for ICP)





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Propranolol (Inderal)	X			X	X		X									control and procedural sedation); MD only to administer push
Prostacyclin (Flolan)			X		X			X								See prostacyclin protocol
Prostaglandin E1 (Alprostadiil)	X		X	X												
Protamine sulfate	X	X		X			X	X		X	X		X	X		Max rate: 100mg/min
Pyridoxine	X			X	X		X			X						
Rituximab (Rituxan)						PICU only		X						X	INF	Areas approved for chemotherapy
Rocuronium (Zemuron)	X		X	X		X										
Sodium chloride > 3%				X												
Streptokinase				X												
Succinylcholine chloride (Anectine)				X												
Terbutaline							X									
Tolazoline (Priscoline)	X		X	X		X		X								
Tranexamic acid				X			X	X								
Vasopressin (Pitressin)			X				X									
Vecuronium (Norcuron)	X		X	X		X		X								
Verapamil (Calan)				X												
Vitamin K (Synkovite)		X				X		X				X			X	

IVP = intravenous push  
Drip = continuous infusion